Navigating Fake News, Alternative Facts, and Misinformation in a Post-Truth World

Kimiz Dalkir and Rebecca Katz

Navigating Fake News, Alternative Facts, and Misinformation in a Post-Truth World

Kimiz Dalkir
McGill University, Canada

Rebecca Katz
McGill University, Canada

IGI Global
DISSEMINATOR OF KNOWLEDGE

A volume in the Advances in Media,
Entertainment, and the Arts (AMEA) Book Series

Advances in Media, Entertainment, and the Arts (AMEA) Book Series

Giuseppe Amoruso
Politecnico di Milano, Italy

MISSION

Throughout time, technical and artistic cultures have integrated creative expression and innovation into industrial and craft processes. Art, entertainment and the media have provided means for societal self-expression and for economic and technical growth through creative processes.

The **Advances in Media, Entertainment, and the Arts (AMEA)** book series aims to explore current academic research in the field of artistic and design methodologies, applied arts, music, film, television, and news industries, as well as popular culture. Encompassing titles which focus on the latest research surrounding different design areas, services and strategies for communication and social innovation, cultural heritage, digital and print media, journalism, data visualization, gaming, design representation, television and film, as well as both the fine applied and performing arts, the AMEA book series is ideally suited for researchers, students, cultural theorists, and media professionals.

COVERAGE

- New Media Art
- Fabrication and prototyping
- Visual Computing
- Drawing
- Design Tools
- Geometry & Design
- Products, Strategies and Services
- Blogging & Journalism
- Data Visualization
- Fine Arts

IGI Global is currently accepting manuscripts for publication within this series. To submit a proposal for a volume in this series, please contact our Acquisition Editors at Acquisitions@igi-global.com or visit: http://www.igi-global.com/publish/.

Titles in this Series

Handbook of Research on Combating Threats to Media Freedom and Journalist Safety
Sadia Jamil (Khalifa University, UAE)
Information Science Reference ● © 2020 ● 408pp ● H/C (ISBN: 9781799812982) ● US $265.00

Deconstructing Images of the Global South Through Media Representations and Communication
Floribert Patrick C. Endong (University of Calabar, Nigeria)
Information Science Reference ● © 2020 ● 469pp ● H/C (ISBN: 9781522598213) ● US $195.00

Handbook of Research on the Global Impacts and Roles of Immersive Media
Jacquelyn Ford Morie (All These Worlds, LLC, USA) and Kate McCallum (Bridge Arts Media, USA & Vortex Immersion Media, USA)
Information Science Reference ● © 2020 ● 400pp ● H/C (ISBN: 9781799824336) ● US $265.00

Handbook of Research on Multidisciplinary Approaches to Literacy in the Digital Age
Nurdan Oncel Taskiran (Istanbul Medipol University, Turkey)
Information Science Reference ● © 2020 ● 405pp ● H/C (ISBN: 9781799815341) ● US $265.00

International Perspectives on Feminism and Sexism in the Film Industry
Gülşah Sarı (University of Bolu Abant Izzet Baysal, Turkey) and Derya Çetin (University of Bolu Abant Izzet Baysal, Turkey)
Information Science Reference ● © 2020 ● 277pp ● H/C (ISBN: 9781799817741) ● US $195.00

Handbook of Research on the Global Impact of Media on Migration Issues
Nelson Okorie (Covenant University, Nigeria) Babatunde Raphael Ojebuyi (University of Ibadan, Nigeria) and Juliet Wambui Macharia (Karatina University, Kenya)
Information Science Reference ● © 2020 ● 392pp ● H/C (ISBN: 9781799802105) ● US $280.00

Media and Its Role in Protecting the Rights of Children in Africa
Olusola Oyero (Covenant University, Nigeria)
Information Science Reference ● © 2020 ● 368pp ● H/C (ISBN: 9781799803294) ● US $195.00

Gender and Diversity Representation in Mass Media
Gülşah Sarı (Bolu Abant Izzet Baysal University, Turkey)
Information Science Reference ● © 2020 ● 338pp ● H/C (ISBN: 9781799801283) ● US $195.00

Editorial Advisory Board

Table of Contents

Section 1
Information Literacy: Methods to Indentify Fake News, Alternate Facts, and Misinformation

Section 2
The Information Literacy Toolkit: How to Acquire the Necessary Skills to Detect Fake News, Alternate Facts, and Misinformation

Section 3
National Laws and Organizational Policies: How to Ensure Consequences of
Deliberately Disseminating Fake News, Alternate Facts, and Misinformation

Section 4
New Tools and Technologies to Help in the Fight Against Fake News, Alternate Facts,
and Misinformation

Detailed Table of Contents

Section 1
Information Literacy: Methods to Indentify Fake News, Alternate Facts, and Misinformation

Chapter 1
Joan C. Bartlett, McGill University, Canada

Science and health misinformation is endemic; there can be profound consequences both for individuals and society when people make decisions based on such information. Information literacy skills provide one tool to help mitigate against misinformation. These skills include the recognition of a need for information, the ability to locate and retrieve information, and the ability to effectively use the information. Underpinning these processes are the concept of effectiveness and the ability to evaluate all steps of the process. These skills are essential if people are to be able to evaluate the sources of information, the process by which it was retrieved, and the biases inherent in its creation and dissemination. Thus, information literacy is one of tools that can be used to mitigate against misinformation.

Chapter 2
Dana Tessier, Independent Researcher, Canada

Since the invention of the printing press, individuals have created and shared more information at increasing rates, and this has further accelerated with the proliferation of information technology and the increase in Internet accessibility. Humans' ability to absorb and process information has not evolved alongside the speed at which information can be created and shared. This chapter examines what impact this abundance of information has had on society and its ability to process, examine, and retain information. The relationship between information overload and society's ability to discern the veracity of information is discussed. The author makes recommendations for how individuals and organizations can harness their information overload and continue to discern fact from fiction and create a more truthful world.

Chapter 3
Thomas Joseph Froehlich, Kent State University, USA

This chapter outlines the structure and content of a course devoted to developing strategies to cope with the massive assault of disinformation on American democracy. Ten lessons for the age of disinformation will provide pedagogical techniques to teach high school, college students, or adult learners how to cope with our current environment, which the author calls the "Age of Disinformation." It provides a multifaceted approach in which each facet reinforces the others. The 10 lessons are (1) characteristics of the age of disinformation; (2) the varieties of false information; (3) knowledge, opinion, and second-hand knowledge; (4) deception and self-deception; (5) psychological factors; (6) cognitive authorities; (7) social media, intellectual freedom, and libraries; (8) logical fallacies; (9) ethical principles; and (10) information, media, and digital literacies and personal, political, and professional commitments. Each lesson outlines the key ideas for each lesson and provides exercises that reinforce the key ideas of each lesson.

Chapter 4
Nicole S. Delellis, University of Western Ontario, Canada
Victoria L. Rubin, University of Western Ontario, Canada

This chapter describes a study that interviewed 18 participants (8 professors, 6 librarians, and 4 department chairs) about their perceptions of 'fake news' in the context of their educational roles in information literacy (IL) within a large Canadian university. Qualitative analysis of the interviews reveals a substantial overlap in these educators' perceptions of skills associated with IL and 'fake news' detection. Librarians' IL role seems to be undervalued. Better communication among integral IL educator groups is recommended. Most study participants emphasized the need for incorporating segments dedicated to detecting 'fake news' in IL curricula. Pro-active IL campaigns to prevent, detect, and deter the spread of various 'fakes' in digital media and specialized mis-/disinformation awareness courses are among best practices that support critical thinking and information evaluation within the societal context. Two other interventions, complementary to IL as per Rubin's Disinformation and Misinformation Triangle, are suggested – detection automation technology and media regulation.

Section 2
The Information Literacy Toolkit: How to Acquire the Necessary Skills to Detect Fake News, Alternate Facts, and Misinformation

Chapter 5
Mark Chong, Singapore Management University, Singapore
Murphy Choy, MC EduTech, Singapore

Fake news, which includes both disinformation and misinformation, has been a challenge for many countries in the last few years. Disinformation has been present in modern history as part of the tool kit of PSYOPS for the military. Likewise, misinformation has been part of human history for a long time. Hoaxes, rumors, and urban legends—all of which can be classified as differing types of misinformation, although they are not commonly addressed as such—have been exploited by adversarial organizations for

their own benefit. This study will propose a comprehensive taxonomy to tackle fake news, disinformation, and misinformation and assess the level of threat they pose to society. A comprehensive comparison with existing typologies will also be included.

Chapter 6

Daniel Martínez-Ávila, Universidad Carlos III de Madrid, Spain
Mariana Rodrigues Gomes de Mello, Sao Paulo State University, Brazil
Ellen Valotta Dias Borges, Sao Paulo State University, Brazil
Selma Leticia Capinzaiki Ottonicar, Sao Paulo State University, Brazil

The purpose of this chapter is to discuss information and media literacy from a philosophical perspective. This kind of discussion is important because it brings together scientific knowledge and philosophy. The authors base their arguments on some discussions about the Theory of Knowledge, such as the problem of truth, as well as philosophers such as Nietzsche and Foucault. This chapter is interdisciplinary, and it results in the evolution of information and media literacy theory. This chapter also aims to consider the power games that encourage fake news. These games are influenced by ideological aspects of the post-truth world.

Chapter 7

Özgür Külcü, Hacettepe University, Turkey

Accurate information for information professionals means recorded data that has integrity, validity, reliability, and authenticity. However, confidence in information sources can be pushed to the background when easily accessible and sensational information becomes so popular. It is often difficult even for professionals to decide on which content and which sources are credible. The chapter will describe the result of a survey of 236 information professionals that evaluated the personal and institutional communication and information acquisition environments, information searching behaviors, information and media literacy perspectives. The study looked at information requirements and information seeking behaviors, e-government services, citizenship issues, social and cultural activities and evaluated them within the framework of internet search engines, radio and television channels, social media, and information centers.

Chapter 8

Salma Mariam Ayad, East Tennessee State University, USA
Robert Andrew Dunn, East Tennessee State University, USA
Stephen William Marshall, East Tennessee State University, USA

This study represents an investigation of the effect of political advertising on readers' perceptions of bias, value, and credibility in an online news article. Participants read an unbiased news article placed alongside three advertisements. Participants randomly entered one of three conditions—right-leaning advertisements, left-leaning advertisements, or neutral advertisements. They then answered questions about the perceived bias and credibility of the article. The researchers predicted biased political ads would prime perceptions of bias for the news article, despite its neutrality. Though the findings trended in the hypothesized direction, a lack of significance suggests political advertising may not serve as a

prime for news readers in making decisions about the political bias, credibility, and news value of an article or news source. However, participants who had a higher prior knowledge of politics did place a higher news value on the article than those with low prior knowledge. Also, men were more likely to see a liberal bias and to rate a news story higher on news value.

Section 3
National Laws and Organizational Policies: How to Ensure Consequences of Deliberately Disseminating Fake News, Alternate Facts, and Misinformation

Fake news has influenced politics, economy, and society in Brazil. Because of that, some people have developed actions to fight against fake news and disseminate its consequences to people. In order to fight against fake news, individuals need critical literacy to verify the trustfulness of information sources. This chapter has three purposes: It intends to discuss the state of the art of scientific studies of fake news in Brazil. It aims to do documentary research to describe the policies and actions that were created to inform the population about the consequences of fake news. And it aims to show critical literacy concepts and the application of Brazilian standards and indicators of information and media literacy. The methodology is based on documentary research and a systematic literature review. The results demonstrate the journalistic, scientific, and political actions to fight against fake news.

This chapter explores the Spiritualist movement and its rapid growth due to the formation of mass media and compares these events with the current rise of fake news in the mass media. The technology of cheaper publications created a media platform that featured stories about Spiritualist mediums and communications with the spirit world. These articles were published in newspapers next to regular news creating a blurred line between real and hoax news stories. Laws were later created to address instances of fraud that occurred in the medium industry. Today, social media platforms provide a similar vessel for the spread of fake news. Online fake news is published alongside legitimate news reports leaving readers unable to differentiate between real and fake articles. Around the world countries are actioning initiatives to address the proliferation of false news to prevent the spread of misinformation. This chapter compares the parallels between these events, how hoaxes and fake news begin and spread, and examines the measures governments are taking to curb the growth of misinformation.

Fake news and populist movements that appear to hold the fate of democracy hostage are urgent concerns around the world. The flight from liberal democracy toward oligarchy has spread out from the unexpected results of the 2016 American presidential elections bringing in a wave of reactionary

populism and the beginning of a left populist counter movement. The phenomenon of fake news is often explained in terms of opposition public relations strategies and geopolitics that shift audiences toward a regime of post-truth where emotion is said to triumphs over reason, computational propaganda over common sense, or sheer power over knowledge. In this chapter, the authors propose something different in order to theorize the imaginary audience(s) and conditions of reception for fake news treated as both a symptom (often of injury) and a cause (at times a danger to democracy). This leads them to evaluate the role it plays in defining what the fields of journalism, politics, and social science are becoming and what it means for democracy to come.

Section 4
New Tools and Technologies to Help in the Fight Against Fake News, Alternate Facts, and Misinformation

Chapter 12

Maria Aparecida Moura, Federal University of Minas Gerais, Brazil
Lorena Tavares de Paula, Federal University of Minas Gerais, Brazil

This chapter proposes an environment for the discovery of fake news and the orientation of information users in digital environments that correlates the cognitive authorities and the digital structures left as a trace. Such traces can promote the construction of a symbolic index that materializes the anatomy of lies. The model reached in this methodological process may function as a support for informational literacy in the post truth scene, as a space for fostering the informational culture in a network.

Chapter 13

Mehmet Fatih Çömlekçi, Kirklareli University, Turkey

In today's post-truth environment, besides the increase in political polarization, the rapid spread of fake news infringes on society. In the struggle with fake news, fact-checking services have begun to play an important role. The aim of this chapter is to highlight how fact-checking services work, what their strategies and limitations are, their interaction with users, and the digital tools they use in such interactions. Thus, the platforms Teyit.org (Confirmation) and Doğruluk Payı (Share of Truth) that operate in Turkey have been chosen as exemplary cases. In the study, the content analysis and the in-depth interview methodological approaches have been used together. As a conclusion, it has been revealed that these aforementioned fact-checking services increase their activities during election times, adopt the principles of political impartiality and economic transparency, use the practices of data journalism, interact with users, and try to create a digital literacy ecosystem as an ultimate goal.

Chapter 14

Hicham Hage, Notre Dame University – Louaize, Lebanon
Esma Aïmeur, Université de Montréal, Canada
Amel Guedidi, Université de Montréal, Canada

While fake and distorted information has been part of our history, new information and communication

technologies tremendously increased its reach and proliferation speed. Indeed, in current days, fake news has become a global issue, prompting reactions from both researchers and legislators in an attempt to solve this problem. However, fake news and misinformation are part of the larger landscape of online deception. Specifically, the purpose of this chapter is to present an overview of online deception to better frame and understand the problem of fake news. In detail, this chapter offers a brief introduction to social networking sites, highlights the major factors that render individuals more susceptible to manipulation and deception, detail common manipulation and deception techniques and how they are actively used in online attacks as well as their common countermeasures. The chapter concludes with a discussion on the double role or artificial intelligence in countering as well as creating fake news.

Foreword

Our global village is a densely connected heterogeneous social network, consisting of multiple layers of interconnected links joining different groups of individuals, organizations, or entities. As the network is becoming more densely connected than ever, information can quickly propagate through social Medias and reach millions of individuals within minutes. Ideally, if every piece of information passing through the network is truthful and trustworthy, then the network essentially is an efficient information exchange platform that can significantly lower the transaction costs in a society. Specifically, members in the network can enjoy the benefits of making optimal decisions in all activities, from deciding a vote in a presidential election to choosing the right product in online shopping, through the electronic devices on their fingertips.

Nonetheless, our world is far from perfect. Such an information exchange platform is equally efficient for spreading falsified information, resulting in increasing the transaction costs of our society. Some parties, organizations or even governments often intentionally create and spread fake news, alternate facts and misinformation with the goal of influencing the decisions of other members in the network. For example, totalitarian nation states often use propaganda to justify their dictatorial decisions and actions. Some companies and politicians use fake news and alternative facts to project negative images on their competitors. In many recent conflicts, such as the Russo-Ukrainian War, the cyberspace, especially the social media, has become the fifth dimension of battlefield in addition to land, sea, air, and space.

This book opens the door to study and tackle some of the crucial problems of disseminating fakes news, alternative facts and misinformation in our densely connected information village. The authors, who are experts in different domains of information science and information study, present comprehensive studies of the problems from different perspectives and provide their insightful solutions for handling different types and phases of falsified information. Specifically, the book covers the methods to identify and verify falsified information in the context of information literacy with case studies. These identification and verification methods are important skills for information professionals, especially in social media and traditional media. The book also presents a roadmap to acquire the adequate skills to detect falsified information and reviews the national laws and organizational policies that are related to spreading fakes news. This knowledge is useful for policy makers and executive management in organizations and governments. In addition to providing an in-depth study of the aforementioned problems, the book also sheds light on solutions to fight against fake news, alternative facts and misinformation. Researchers in information science, social science, machine learning, and artificial intelligence will find the information useful for developing new generations of mitigation techniques.

Detecting and mitigating falsified information is a challenging yet important research domain that includes the areas of information propagation, information retrieval, social networks mining, text mining,

machine learning and social sciences. Interdisciplinary problems require interdisciplinary solutions. This book presents a solid basis for developing interdisciplinary solutions to tackle the problems.

Benjamin C. M. Fung
McGill University, Canada

Benjamin Fung *is a Canada Research Chair in Data Mining for Cybersecurity, an Associate Professor at McGill University, a Co-curator of Cybersecurity in the World Economic Forum (WEF), and an Associate Editor of IEEE Transactions on Knowledge and Data Engineering (TKDE) and Elsevier Sustainable Cities and Society (SCS). He received a Ph.D. degree in computing science from Simon Fraser University in 2007. Collaborating closely with the national defense, law enforcement, transportation, and healthcare sectors, he has published over 120 refereed articles that span across the research forums of data mining, machine learning, privacy protection, cyber forensics, services computing, and building engineering with over 9,000 citations. His data mining work in crime investigation and authorship analysis have been reported by media worldwide, including New York Times, BBC, CBC, etc. Dr. Fung is an Associate Member of MILA and a licensed professional engineer in software engineering in Ontario.*

Preface

THE POST-TRUTH WORLD

We have entered the post-truth era, when "alternative facts" replace actual facts, and feelings have more weight than evidence.

Post-truth is an assertion of ideological supremacy by which its practitioners try to compel someone to believe something regardless of the evidence. (McIntyre, 2018)

In a post-truth world, objective facts have less influence on opinions and decisions than emotions and personal beliefs. People deliberately select those facts and data that support their preferred conclusions and classify any information that contradicts their beliefs as "false news." This is not a recent problem; however, the Internet and social media allow information sharing at an incredible speed (practically real-time) and over a much greater geographic range (almost worldwide) compared to analog media. There is also increasingly a crowd-sourcing approach to gathering information. PEW Research notes that most people read news through their social networks rather than independent news reports[1]. This creates an overall false balance as people tend to seek out information that is compatible with their existing views and values.

How can we better educate our students and train our professionals so that they have the full range of literacies or meta-literacy needed to navigate in a post-truth world? How can policies be implemented, within organizations and laws within countries, to combat fake news and ensure there are serious consequences to deliberately creating and sharing misinformation? Can newer technologies such as artificial intelligence improve the efficiency and effectiveness of fact checking (e.g. through news filtering agents that identify false news much as we identify junk email)? This book consists of a series of contributed chapters that address the post-truth world in a comprehensive manner, covering all of these dimensions and showing how literacy, policy, and technology need to work together to help us navigate the post-truth world.

OBJECTIVES OF BOOK

There is an interesting intersection of human (manual) methods to address post-truth (such as information literacy workshops and legal or policy changes to deter the spread of misinformation online) and more automated, machine/AI-based approaches (e.g., an algorithm that detects fake news dissemination

patterns in social media). This book brings together the different disciplines and research approaches to provide a comprehensive and effective toolkit to deal with information and knowledge in the post-truth era. The objective is to integrate approaches from the educational, policy, and technology sectors because they must all work together to combat fake news. We expect this work to have a wide impact as it resonates with a broad audience of educators, policymakers, and technology developers. There is potentially significant value in providing a blueprint to help users navigate in this convoluted world of increasingly complex and dubious content. The only uncontested prediction is that the volume of such content will only increase, making its validation even more challenging.

TARGET AUDIENCE

There are three main groups that we hope will benefit from this work: educators, policymakers, and technology developers. Educators will be better equipped to teach the multiple and meta-literacies needed to deal with information and knowledge, both in formal curricula but also in workshops and peer-to-peer mentoring. Many universities as well as some companies now have a requirement that all employees successfully complete training on information literacy. Policymakers at the organizational and societal levels will need to better understand the risks posed by post-truth misinformation and knowledge flows in order to implement policies and legislation that impose real consequences (e.g., a few countries such as Germany have passed laws addressing misinformation online). In addition, technology and software developers will have a deeper understanding of how and why people create and share fake news so they can develop algorithms capable of detecting and eventually preventing their dissemination.

OVERVIEW OF CHAPTERS

The chapters are categorized with respect to their contribution to one of the three areas: information literacy and post-truth education, policy and legislation, and technology and tools. Together, the chapters provide broad coverage of foundational concepts such as the history of fake news (propaganda, hoaxes, fraud, urban myths, and satire); provide definitions of key terms such as misinformation, disinformation, and fake news; and provide recommendations on how to better educate citizens in a post-truth world, what legislation to implement to protect citizens from harm, and how to combine sophisticated tools to help citizens better detect fake news, alternative facts, and misinformation.

Information Literacy

The first chapter by Joan Bartlett, "Information Literacy: Methods to Identify Fake News, Alternative Facts, and Misinformation," studies the relationship between information literacy and science disinformation. Science is a field in which there can be significant consequences when information consumers make the wrong decision. Recent examples include children dying because their parents were wrongly convinced that the measles vaccine was a cause of autism. Information literacy has long been the purview of libraries and information schools and they can continue to play an effective role in teaching these skills. However, there is a need for all digital citizens to be equipped with a fundamental awareness of information literacy and the critical skills necessary to identify dubious content. The chapter highlights

some of the inherent biases present in the creation and sharing of disinformation and how post-truth education can help people better identify who created the fake news and how they managed to share it with them. One of the greatest advantages offered by information literacy is that it is not media-specific: the approach can be applied to any type of content regardless of its format. While information literacy alone is not sufficient, it is certainly one of the most valuable tools to include in our post-truth toolkit.

The second chapter, "The Needle in the Haystack: How Information Overload Is Impacting Society and Our Search for Truth," by Dana Tessier, makes a strong link between the theory of information overload with good organizational practices on how best to deal with this overload in order to minimize our vulnerability to fake news. The chapter notes that, given the limitations of human cognition with respect to how much information we can absorb as well as the fact that information overload is not going to go away but is more likely to get worse, we will need help to deal with the post-truth world. Social media is also here to stay, and we will likely continue to share content with our online communities. Recommendations include adapting proven strategies used in the past to help organize information into more manageable chunks. Sometimes referred to as personal information management or knowledge management, these strategies include manually taking notes and summarizing content. Today there are also a number of automated tools including apps that can help us deal with information overload while continuing to use new media to connect with one another.

The third chapter, Thomas Froelich's "Ten Lessons for the Age of Disinformation," contains a valuable summary of key lessons relevant to understanding our post-truth moment. The author summarizes a comprehensive course he has developed to equip high school learners with effective strategies to cope with disinformation in the post-truth world. It is critical that educational interventions begin at an early stage of learning. While information literacy courses, workshops, and tutorials exist, they tend to be targeted toward adult learners and university students. Froelich's ten lessons are: (1) characteristics of the Age of Disinformation; (2) the varieties of false information; (3) knowledge, opinion, and second-hand knowledge; (4) deception and self-deception; (5) psychological factors; (6) cognitive authorities; (7) social media; (8) logical fallacies; (9) ethical principles; and (10) information literacies and personal, professional and political commitments. Each lesson is presented with a list of key ideas and exercises that can be completed in groups or by the reader alone in order to apply the lessons concretely to the post-truth world learners live in.

The section concludes with a case study by Nicole Delellis and Victoria Rubin, "Fake News in the Context of Information Literacy: A Canadian Case Study." The authors interviewed 18 university participants about their perceptions of 'fake news' and their role in helping people become more information literate. Their findings confirm what others have also noted, namely, that librarians and information professionals are not very visible and that their role in post-truth education tends to be under-valued. The authors recommend that there be more communication and visibility of groups involved in information literacy efforts and that, if it is not already present, information literacy needs to be part of the curriculum to ensure that all information professionals acquire the necessary skills. They conclude by reinforcing the need to increase general awareness of how information literacy skills can help everyone navigate in a post-truth world, as well as the need to coordinate this with media legislation and complementary technological tools.

Information Literacy Toolkit

This section begins with a categorization of different types of fake news, alternative facts, and misinformation by Mark Chong and Murphy Cho, "An Empirically Supported Taxonomy of Misinformation." The authors looked at existing typologies and enumerated the different types of fake news such as hoaxes, rumors, and urban legends in order to propose a taxonomy that clearly distinguishes between different types. They used three major criteria: lexical structure, simplicity, and an unsupervised machine learning algorithm to automatically cluster a corpus of fake news. They propose four major categories in their taxonomy: click bait, shockers, events, and fear inducers and provide specific recommendations on how to address each category of threat. They found a number of markers that can be used to distinguish between fake and real news in a clear, unambiguous, and rigorous manner.

The next chapter, "Behind the Post-Truth World: A Philosophical Perspective on Information and Media Literacy," by Daniele Martinez Avila et al., looks at information literacy from an interdisciplinary perspective that includes information literacy, media literacy, philosophy, and science. The authors address the theory of knowledge, the nature of truth, and the role of power relationships when manipulating the truth. They investigate the ways in which philosophical thinking can contribute to the evolution of information and media literacy concepts and whether philosophical training can help digital citizens be critical of and reflect more on truth and post-truth. A number of critical concepts are discussed, including the nature of discourse and language; the ways discourse determines the impact of social relations on all spheres of society; and the ways in which language can be responsible for producing different forms of power in these relations. The authors' analysis addresses works by early historical philosophers as well as the contributions of contemporary philosophy. The authors apply these reflections to the ways in which we assess whether or not something is true. The recommendation is that a philosophical tradition of critical thinking can help individuals adopt a critical stance towards information in a post-truth society.

Özgür Külcü continues the discussion of critical tools to include in an information literacy toolkit through his study on how Turkish information professionals decide whether content is valid, reliable, authentic, and credible. His chapter on "Verification of Information and Evaluation of Approaches of Information Professionals in Accessing Accurate Information" describes a large-scale survey of participants' information searching behaviors across Internet search engines, radio and television sources, social media, and information centres. The study findings address how participants perceived information reliability, whether or not they used multiple sources of information to triangulate, and their preferred source of news (predominantly social media, as has been found in studies done in other countries). The participants are information professionals who are expected to assume leadership roles in teaching information literacy and vetting the quality of information. The study shows that there is a strong need to support all users in developing information literacy skills, particularly information professionals, as they will influence how successfully the rest of us will negotiate our way through the post-truth world.

The final chapter in this section is by Ayad et al., "Political Advertising Effects on Perceived Bias, Value, and Credibility in Online News." Their study looked at how readers of political advertising perceived bias, value and credibility of the online news articles they read. Participants were given unbiased articles as well as political advertising articles that were either right or left-leaning or neutral. The authors' study looked at the effects of prior knowledge of political content, political affiliation and gender on online news bias. They found prior knowledge and gender showed significant effects but political affiliation did not. Their findings help to better understand what motivates people to watch certain news content in a highly politically polarized environment. Not only are people more likely to watch programs that

reinforce their beliefs but they also rated the shows as more fair, friendly, good, and cooperative than those who saw shows that contradicted their political attitudes.

Legislation and Policies

The chapter by Selma Ottonicor, "Brazilian Policy and Actions to Fight against Fake News: A Discussion Focused on Critical Literacy," outlines how Brazil is addressing fake news. Brazil has undertaken a number of policies and actions to help address fake news in addition to creating information literacy and media literacy standards and indicators. The author looks at why, despite significant investment in education, fake news remains a threat to both highly educated and less educated individuals. In Brazil, Paulo Freire is renowned for his impact on education through his book, Pedagogy of the Oppressed, that aimed to reduce social inequality by improving universal access to education. Freire emphasized the critical consciousness of students and the idea that learning is not only about decoding words but is also about interpreting information. He therefore laid down the foundations of information literacy. The chapter describes the journey from this historical foundational movement to current Brazilian efforts in regulating fake news proliferation. These efforts include the creation of a commission to investigate politicians who used fake news to win in the 2018 elections and also the establishment by the Brazilian government of the Health without Fake News program to fight against vaccine misinformation.

The chapter on "Spiritualism and the Resurgence of Fake News" by Kirsty Hesketh takes us on a historical journey back to the rise of the spiritualist movement in the Victorian Era, with the Fox sisters' 1848 claim to be able to communicate with departed spirits. This fake news was rapidly disseminated through the mass media of that time, i.e., the new printing technology that permitted more newspapers to be printed very cheaply. This was coupled with new photography techniques, that allowed images to be manipulated or superimposed to create photos of spirits, thus offering visual proof of the afterlife. The parallels with today's post-truth world are quite striking. Spiritualism, hoaxes, and false news have existed before 2016 and governments had no option but to take action. In Victorian England, this action took the form of the Fraudulent Mediums Act which imposed fines on any medium who deliberately deceived a paying customer. Historical legislation, such as that taken to curb purported nineteenth century mediums capitalizing on the Spiritualist movement, may inform governments today on the type of legislation needed to protect citizens from fake news.

The final chapter in this section is by Greg Nielson, "Populism, Fake News, and the Flight From Democracy." The author presents an alternative to policies to prevent fake news and legislation to curb its damaging effects. The chapter investigates the relations between democracy, knowledge production, and populism through an interdisciplinary lens that includes political science, social science, and journalism. The author proposes thinking about the fact that audiences (including online audiences) already deny, ignore, or suspend belief in the facts that journalists, politicians, and social scientists create and expect readers to trust in order to help create democracy. In addition, technology is not alone in making it possible to share any content instantly with an enormous number of people: another challenging factor is the fact that everyone is creating content every day. This content is not subjected to any editorial vetting or fact-checking before publication, as traditional news stories were. This lack of verification means there is no longer any effective governance, nor is there compliance with professional codes and ethics. Readers appear to be equally vulnerable to fake news regardless of their political views, which puts democracy at risk. Journalism and social science can continue to play a significant role in acting as watchdog on powerful institutions as a complement to government legislative actions.

Technologies

The first chapter in this section is "Cognitive Authority, Accountability, and the Anatomy of a Lie: Experiments for Detecting Fake News in Digital Traces," by Maria Moura and Lorena Tavares de Paula. The authors describe how the use of cognitive authority, accountability, semiosis, and declarative traces can be used to understand and identify evidence of lies in digital environments. They analyze the "anatomy" of a lie by looking at specific digital traces left behind by fake news. Digital traces are identity markers produced in human-machine interaction and they are often found on blogs and social networks. The set of digital traces that readers leave behind can be identifiers of content (of what I say), navigational identifiers (of how I behave), and declarative identifiers (of what I think). As a complement to human information literacy, the chapter outlines the model of a machine-based or informational literacy that makes use of these digital traces to help us better navigate the post-truth world.

The next chapter, "Combating Fake News Online: Turkish Fact-Checking Services," by Mehmet Fatih Çömlekçi, looks at how digital tools can help improve the effectiveness of fact-checking services. There are 60 fact-checking platforms in The International Fact-Checking Network, which is a part of the Poynter Institute. Half of these services have signed the Code of Principles for Fact-Checkers. As of 2018, there are 137 fact-checking services operating around the world. The majority of these consist of manual fact-checking services and are often staffed by volunteers. These are sometimes enhanced by digital aids such as data visualization techniques (infographics, tables, short documentaries, videos, etc.), which are used to engage reader attention, making the results of the fact-checking more accessible and therefore increasing its impact. Another addition that can help address some of the limitations of manual fact checking involves maintaining continual interaction with users in both online and offline environments. Users can provide feedback and alerts that can help in the research, data collection, analysis, and presentation of results during the entire fact-checking process. The chapter concludes by proposing a promising digital literacy ecosystem that can be used in the fight against fake news, alternative facts, and misinformation.

The final chapter, "Understanding the Landscape of Online Deception," by Hage et al., provides a broader framework in which to view fake news. Fake news is more often than not deliberately created for some type of gain (financial or influencing public opinion). All fake news aims to deceive and manipulate users, so tools to prevent online deception will likely be beneficial in detecting and protecting against fake news. The chapter focuses on social networking sites to highlight the major reasons why online deception succeeds. Some of the more common deception techniques are described, along with countermeasures that can be used against them, both human-based, machine-based, and a hybrid of both. The dual role that can be played by artificial intelligence, both to create fake news but also to fight against fake news, is addressed, as are recommendations on how to leverage artificial intelligence's strengths to help in the fight against fake news.

WHAT'S NEXT?

It looks like there is no way to put the fake news genie back in the bottle – we will likely be in a post-truth world for the foreseeable future. However, as demonstrated by the diverse approaches described in these chapters, there are a myriad of ways to address fake news. We can remain optimistic that there will be continued awareness of fake news; that countries may implement legislation imposing consequences

on those who deliberately create and spread misinformation; and that partnerships between humans and AI-enabled technologies can equip us with more effective means of detecting misinformation and better preventing its spread throughout the world.

Kimiz Dalkir
McGill University, Canada

REFERENCES

McIntyre, L. (2018). *Post-truth*. Cambridge, MA: MIT Press.

ENDNOTE

[1]   http://www.pewresearch.org/fact-tank/2017/10/04/key-trends-in-social-and-digital-news-media/

Introduction

BACKGROUND

The subjects of "fake news," misinformation, and disinformation are certainly topical, if not completely novel. Famously, Collins Dictionary named "fake news" its word of the year in 2017, citing the term's 365% increase in use since 2016 (Flood, Nov. 2 2017). The term "post-truth" achieved a similarly dubious honour in 2016, when the Oxford English Dictionary announced that that phrase was its word of the year (BBC, 2016). Regrettably, these terms, like the political context propelling them to ever-greater use, are not without its problems. The phrase "fake news", for instance, can be fuzzy in its meaning – does it include only deliberate hoaxes that masquerade as news? What of exaggerated or biased stories or commentary? What of hoax stories from satirical or even fictional media intended to entertain, but which may mislead unwary consumers? Worse, the lack of precision inherent in a term like "fake news" makes it easy to bandy about to discredit well-researched and legitimate political criticism; this tactic works by tarnishing critical, but potentially accurate, news stories with a label that invokes lies and hoaxes. US President Donald Trump's frequent use of the phrase to sow doubt about unfriendly media provides an unfortunate and all-too-common example of the latter, though he is far from the only political figure to do so (Forde, 2018). The phrase "fake news" also appears to be an oxymoron, in the way "fake information" and, for that matter, "alternative facts" might strike audiences as contradictions in terms: if a story or a claim is "fake," can such a story or claim really be "news" or "information"? Similarly, are there no facts which are objective, external, beyond doubt or disagreement resulting from individual biases or perceptions?

However, despite the shortcomings of terms like "fake news" and "post-truth" (defined by the Oxford English Dictionary as "relating to or denoting circumstances in which objective facts are less influential in shaping political debate or public opinion than appeals to emotion and personal belief"), these words have become common in public discourse. "Fake news" is a buzzword for false, exaggerated, or other problematic news stories whose accuracy is questioned (though "problematic" may be in the eye of the beholder, and different audiences may question a claim's accuracy for different reasons or motives). A full exploration of the term's nuances and of possible definitions is beyond the scope of this introduction; however, prior scholarship has addressed this issue (for a discussion, see, for example, Tandoc, 2019). Some of the contributors to this collection build on those definitions in their chapters. It is, however, important to recognize these two dimensions of the term "fake news" (heretofore not in quotation marks, despite its weaknesses, its oxymoronic nature, and its potential for abuse). It is a potentially contradictory term, one that has some use in identifying and critiquing false claims that masquerade as news while

also serving as a useful weapon by which motivated – and often biased – speakers attack traditional journalistic bodies attempting to report accurately on events.

The above *caveat* is closely related to another challenge of fake news and of our so-called post-truth era. Our current historical moment – in political, media, and digital culture – may be particularly conducive to polarized discourse, where claims or stories command passionate belief despite having little to no factual backing. Research consistently suggests that a growing proportion of Internet users consume some portion of their news through social media sites, such as Facebook and Twitter (Mitchell, Kiley, Gottfried & Gluskin, 2013; Mitchell & Gluskin, 2013; Newman, Levy & Nielsen, 2015; Gottfried & Shearer, 2016; 2017). Moreover, news consumption via social media appears to have grown steadily among older users, and has become a prevalent means of consuming news across age groups – though platforms used vary by demographic (Shearer & Gottfried, 2016; Shearer & Gottfried, 2017). Once again, a full exploration of the research on social media news consumption behavior is beyond the scope of this introduction. However, the prevalence of news consumption via social media may be one among several factors leading to our current polarized and hoax-laden climate. Some evidence, for example, suggests that users consuming news via the social media platform Twitter are unlikely to read beyond an article's headline (see Gabielkov et al., 2016, cited in Rochlin, 2017). Social media sites and their algorithms also facilitate selectively exposing oneself to positions one agrees with, either by following users or organizations likely to share one's perspective; unfollowing those with opposing views; and/ or engaging with approved views through likes, clicks, or shares (see e.g. Spohr, 2017, for a review of relevant research). The latter form of engagement may encourage a platform's algorithms to display additional related content, in hope of generating more engagement from users and thus more advertising revenue. Online content creators – ranging from purveyors of harmless cat videos to conspiracy theorists and writers of hoax 'news' stories – likewise have financial incentives in the form of advertising revenue to publish content that spurs engagement regardless of its accuracy (for a discussion, see Rochlin, 2017, pp. 389-391). These financial incentives, like the algorithmic architecture that can exacerbate "filter bubbles" (Rochlin, 2017; Spohr, 2017), may not be evident to Internet users, who may in turn accept false or inaccurate content as readily as carefully researched and reported news.

To make matters worse, cultural and psychological factors interact with and drive our fragmented, inaccuracy-laden media landscape. Polls suggest that confidence in traditional media outlets has been declining in recent decades. Political partisanship affects consumer confidence in news sources (Rochlin, 2017), with consumers more likely to report confidence in sources that share their perspectives. Added to this reduced confidence in traditional media is the ease of creating professional-looking blogs, websites, and other venues online. The addition of new voices to the public discourse via the Internet and Web 2.0 has a light side as well as a dark side, potentially empowering new speakers and new forms of cultural production (Cammaerts, 2008). However, ill-intentioned actors likewise benefit from the digital ease of establishing 'news' and 'political commentary' sites, whether to spread hatred or propaganda, or simply to promote engaging hoaxes that yield dividends in the form of ad revenue. Human psychology also deserves its share of the blame in spreading misinformation. Lewandowski and his colleagues (2012) review a number of cognitive factors that can promote trust in misinformation. For example, ordinary conversation – and perhaps even comprehension of statements – favours accepting statements as true (Grice, 1975; Ecker, Seifert, Schwarz & Cook, 2012; Lewandowski et al, 2012). Psychological studies also suggest that compatibility with previously-held beliefs and coherence as a story promote belief in new information (for a review of the literature, see Lewandowski et al, 2012, pp. 112-113), as do social factors such as trust in the information's source and the perception that others believe that same infor-

mation. Once misinformation becomes entrenched, there is a risk that retractions or corrections will be ignored or backfire, although some strategies such as warnings and alternative narratives show promise in countering misinformation.

These media, cultural, and psychological factors are all relevant to our post-truth moment. Furthermore, the prevalence appeal, and 'stickiness' of misinformation make this challenge a difficult one to address. Despite significant public and scholarly interest in fake news and misinformation, solutions to these challenges are far from obvious. Indeed, even specific examples of misinformation, such as the myth that vaccines cause autism, can linger in public discourse long after the initial claim has been debunked. Given the persistence of specific and frequently-discredited claims, like the purported link between vaccines and autism, countering misinformation as a whole may seem utterly daunting. Compounding this challenge are several theoretical assumptions that underlie regulators of social behavior. A discussion of relevant assumptions and regulators follows.

Assumptions and Regulators

Lawrence Lessig identifies four regulators of social behavior in his seminal word *Code and Other Laws of Cyberspace.* Behavior may be regulated or affected by laws, social norms, markets, and architecture. Most, if not all, of these regulators may facilitate the containment of fake news and misinformation. They may also facilitate its spread, particularly when their underlying assumptions have developed without adequate regard for our susceptibility to believing appealing lies. For instance, contemporary liberal democracies value freedom of expression or of speech, and generally protect this value through constitutions and other laws. Liberal democracies of course vary in the expansiveness of the free expression guarantees they provide. The United States, for example, may be more wary of penalizing hate and other subversive speech than comparable countries such as Canada or various EU states (for a discussion, see e.g. Greenawalt, 1992; Zoller, 2009). However, freedom of expression faces at least some limits in most jurisdictions, such as civil and potentially criminal sanctions for defamation. Nevertheless, democracies generally afford political and media expression strong protection. The liberal faith in the so-called marketplace of ideas – a public discourse in which, allegedly, the most accurate or convincing ideas will "sell themselves" to consumers of ideas despite competition – underlies these protections. There are, of course, other assumptions and experiences that also underlie and justify strong protection for freedom of expression. These include fear and suspicion of government censorship (an understandable impulse); respect for individual rights to consider and express opinions; and belief in the human capacity to choose rationally between competing narratives or arguments.

However, the appeal of misinformation casts doubt on that last premise. It poses less of a challenge for some of our political justifications for free expression. For example, government abuse may well be a risk inherent in laws limiting expression. One has only to look at Donald Trump's attacks on critical media sources to find this spectre rearing its head in contemporary politics. Likewise, the individual right to express and consider information may be inherently worthy of respect; restrictions thereon require careful consideration and narrow interpretation. However, it is not always clear that true or accurate narratives necessarily triumph in the so-called marketplace of ideas, or that accurate expression will be more convincing than inaccurate expression (for a critique, see Ingber, 1984). The fact that individuals with access to education and rigorously-researched information or media nevertheless sometimes believe false or exaggerated stories or conspiracy theories suggests that the truth does not always triumph. Cognitive psychology may explain why misinformation can be more convincing than accurate information. It

may even suggest educational and communications strategies to help counter this tendency. Nonetheless, it seems likely that liberal legal and political protections for freedom of expression developed without taking into account our potential for *irrationality* and the appeal of falsehood over truth in the so-called marketplace.

Lessig's other regulators can also play a role in spreading and, hopefully, containing misinformation. As of this writing, it appears that market considerations perversely create an incentive to publish and derive advertising revenue from inaccurate claims. Human biases and our drive to seek confirmation of our beliefs, perhaps coupled with polarized views on issues such as politics, likely drive demand for emotionally engaging and appealing content. The voter committed to hating a particular candidate, or the citizen convinced that vaccines cause autism, may find it reassuring, emotionally arousing, and otherwise appealing to consume "news" articles confirming their beliefs. Demand for such content may be quite high regardless of its accuracy. Because consumers do not always want truthful, carefully-researched sources that contradict their biases, content creators may step in to supply market demand for comforting lies. Furthermore, user/consumer engagement is itself an in-demand commodity for online advertisers. Advertisers are not always necessarily invested in promoting accurate, fair, or truthful debate. They may, however, pay sites to offer them clicks, views, and attention broadly speaking. This can create a symbiotic triangle between advertisers, misinformation or fake news providers, and audiences, made possible by today's "attention economy". The Internet's architecture can likewise promote inaccurate and exaggerated content. Commercial sites, of course, cannot escape market considerations like those detailed above. Further, algorithms that display content likely to receive engagement on dashboards and newsfeeds (while suppressing stories unlikely to compel engagement) are a form of architecture that may be invisible to many users but that still propels them further into partisan filter bubbles. Lessig's last regulator, social norms, is less clearly applicable to online misinformation, in part because it is highly context-dependent. There may, for example, be contexts in which spreading exaggerated, bizarre, or debunked claims is unacceptable. There may also be contexts in which promoting inaccuracies is socially desirable (such as an online or offline gathering of people with highly partisan political views, or with a prior belief in the evils of vaccination). Transforming global social norms, both online and offline, to value accuracy, rigour, and evidence of news stories or other claims is another daunting prospect.

Information Literacy

The preceding, and rather depressing, discussion of Lessig's regulators suggests that further consideration of the marketplace of ideas conceit is worthwhile. The significance of that metaphor to the legal regulation of speech has already been discussed. However, outside the legal field, the world of libraries and that of the Internet also demonstrate our attachment to a marketplace model which may be ill-suited to tackling misinformation. Intellectual freedom is a foundational principle in the library field (Gorman, 2015; Jones, 2015). The potential for intellectual freedom and neutrality (understood as providing resources that represent a wide range of political viewpoints without advocating any one perspective) is not without its critics (Gibson, Chancellor, Cooke, Dahlen, Lee, & Shorish, 2017; Lewis, 1993). There is an argument to be made that simply providing content – even unpalatable or anti-minority content – may make the library field complicit in amplifying voices that advocate oppression. While this debate is something of a digression, it is worth bearing in mind as an example of ways in which the marketplace of ideas may not always advance the rights of everyone in society. (Of course, as hinted in the above discussion of constitutional rights, one person's freedom of expression may infringe – or come danger-

ously close to infringing – another's right to be free from discrimination and to be respected as a full and equal member of the polity.) This discussion is also not completely tangential because, unfortunately, misinformation and fake news can target minorities, thus serving as a form of political propaganda.

Library neutrality – providing resources that represent all ideas in the so-called marketplace – has other weaknesses as well. Sullivan (2018) addresses the "library faith" that has underpinned discourse within the field since the days of Melvil Dewey in the late 19th century. This "library faith" assumes members of the public are uninformed, like vessels that can be filled up with high quality information if they are encouraged and offered resources to do so. To their credit, even the most traditional voices within the library field speak of providing high quality information – presumably, resources that are accurate, and not simply hoaxes. However, given the library faith's origin within a particular historical period that predates contemporary psychological research, this approach paints an unrealistic picture of human engagement with information. It does not address the fact that members of the public may be *misinformed* rather than uninformed. In fact, information users may believe inaccurate information with such confidence and passion that that misinformation becomes part of their identity or values (Sullivan, 2018). The library faith likewise does not account for the social, political, and ideological motivations that may lead users to reject information challenging their pre-conceptions and even to distrust or discredit experts creating such content, or fact-checkers pointing out inaccuracies therein. In his work, Sullivan explores some of the limitations in library values and practical information literacy programs which ignore cognitive psychology at their peril; he also addresses some developments which may mitigate these gaps (2018). Lenker likewise advocates a broader approach to information literacy which – rather than focusing narrowly on practical skills within the academic library – could assist learners in developing critical thinking skills relevant to politics and in understanding how motivated reasoning affects the ways we process political and other information (2016).

While information literacy has drawn criticism for its sometimes narrow academic focus and its inattention to our cognitive biases, media literacy instruction has also come under fire since the political developments of 2016. Media literacy is defined as the ability to "decode, analyze, evaluate and produce communication in a variety of forms" (Aufderheide & Firestone, 1993; Carnegie Council, 1995, cited in Stein & Prewett, 2009). Media literacy research has canvased three aims of media literacy. These are: protection from potential risks portrayed in media; preparation for democratic life; and pleasure derived from engaging with media. A surface glance at these categories suggests that protection and preparation for democratic life are self-evidently applicable to misinformation in the media, including online sources. Is the solution, then, simply to double-down on support for media literacy? Unfortunately, this may be too optimistic and simplistic. Researcher danah boyd (her name is in lowercase) criticizes media education for backfiring, potentially leading consumers to criticize traditional media and, upon conducting their own personal searches, to find their way to propaganda, conspiracies, and other misinformation (2018). Boyd also warns that fact-checking and re-asserting authority to citizens disenfranchised with authority (and convinced that they are thinking critically about it) can likewise backfire by deepening a sense of grievance. Further, the fact that many users – progressive activists and neo-Nazis alike – are skilled at creating online media simply complicates our information landscape, without necessarily creating more empathy, enhancing awareness of our own biases, or teaching individuals and communities to have conversations across worldviews (boyd, 2018).

Legislation

The influence of misinformation in the "information society" therefore highlights weaknesses in contemporary social and information structures. Proponents of the Web, such as Tim Berners-Lee, have long advocated a neutral Internet as a force for social good. However, Berners-Lee himself has recently warned of a looming "digital dystopia" where inequality and abuses of rights are the norm (Schulze, 2018). It is unclear whether Berners-Lee's proposed Contract for the Web initiative, which calls for an open and neutral Internet with equal access for all; greater respect for privacy; and strong user communities that hold power to account and stand up for the rights of targeted members, is a viable solution to the Internet's ills. However, this so-called Contract has received support from tech giants such as Facebook, Microsoft, and Google, and states including France, Germany, and Ghana. Perhaps this Contract represents an attempt to articulate better social norms regarding Internet use. Meanwhile, some states are undertaking legal and policy initiatives to curb fake news and misinformation. It is tempting to think that legislative changes are the only public policy solutions available; however, that is not necessarily the case. Governments around the world may choose to amend laws in an attempt to restrict the spreading of false news. Some examples of legislative change are addressed below. However, governments may also endorse public statements like the Contract for the Web or similar initiatives that articulate Web stakeholder standards of conduct, such as Canada's Digital Charter (Innovation, Science, and Economic Development Canada, 2019). Similarly, governments may choose to invest in initiatives carried out by other stakeholders – perhaps funding new media literacy curricula or anti-disinformation campaigns, as in Sweden (Law Library of Congress, Global Legal Research Directorate ("Law Library of Congress"), 2019); encouraging self-regulation by professional associations of journalists (another practice of the Swedish government); or offering financial support to journalism organizations creating new content and meeting certain government-designated criteria (one of Canada's initiatives: see Canada Revenue Agency, 2019). Evidently, different initiatives are not necessarily mutually exclusive, and can co-exist with one another. Indeed, the most effective strategy to minimize misinformation may be multi-pronged and engage different regulators of behavior.

Within the realm of legislative change, several options are available. States may adopt new legislation that focuses on false information purporting to be news, typically imposing fines for providers of such misinformation and articulating new legal orders to remove problematic material (Law Library of Congress, 2019). States may also rely on existing criminal, civil, or administrative laws addressing issues such as media standards, elections advertising, hate speech, and defamation (libel or slander). France, for example, recently passed a new law intended to combat misinformation. This legislation develops a new cause of action by which political figures can report fake news and get a judgement within 48 hours ordering the removal of the false report, provided certain criteria are met (*Proposition de loi relative à la lutte contre la manipulation de l'information*, 2018). The French law also articulates an obligation for online platforms to provide accurate information, including databases of elections ads and algorithms by which content is displayed to users, and to cooperate with the government in its attempts to fight misinformation. However, the law largely focuses on elections campaigns and information about political figures or issues likely to "lead to a disturbance of the peace or influence the result of an election" ("Against Information Manipulation," n.d.). It is unclear to what extent these provisions can curb misinformation that is published outside an election campaign or that does not discuss specific political figures, but that may nevertheless eventually distort political discourse (for example, by promoting distorted accounts of political issues such as climate change or the integration of refugees).

Canada has also recently modified its elections law in an attempt to combat fake news. This initiative was developed in the wake of a Parliamentary Committee Report that advocated changes to Canada's digital, media, and regulatory landscape to combat mis- and disinformation (Canada, Parliament, House of Commons, Standing Committee on Access to Information, Privacy, and Ethics, 2018). The updates to Canadian elections law have been developed alongside existing civil, criminal, human rights, and broadcasting provisions that may prohibit some aspects of fake news, within some contexts. However, despite adopting some interesting provisions (such as requiring social media platforms to publish registers of information on groups sponsoring political ads, an initiative that is similar to a provision in the new French law), these legislative amendments are narrowly focused on elections law. They also contain broad exemptions for editorials, opinions, commentary, news and other expression, including by foreign actors, which call into question their effectiveness (*Canada Elections Act,* 2009, s. 349.01(1)(a)). Developing comprehensive legal solutions that target all forms of misinformation without enabling government censorship (a fear prevalent in countries that have adopted fake news laws, but that rank low on international indices of freedom of expression, such as Russia, Malaysia, and China: Law Library of Congress, 2019) may be an elusive goal. While a full consideration of international legal efforts to tackle misinformation is beyond the scope of this chapter, these examples suggest that state legal systems may tackle certain types of false news or speech within certain contexts. Worryingly, these initiatives may also represent attempts to censor speech, journalism, and opposition to ruling parties in countries that already rank low on freedom of expression or press freedom. Even in democratic countries such as Canada, prohibitions on false news may face constitutional challenge and be deemed of no effect due to their overbreadth and their potential to infringe rights (see e.g. *R. v. Zundel,* [1992] 2 S. C. R. 731; see also Law Library of Congress, 2019). The law, in democratic countries at least, may only succeed in targeting narrowly-defined and highly contextualized types of misinformation, through a variety of legal tools.

Technology

Legal and policy solutions, then, are clearly not a one-size-fits-all approach to combatting misinformation. Nor are other solutions, such as an individual-focused media or information literacy curriculum, or technological innovation in the form of algorithms to identify, remove, downvote, or provide more credible sources alongside fake news. As noted above, policy solutions, like a decontextualized focus on media or information literacy, may be ill-equipped to address all aspects of this challenge. Furthermore, algorithmic responses are likely to raise comparable questions to other responses. They may, for example, face the same difficulties legislators do in defining fake news or misinformation appropriately, without impairing too much or too little expression. Likewise, algorithmic solutions may not even be implemented by platforms that value user engagement over honesty, or they may only be implemented on certain websites, simply driving traffic that wishes to see validating but inaccurate content to other sites.

Technological approaches may also further entrench a sense of disenfranchisement by seemingly validating the claim that corporate elites in technology companies are censoring stories some users want to believe. Finally, such solutions raise the spectre of privatizing the regulation of journalism and the media, outsourcing a public responsibility to corporate platforms. These platforms may lack transparency and public accountability, and almost certainly lack the moral authority as well as the practical legal expertise to weigh in on regulating expression. However, the technological or algorithmic avenue is probably one avenue worth pursuing in the battle against mis- and disinformation.

CONCLUSION

Technology is one tool, but cannot be the only tool in our anti-misinformation toolkit. The same is true of other possible solutions: updating legislation or deploying existing laws in our online media ecosystem; tweaking and widely promoting information and media literacy principles, especially principles that make us aware of our own biases; and supporting fact-checking and rigorous journalism. The following chapters address studies and initiatives drawing on these different directions. Some focus on information and media literacy in theory and practice. Others explore factors that may help tailor algorithms for detecting fake news and misinformation—potentially useful tools, if used in conjunction with other approaches. Still others address philosophical, sociological, historical, policy, and additional aspects of this challenge. The interdisciplinary nature of these chapters should be applauded, given that stakeholders in technology, law and policy, education, journalism, and the information professions will likely have to unite to curb misinformation: no one field or community can succeed at this challenge alone. It is hoped that this collection will offer insight and inspiration in developing multi-pronged solutions to the plague of falsehoods that has infested our digital and social discourse.

Rebecca Katz
McGill University, Canada

REFERENCES

ABC News. (n.d.). *As Trump resumes attacks on press in Europe, critics warn of ripple effect of "fake news" label.* Retrieved December 17, 2019, from ABC News website: https://abcnews.go.com/News/trump-resumes-attacks-press-europe-critics-warn-ripple/story?id=56542685

Against Information Manipulation. (n.d.). Retrieved from https://www.gouvernement.fr/en/against-information-manipulation

BBC. (2016, November 16). *"Post-truth" declared word of the year*. Retrieved from https://www.bbc.com/news/uk-37995600

boyd, d. (2018, March 9). You think you want media literacy… Do you? [Blog post]. Retrieved from https://points.datasociety.net/you-think-you-want-media-literacy-do-you-7cad6af18ec2

Canada, P. House of Commons. Standing Committee on Access to Information, Privacy, and Ethics. (2018). *Democracy under threat: Risks and solutions in the era of disinformation and data monopoly.* 42nd Parl., 1st sess. Rept. 17. Parliament of Canada website: https://www.ourcommons.ca/Committees/en/ETHI/Work?show=reports&parl=42&session=1

Canada Elections Act, SC 2000, c. 9.

Canada Revenue Agency. (2019, December 20.) *Government kicks off support of Canadian journalism organizations*. Retrieved from https://www.canada.ca/en/revenue-agency/news/2019/12/government-kicks-off-support-of-canadian-journalism-organizations.html

Flood, A. (2017, November 2). *Fake news is "very real" word of the year for 2017*. Retrieved from https://www.theguardian.com/books/2017/nov/02/fake-news-is-very-real-word-of-the-year-for-2017

Gibson, A. N., Chancellor, R. L., Cooke, N. A., Park, D. S., Lee, S. A., & Shorish, Y. L. (2017). Libraries on the frontlines: Neutrality and social justice. *Equality, Diversity and Inclusion. International Journal (Toronto, Ont.)*, *36*(8), 751–766. doi:10.1108/EDI-11-2016-0100

Gorman, M. (2015). *Our enduring values revisited: Librarianship in an ever-changing world*. Retrieved from http://ebookcentral.proquest.com/lib/mcgill/detail.action?docID=2068198

Greenawalt, K. (1992). Free speech in the United States and Canada. *Law and Contemporary Problems*, *55*(1), 5–33. doi:10.2307/1191755

Ingber, S. (1984). The marketplace of ideas: A legitimizing myth. *Duke Law Journal*, *1984*(1), 1–91. doi:10.2307/1372344

Innovation, S., & the Economic Development Canada. (2019). *Canada's Digital Charter in action: A Plan by Canadians, for Canadians* [Report]. Industry Canada website https://www.ic.gc.ca/eic/site/062.nsf/vwapj/Digitalcharter_Report_EN.pdf/$file/Digitalcharter_Report_EN.pdf

Jones, B. (2015). Intellectual Freedom. In S. Hirsh (Ed.), *Information services today: an introduction* (pp. 357–364). Rowman & Littlefield. Retrieved from http://ebookcentral.proquest.com/lib/mcgill/detail.action?docID=2032756

Law Library of Congress, Global Legal Research Directorate. (2019, April). *Initiatives to counter fake news in selected countries* [Report]. Library of Congress website: https://www.loc.gov/law/help/fake-news/counter-fake-news.pdf

Lewis, A. (1993). *Questioning library neutrality*. Litwin Books.

Proposition de loi relative à la lutte contre la manipulation de l'information 2018 no. 190 (Fr.)

R. v. Zundel, [1992] 2 S. C. R. 731.

Schulze, E. (2018, November 5). *The inventor of the web says the internet is broken—But he has a plan to fix it.* Retrieved December 19, 2019, from CNBC website: https://www.cnbc.com/2018/11/05/inventor-of-the-web-says-the-internet-is-at-a-tipping-point-and-reveals-a-new-plan-to-fix-it.html

Spohr, D. (2017). Fake news and ideological polarization: Filter bubbles and selective exposure on social media. *Business Information Review*, *34*(3), 150–160. doi:10.1177/0266382117722446

Tandoc, E. C. Jr. (2019). The facts of fake news: A research review. *Sociology Compass*, *13*(9), e12724. doi:10.1111oc4.12724

Zoller, E. (2009). Foreword: Freedom of expression: Precious right in Europe, sacred right in the United States? *Indiana Law Journal (Indianapolis, Ind.)*, *84*(3), 803–808.

Section 1

Information Literacy: Methods to Indentify Fake News, Alternate Facts, and Misinformation

Chapter 1
Information Literacy and Science Misinformation

Joan C. Bartlett
McGill University, Canada

ABSTRACT

Science and health misinformation is endemic; there can be profound consequences both for individuals and society when people make decisions based on such information. Information literacy skills provide one tool to help mitigate against misinformation. These skills include the recognition of a need for information, the ability to locate and retrieve information, and the ability to effectively use the information. Underpinning these processes are the concept of effectiveness and the ability to evaluate all steps of the process. These skills are essential if people are to be able to evaluate the sources of information, the process by which it was retrieved, and the biases inherent in its creation and dissemination. Thus, information literacy is one of tools that can be used to mitigate against misinformation.

INTRODUCTION

We live in an era in which information is ubiquitous. It is everywhere, anytime, literally available at one's fingertips with a swipe on a phone. Yet people are not necessarily well-informed. This is true in the areas of science and health, as in many other domains. Issues as wide-ranging as GMOs, nuclear energy, evolution and natural selection, antibiotic use, climate change, and vaccination are vulnerable to misinformation. These are issues around which there is considerable debate, for which there are strongly held beliefs against the scientific evidence, and which can have profound global impacts.

There are a myriad of factors which affect one's understanding, or lack thereof, of science information and misinformation. Among these are an understanding of the scientific method, the different types of research evidence, the difference between hypothesis and theory, the weight of evidence required to support a scientific theory, that scientific understanding is dependent on the best available evidence, and that contrasting opinion and empirical evidence do not represent balance (e.g. Di Ventra, 2018; MacRitchie, 2018; Staddon, 2018; Swanson, 2015). For example, in colloquial use, the word "theory" tends to refer to a hypothesis, something speculative or yet to be tested; in scientific use, a theory is actually sup-

ported by a considerable weight of evidence, has predictive value, and has withstood serious attempts to disprove it (MacRitchie, 2018; Swanson, 2015). However, another issue affecting understanding of science is where people find information that forms the basis for their knowledge and understanding of scientific issues. This chapter is focused on the latter.

One issue is that the Internet in general, and social media applications in particular, make it easy for anyone to "publish", thus bypassing the quality and reliability checks (e.g., peer review) that have historically existed around the publication of scientific findings. Opinion pieces, blogs and influencer postings are freely and easily available, while the published scientific literature is often hidden behind publisher paywalls, accessible only to those affiliated with universities and research institutes. This is often the case even for the results of publicly funded research. We also all subconsciously tend to seek information to confirm our knowledge or beliefs; this is compounded by the fact that current search engines preferentially display results that are consistent with previous browsing behavior. Thus, it becomes very easy to exist within a filter bubble of information that only includes information supporting a given perspective.

Misinformation is defined by the Oxford English Dictionary (2019) as "wrong or misleading information", while disinformation is "deliberately false information, esp. when supplied by a government or its agent to a foreign power or to the media, with the intention of influencing the policies or opinions of those who receive it,"; the main distinction between the two is the intent behind the information. Fake news is considered to be "news that conveys or incorporates false, fabricated, or deliberately misleading information, or that is characterized as or accused of doing so" (OED, 2019). The purpose of this chapter is to consider how information literacy skills can be one aspect of mitigating science and health misinformation, disinformation, and fake news (hereafter referred to collectively as "misinformation"). It will review the challenges to navigating the universe of scientific information and to recognizing misinformation. It will then discuss the evolution of definitions and frameworks of information literacy, as well as some examples of information literacy interventions to address misinformation.

CHALLENGES

We live in an environment in which vast amounts of information, data, knowledge, facts and opinions are freely and readily accessible. This can lead to the misperception that simply having access to information is sufficient to make people informed. A similar argument has been made about information and communication technologies (ICT), suggesting that providing an infrastructure to support communication and information transfer is sufficient to support efficient information access and use. Yet it has also been argued that "the sheer abundance of information will not in itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively" (Kranich, 2001, p.88).

In the context of science, it has been noted that while historically, one characteristic of scholars or experts was that they knew a lot of facts, and could analyze, synthesize and apply that knowledge, today those facts are available to everyone, and are often seen as open to question (Storksdieck, 2016). At the same time, new sources of information (e.g., blogs, Twitter, social media, etc.) are emerging, in which anyone can post information about any topic, and traditional sources (e.g., newspapers) which historically may have been considered neutral may now be motivated by how their articles will be received on social media (Storksdieck, 2016).

Science information now comes from a variety of sources, including those that are fully or partially fictional. Examples include factual information being incorporated into medical or scientific dramas, docudramas, and mockumentaries, at the same time as the overall objective is to entertain, not necessarily to educate. This blurring of the boundaries between fact and fiction within some genres poses challenges for people to know what information is accurate and trustworthy (Reid & Norris, 2016). An example of factual knowledge within a fictional context is a 2001 episode of the television series ER (an American medical drama which aired between 1994 and 2009), in which an un-vaccinated child died of measles; the parent had refused vaccination due to their belief in misinformation. One can speculate if television's Dr. Carter advocating for the value and merits of vaccination would be more convincing to some than mainstream scientific communication.

Another source of tension between information and misinformation can stem from the process of journalism. One of the fundamental tenets of journalism is to provide balance, that is, to present both sides of an issue. Scientific understanding, however, follows the evidence; as new evidence emerges, new understandings supplant the older ones. There can therefore be tension between journalistic practice and the scientific process, in that the pursuit of balance can lead to artificially creating a perceived parity between different perspectives. One would not, for example, when discussing the contemporary view of our solar system, with the sun at its centre, "balance" that with presenting the pre-Copernican view (earth at the centre) or the idea that the Earth is flat as equally valid perspectives.

Yet another challenge relates to what information is retrieved in the first place. The phrase "filter bubble" was coined in 2011 by Eli Pariser. It refers to one of the consequences of the personalization of search. With the objective of maximizing the relevance of search results to the individual searcher, search engines, and subsequently social media services, refer to a range of data about the individual to inform the ranking of search results. As a consequence, two individuals entering the same search terms will obtain different results, or different rankings of the results. One example might be searching for a country name. An individual with a past pattern of looking for travel information might find travel related sites, while another individual with a past interest in politics would be directed towards sites relating to politics. Likewise, one who had previously viewed information skeptical of climate change would be more likely to be directed to sites with a similar perspective than those presenting evidence that climate change exists. Another example is that of a social media site preferentially recommending news items posted by friends who share a similar political perspective and not recommending those from friends with an opposing viewpoint. Even though both sets of people had been identified as friends, the personalization algorithms would limit access to some. The result of this personalization is the filter bubble, the "unique universe of information for each of us" (Pariser, 2011, p. 14), in which information is prioritized based on how well it matches previously viewed information and topics, and in which novel information and contradictory viewpoints are suppressed.

Pariser (2011) acknowledges that people have always personalized their media use and information searching through factors such as their choice of news source, or researching topics of interest. However, he argues that the filter bubble introduces three new dynamics. The first is that the filter bubble is so personalized that each individual is alone in their bubble, in contrast to the shared experience of people with similar interests who might all subscribe to a magazine about vintage cars. The second point is that the filters creating the bubble are largely invisible. While one might knowingly choose to watch television news from a network with a known political leaning, and have an awareness of the bias that entails, the bias inherent in the filter bubble is not as visible. People may still believe that the information obtained is objective and unbiased. Finally, the filter bubble is not entered by choice. People make choices about

the filters inherent in their news choices, their reading material, or the people they choose to socialize with; they don't choose to enter the filter bubble.

INFORMATION LITERACY

Information literacy is one of several complementary and overlapping literacies, or sets of competencies which can relate to science misinformation. Others include media literacy, computer literacy, and science literacy. While there are overlapping concepts and skills, these various literacies are not synonymous; the focus here is on information literacy.

Definitions

The phrase "information literacy" became prevalent in the late 1990s, but the concepts and principles it encompasses have a much longer history. Previous names tended to be quite library-centric, such as "bibliographic instruction" and "instruction in library use". Yet, the skills and competencies can apply to all types and forms of information, regardless of the institution from which they come.

One of the earliest instances of the phrase defines an information literate person as "anyone who has learned to use a wide range of information sources in order to solve problems at work and in his or her daily life" (Zurkowski, 1974). More recently, information literacy has been defined as the ability to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989), while UNESCO's (United Nations Educational, Scientific and Cultural Organization) Prague Declaration stated that information literate people "know when they need information, and are then able to identify, locate, evaluate, organise, and effectively use the information to address and help resolve personal, job related, or broader social issues and problems" (UNESCO, 2003). These are but a few examples of descriptions of information literacy and information literate people. However, consistent and recurring themes are the recognition of a need for information, the ability to locate and retrieve information, and the ability to effectively use the information. Underpinning these processes is the concept of effectiveness, and the ability to evaluate all steps of the process.

International Initiatives

In 2003, a UNESCO supported international forum put forward the Prague Declaration, "Toward an Information Literate Society". It proposed six basic principles relating to information literacy, summarized below:

- An information society is key to social, cultural and economic development in the 21st century and beyond.
- Information literacy is a prerequisite for participating in the information society, and is a component of the basic human right of lifelong learning.
- Information literacy had a leading role in reducing inequities and in promoting tolerance and mutual understanding in multicultural and multilingual contexts.
- Governments should develop strong programs to promote information literacy as a means of closing the digital divide and creating an effective civil society and competitive workforce.

- Information literacy concerns all areas of society, and should be adapted to each specific context.
- Information literacy should be an integral part of Education for All (UNESCO, 2003).

In 2005, IFLA (International Federation of Library Associations) published the Alexandria Proclamation on Information Literacy and Lifelong Learning. The proclamation came from a conference held at the Biblioteca Alexandrina, site of the ancient library of Alexandria. It states that information literacy is a basic human right, which promotes social inclusion, and supports lifelong learning. Within the declaration, information literacy is defined as "the competencies to recognize information needs and to locate, evaluate, apply and create information within cultural and social contexts"; it is crucial for individuals, enterprises, and nations, and supports "economic development, education, health and human services, and all other aspects of contemporary society" (International Federation of Library Associations, 2005). The proclamation urges governments and organizations to implement programs to support information literacy and lifelong learning, including developing strategies within specific regions and sectors, supporting professional development of educators, librarians, archivists and related professionals, and including information literacy as a core capability with all educational programs as well as in continuing education.

On a global level, UNESCO has put forward a framework for information literacy on a national and international scale, linking information literacy to a range of other adult competencies (Catts & Lau, 2008). The UNESCO framework is built around the definitions from the Alexandria proclamation, which was also adopted by UNESCO's Information for All Programme (IFAP). They define information literacy as "the capacity of people to: recognise their information needs; locate and evaluate the quality of information; store and retrieve information; make effective and ethical use of information; and apply information to create and communicate knowledge" (Catts & Lau, 2008, p. 7). Unlike many standards and frameworks which were oriented towards students, the UNESCO framework advocates for information literacy as part of a set of skills essential for adults to be effective in all aspects of life. It makes a distinction between simply having access to information and being able to effectively use it, and argues that information literacy, while supporting the latter, is often neglected within knowledge societies (societies grounded in the four pillars of: freedom of expression; universal access to information and knowledge; respect for cultural and linguistic diversity; and quality education for all (UNESCO, 2019)). Yet information literacy can underpin a diversity of skills essential within a knowledge society, and those needed for a variety of goals including employment, supporting health and well-being, promoting national economic development, and supporting civic society. The UNESCO framework situates information literacy among a number of other "adult skills", including reading, writing, numeracy, ICT skills, media literacy, and problem solving, and indicates that all are important, and that all (including information literacy) merit attention (Catts & Lau, 2008, p. 17). The global perspective of UNESCO is evident in its explicit recognition of the oral tradition as a means of knowledge sharing and information transfer, the need to value oral traditions, and the importance of applying information literacy standards and frameworks to also encompass information within oral societies (Catts & Lau, 2008, p. 22). Finally, the framework acknowledges the constraints that may hinder the development of information literacy skills, including language and cultural, political, and economic constraints (Catts & Lau, 2008, p. 24).

Standards and Frameworks

Over the past two decades, a series of standards and frameworks have been developed to further define and describe the skills and competencies inherent in information literacy and to specify the corresponding indicators or learning outcomes that would demonstrate these skills.

Through the late 1990s and early 2000s, a series of standards were developed by a number of national and regional organizations, all following a similar format. The common structure was based around a set of standards (between five and nine), each specifying a broad information literacy skill (e.g., determining the nature of an information need, critically evaluating information and information sources, or using information ethically and legally). Each standard was divided into performance indicators, which were then further sub-divided into a series of outcomes.

In 1998, the American Association of School Libraries (AASL), part of the American Library Association (ALA), set out a series of nine standards which defined the skills that should be demonstrated by the information literate student. While the standards included a range of age- and grade-appropriate outcomes, the intent was to specify the skills a student should achieve by the end of their elementary and secondary school studies (American Association of School Librarians, 1998). In 2000, the Association for College and Research Libraries (ACRL), also part of the ALA, set out their first (now rescinded) set of information literacy standards for higher education (Association of College and Research Libraries, 2000). Building on the AASL standards, this set specified the skills that should be achieved during the higher education process. The outcomes were grouped around five standards and reflected more advanced learning than those aimed at school children. Together, the AASL and ACRL standards described a continuum of information literacy skills from kindergarten to university.

Another two sets of standards came from Australia and New Zealand. In 2001, the Council of Australian University Libraries (CAUL) published a set of seven standards for information literacy in higher education (Council of Australian University Librarians, 2001), followed by a set of standards from the Australian and New Zealand Institute for Information Literacy (ANZIIL) (Bundy, 2004). Both closely paralleled the structure, format and content of the two sets from ALA. Indeed, a line can be drawn among them showing the evolution of the standards through the various iterations.

Although with each iteration the outcomes were slightly revised, and the phrasing and definitions refined, the core principles remained consistent. These were the following abilities:

- to recognize and identify an information need, as well as the type and extent of the information needed.
- to effectively and efficiently find the needed information.
- to critically evaluate information, information sources, and the information-seeking process.
- to manage the information retrieved.
- to effectively use the information to accomplish a goal or purpose, or to create new knowledge or understanding.
- to use information legally and ethically (e.g., copyright, plagiarism) and to be aware of and respect the cultural, ethical, economic, legal, and social issues around information use.

A second group of standards/frameworks emerged in the 2010s, taking different approaches to the standards/indicators/outcomes structure. In 2011, the Society of College, National and University Libraries (SCONUL) published its seven pillars of information literacy (SCONUL Working Group on

Information Literacy, 2001). The seven pillars (identify, scope, plan, gather, evaluate, manage, and present) were presented as a circular framework to support learning. Each pillar included a set of attitudes/understandings, and a set of skills/competencies.

In 2015, ACRL introduced a new framework for information literacy in higher education (Association of College and Research Libraries, 2015); the 2000 set of standards was rescinded and replaced. The framework has six frames, each one representing a central information literacy concept, a set of knowledge practices (relating to cognitive aspects of learning), and a set of dispositions (relating to affective aspects of learning). Like the SCONUL pillars, the frames are not sequential. The framework also relies on the concept of metaliteracy, which expands the scope of traditional information literacy skills (determine, access, locate, understand, produce, and use information) to include the production and sharing of information (collaborate, produce, and share), particularly in collaborative and digital environments (Mackey & Jacobson, 2014). The six frames are:

- authority is constructed and contextual.
- information creation as a process.
- information has value.
- research as inquiry.
- scholarship as conversation.
- searching as strategic exploration (Association of College and Research Libraries, 2015).

In 2018, the AASL published its new standards for learning as part of a broader framework that also included standards for school librarians and school libraries. It includes six areas of shared foundations (inquire, include, collaborate, curate, explore, and engage), with competencies in each grouped into four domains (think, create, share, and grow).

The new frameworks from ACRL and AASL are much broader in scope than the earlier sets of standards. While the skills described in the standards are still inherent in the newer frameworks, they are part of a much broader set of skills that also include collaboration, sharing, and knowledge creation, among others.

Over the past two decades, information literacy frameworks have expanded from the academic domain to also consider the workplace and everyday-life. They have shifted from a prescriptive approach, which detailed specific tasks that could be accomplished, to a more holistic perspective that incorporates values and attitudes along with skills. The more recent frameworks have also considered the reality that people are no longer only consumers of information, but are also active in the creation and dissemination of information.

Critical Information Literacy

Critical information literacy is a perspective that challenges the traditional approach to information literacy instruction, which some consider to be too prescriptive and "check-box", and which doesn't take into consideration the complexity of the contexts in which information literacy skills are applicable. It has been argued that one key tenet of critical information literacy is its focus on the relationship between people and information (Elmborg, 2012); it is also suggested that information literacy standards have focused too much on the student as the recipient of information and information literacy training, and that the focus needs to shift to include the role of librarians/archivists/information professionals and in-

formation creators. As such, critical information literacy should consider how "librarians may encourage students to engage with and act upon the power structures underpinning information's production and dissemination" (Tewell, 2015, p. 25). Critical information literacy is grounded in the critical pedagogy movement that began with Paulo Freire. One issue that emerged as being particularly relevant to information access is the emphasis on understanding the construction of knowledge, and particularly how and why some perspectives are privileged, and others supressed or marginalized (Tewell, 2015). This perspective challenges information seekers to analyze the authority of information sources, whether they be traditional, scholarly sources, user-generated content on social media, or anything else (Dunaway, 2011; Tewell, 2015), and to examine "the social construction and political dimensions of information" (Tewell, 2015, p. 36).

In addition to a critical analysis of the process by which information is constructed, critical information literacy also encompasses the need for awareness and analysis of the means by which that information is retrieved (Tewell, 2016). One aspect of this is human bias, such as that on the part of teachers or librarians. Even when professional try to uphold the ideals of neutrality, bias is present. Bias also exists within information systems, including classification systems such as the Library of Congress Subject Headings. But an equally prevalent if more obscure source of bias is the algorithms that underpin commercial Internet search engines. As information search becomes more and more dominated by a few large corporations, the subsequent reliance on one or a few sources or perspectives obscures the full information landscape (Davisson, 2013). Tewell advocates the approach of resistant spectatorship or resistant engagement as a remedy. This approach recognizes that people approach information (e.g., text, television, social media) from one of three perspectives: dominant, negotiated, and oppositional. A dominant perspective is when readers or viewers interpret information according to the meaning intended by the producer; this reflects a shared ideology. In an oppositional perspective, readers or viewers resist and reject the information, and provide their own explanation. In this case, the intended message is understood, but rejected. A negotiated position occurs when readers or viewers place some distance between themselves and the information, considering both dominant and oppositional elements. They may accept some premise(s) of the information, but not all.

The concept of resistant spectatorship or engagement is linked to critical information literacy, in that it can serve to help people learn not to accept messages blindly, but to consider critically the intended message, as well as elements such as authorship, production, and bias.

Other Literacies

Information literacy sits among a plethora of other complementary literacies, or skill sets, that are also relevant in dealing with scientific and health information. These are in addition to traditional literacy (i.e., reading, writing, and interpreting written texts) and numeracy, and include media literacy, computer literacy, science literacy, and health literacy, among others.

Media literacy has been defined as

"the ability to choose, to understand – within the context of content, form/style, impact, industry and production – to question, to evaluate, to create, and/or produce, and to respond thoughtfully to media we consume" (National Telemedia Council, 1992, p.12).

Reid and Norris (2016) consider the knowledge about media and its context, as well as applying the context of choosing, understanding, evaluating, and responding to media to be essential components of science education (p. 156-7).

Computer literacy can be defined as simply as being able to use computers to solve problems (Logan, 1995). However, even for those digital natives who have grown up with and are very fluent with computers and technology, this fluency does not necessarily extend to information skills. It is not enough to simply know how to use the machine that provides access to information; one must also know how to interact with the information itself.

The concept of science literacy lacks a single, consistently used definition or conceptualisation, partly due to the fact that the concept can be viewed from multiple perspectives, including those of scientists, educators, sociologists of science, and the general public. However, it is generally considered to include elements such as the nature of science and scientific knowledge, scientific processes and methods, science concepts, principle and laws, and the ability to link scientific processes to the universe around them (Laugksch, 2000). Branscomb suggested a very broad and all-encompassing perspective, defining scientific literacy as "the ability to read, write, and understand systematized human knowledge" (Branscomb, 1981).

Health literacy has considerable overlap with scientific literacy, but with the focus on health. The American Medical Association defines a health literate person as someone with

"a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment. Patients with adequate health literacy can read, understand, and act on health care information" (American Medical Association, 1999, p. 553).

These multiple literacies are often viewed in silos, with each having a link to domains of professional practice and scholarly research. As an example, media literacy is often the focus of attention within education research and teaching practice, whereas information literacy is more the domain of library and information science research and practice. Even where there is considerable overlap in the skills and competencies involved, the disciplinary perspective may be challenging to overcome.

In the case of scientific and health information, it is necessary to consider the complementary role of multiple literacies. This was illustrated in the Lily framework, which is based in the context of eHealth, "the use of emerging information and communication technology, especially the Internet, to improve or enable health and health care" (Eng, 2001). The framework integrates six different literacies into a single framework to support eHealth literacy (Norman & Skinner, 2006). One set of skills were classified as analytical skills – literacy and numeracy, media literacy, and information literacy. The other three were considered context-specific – health literacy, science literacy, and computer literacy. Yet all six skills were relevant for people to be able to successfully navigate the problems and challenges they might encounter in an eHealth environment.

INFORMATION LITERACY INTERVENTIONS

Evaluation of sources is one critical skill in countering misinformation and fake news in science and health. Since the advent of the Web, there has been guidance on how to evaluate web sites and information found on the Internet. From this, a canon set of factors has been determined, and adapted to apply

to any information source, not just Internet based information; the most memorable and catching presentation of these is the CRAAP test (Blakeslee, 2004). Blakeslee's goal was to find an acronym that would engage students and be memorable; she labelled and ordered the five common evaluation factors (currency, relevance, authority, accuracy, and purpose) to create the preferred acronym (http://www.scuchico.edu/lins/handouts/eval_websites.pdf). An added bonus was the fact that the word formed by the acronym actually had meaning in the context of information evaluation – students were challenged to ask if the information they were viewing was "CRAAP". Although the CRAAP test and other evaluation criteria were developed in an academic context, they can be applied much more broadly to other information domains.

The first of the five factors to assess is currency, which refers to the timeliness of the information. This involves identifying when the information was published or posted, and whether it has been revised or updated since. It also requires critical reflection on the information need, to determine whether current information is needed, or whether older sources would also work. If current information is important, then it is also necessary to determine what timeframe is considered current for the topic. Given that the state of knowledge around science and health topics is dynamic, evolving in response to the latest evidence, it is important that people are able to determine when the information they are viewing is from.

Relevance refers to the importance of the information for one's needs. Assessment of relevance considers whether the information relates to the topic of the information need, or answers the question at hand. It considers the intended audience and level of the source (e.g., academic level, oriented towards professionals, intended for a lay audience, etc.), to determine if the information source is a good fit for the individual. Assessment of relevance guidelines also challenge people to look at a variety of sources before determining which ones will best serve their needs. Following the guidelines for assessment of relevance can help mitigate the "click-bait" effect, in which people may be prompted to sources that are appealing and engaging, but that draw them away (perhaps unknowingly) from the topic for which they were searching. This assessment also highlights the importance of looking at a variety of sources, not just relying on one.

Authority considers the source of the information. Central to this is identifying who is the author, the publisher, the source, and the sponsor. This involves recognizing the credentials of the author and/or their organizational affiliations, and determining whether the author is qualified to write on the topic. Underpinning this is the need to have an understanding of different types of information sources, for example, to be able to distinguish a scholarly research article from an opinion piece, or to identify whether information is based upon empirical evidence or anecdotal reports. Assessment of authority also depends upon an understanding of URL structure and what that reveals about an author or source. It is important to both recognize the URL suffixes (e.g., .com, .edu, .gov, .org) and understand their significance. For example, information in support a particular medication might be viewed differently depending on whether it comes from a .com site of a pharmaceutical company, rather than from a .edu site of a university research centre.

Accuracy relates to the reliability, truthfulness, and correctness of the information content. It considers where the information comes from, whether it is supported by evidence, and whether it has been reviewed or refereed. A key element in assessing accuracy is whether the information can be verified or corroborated from another source (or multiple sources), or from personal knowledge. Accuracy assessment should also consider the language or tone (e.g., does it seem biased? is it free of emotion?), as well as quality issues such as spelling, grammar, or typographical errors. A lack of attention to quality of writing may reflect on the level of attention given to the content. A number of information literacy

skills are needed to support the assessment of accuracy. For example, asking someone to determine if a source has been reviewed or refereed presumes not just the ability to recognize the indicators of a reviewed or refereed source, but also an understanding of the review and/or referee process, what that means, and the significance and value of that process as an indicator of accuracy. Likewise, determining the extent to which information is supported by evidence requires having an understanding of the research process and the scientific method, and being able to determine the strength of evidence based on the research methods. The relative weights of different levels of evidence is clearly delineated in the context of evidence-based healthcare practice (e.g., Huber & Tu-Keefner, 2014; Sackett, 1989), but this type of information is not so readily available in other domains. Nor is this level of understanding of the research process necessarily common knowledge.

The final element in the CRAAP rubric is purpose, the reason the information exists in the first place. It involves determining whether the information is intended to inform, to teach, to sell, to entertain, to persuade, or any other purpose. This could involve assessing whether the intentions of the authors are clear (e.g., through advertising), whether the perspective seems objective and impartial, and whether the information appears to be factual, opinion, or propaganda. It also should involve determining if there are political, ideological, cultural, religious, institutional, or personal biases.

The CRAAP test is but one presentation of criteria for the evaluation of information found on the Internet, albeit the one with the most catchy acronym. Nor is this approach to evaluating online information a recent development; similar frameworks have been around since the early days of the Internet. Examples from the late 1990s include the elements of: accuracy, authority, objectivity, currency, and coverage (e.g., Beck, 1997; Kapoun, 1998). Other frameworks are domain or subject specific, such as one produced by the Medical Library Association (2019) which provides guidance on evaluating websites for health related information, considering elements such as the sponsor of the site, currency, intended audience, and whether the site presents facts or opinions. It is interesting to note that while these evaluation frameworks parallel the development of the Internet and the Web, similar evaluation practices also long pre-date the Internet. Evaluation of information resources has always been a core aspect of collection development (the practices followed by libraries and librarians in determining which materials will be acquired as part of a library collection), with evaluation considering factors such as the scope (purpose), author and publisher (authority), quality (accuracy), relevance, and currency (e.g., Evans & Saponaro, 2012; Kendall, 2018). It can be seen that the frameworks for the evaluation of information from the Internet are an extension of the evaluation practices that have long been in place for the selection of information within libraries. The key difference is that the evaluation of the information from the Internet is done by everyone as we look for information in all aspects of our lives, rather than by librarians with professional expertise in the evaluation of information resources.

The CRAAP test can serve as a useful framework for assessing sources of scientific and health information, and for distinguishing fake news. Currency is important, since scientific knowledge is only as good as the latest evidence. Information which might have been considered to be accurate when published might now have been superseded by more recent findings. Therefore, determining the currency of the information under consideration, and ensuring that the most recent information is used, is important. An awareness of how quickly evidence is being accumulated and updated in any given field can be a benefit, but currency can be checked by simply verifying when the information was published, revised or updated.

Of the items to consider in judging relevance, the most pertinent to countering misinformation is to look at a variety of sources before determining which one(s) to use. By considering a range of sources, people will be more likely to see things outside of their personal filter bubble.

Authority is a critical factor in assessing scientific and health information. Determining an author's qualifications is key to determining how credible and trustworthy they are, and the weight that should be given to their conclusions. This can help distinguish someone who has scientific or health professional qualifications from those who may be offering a personal opinion. One caveat to keep in mind is that qualifications in one domain do not necessarily confer authority in another; for example, one should not consider an astrophysicist to also have expertise in immunology.

Accuracy can be challenging to judge, particularly in domains such as science and health in which not everyone has a strong background, and in which new evidence is being discovered at an often rapid pace. Yet, it is still critical to evaluate the accuracy of the information. This can be linked to the publication process, including whether or not the information has been reviewed or refereed. It should also consider the source of the information being conveyed, and whether it is empirically derived, or opinion-based. An understanding of the scientific method and research practices would be helpful in supporting this, as would an understanding of the relative strength of evidence from different types of research design. As an example, a report of a systematic review might be dismissed or negated as being "just based on the literature", and "not real research", when in fact a well-designed systematic review of high quality randomized controlled trials is considered to be the highest level of evidence in the hierarchy of clinical research.

Finally, determining the purpose for which information is published is essential in distinguishing information from misinformation. The nature and norms of scientific research and publishing constrain the claims that can be made. Results and conclusions must be presented in terms of what the evidence suggests, not in sweeping, absolute terms. Misinformation is much more likely to be presented in absolute terms.

An ongoing challenge in teaching information literacy is to match the teaching to the right time and right context; otherwise, the material is too decontextualized for students to be able to make sense of it in their academic and personal lives. One approach was to use the filter bubble to create a teachable moment (Valentine & Wukovitz, 2013). In this intervention, students analyzed the news feed from their personal Facebook accounts, to determine which of their friends appeared in the news feed, and which were dropped off. They discovered that Facebook filtered for friends with similar political viewpoints and dropped off those whose perspectives differed. The students reported that they found this "creepy" and "scary", that they didn't like the lack of control imposed by the filter, and that they saw the value in reading viewpoints that differed from their own (Valentine & Wukovitz, 2013). The authors recommended teaching information literacy using a rhetorical triangle, with the author, the purpose, and the audience as the three points of the triangle, and teaching students to reflect on how each element impacts on the others.

Evidence of the filter bubble effect was found in a study of personal health information; information was retrieved that reinforced erroneous health claims and/or beliefs (Holone, 2016). A number of strategies were recommended to mitigate the effect of the filter. The first was to promote awareness of filters and their effects, for search and social media sites to provide an unfiltered (unpersonalized) option, for people to deliberately use multiple search engines to increase the breadth of the results, and for people to actively engage in the process of sense-making (Holone, 2016).

A different approach to placing information literacy instruction in context was built around the analysis of news stories that report on the findings of a published scientific paper (Majetic & Pellegrino, 2014). Students were required to find both the original scientific paper referenced in the news story, and also a second, complementary scientific paper. This process could involve a number of fundamental information literacy skills, including finding missing information from an incomplete citation, searching bibliographic databases, and obtaining the journal articles from an online journal subscription. The students then analyzed both the original article to determine how accurately it was represented in the news story, and the complementary article to determine if the news story would have benefited from the inclusion of additional information. The results of the research showed that this critical thinking process led students to reflect on the accuracy of the reporting of scientific news and to learn how to fact-check and verify source material; an incidental anecdotal finding was that students reported applying the skills they had learned to other courses and assignments (Majetic & Pellegrino, 2014).

Critical information literacy has been advocated as a core skill to incorporate into science education. Referencing American standards for science education (https://www.nextgenscience.org/get-to-know), Storksdieck (2016) argues that three of the eight standards (4. Analyzing and interpreting data; 7, engaging in argument from evidence; and 8, obtaining, evaluating, and communication information) would all be supported by critical information literacy. This approach would integrate skills of knowing about information sources, and their reliability and validity, with an understanding of how and by whom the data was interpreted, and if other interpretations might also be valid.

CONCLUSION

Information literacy skills are not a panacea for all the challenges inherent in avoiding science misinformation, nor can they alone address the issue. Other aspects of the solution may come from things such as improved recommendation and/or personalization algorithms, better detection of misinformation, and more stringent policies of search engine and social media providers. But information literacy is also critical. A single information literacy skill, that of evaluating the source of online information, can be a powerful tool. Being able to recognize a reliable site for scientific or health information, such as the World Health Organization, or the Centers for Disease Control, as well as recognizing the credentials of the authors, will help distinguish reliable information from (potential) misinformation coming from unreliable sources or authors. Being able to determine the purpose for which the information was posted will help identify if it is there to inform, to educate, to influence, to persuade, or to sell, among others.

One key aspect of the principle of information literacy is that it is not tied to a particular information system, or type of system. Information literacy skills address the information itself, not the medium in which it is stored, or the system by which it is found, retrieved or disseminated. Information literacy skills can be applied to assess information obtained from Internet search engines, social media sites, traditional media (e.g., television, newspapers), published sources (e.g., books, journals), archival and historical sources, as well as personal sources of information. Information literacy skills provide a means for evaluating the sources of information, the process by which it was retrieved, and the biases inherent in its creation and dissemination. Information literacy skills also relate to how people pass on and share information, and how they can avoid knowingly or inadvertently sharing misinformation. The amount of information that is produced and disseminated outside of the traditional structures (publishing, journalism, libraries, etc.), with their inherent mechanisms of evaluation, will only continue to grow. Even

more than it is now, this will put the onus on the individual to act as editor, publisher, fact-checker and librarian, and to make their own critical judgements about the information they use. To accomplish this, information literacy skills are an essential tool.

REFERENCES

American Association of School Librarians. (1998). *Information Literacy Standards for Student Learning*. Chicago: American Library Association.

American Library Association. (1989). *Presidential Committee on Information Literacy. Final Report*. Retrieved from: http://www.ala.org/acrl/publications/whitepapers/presidential

American Medical Association. (1999). Health literacy: Report of the Council on Scientific Affairs. *Journal of the American Medical Association*, *281*(6), 552–557. doi:10.1001/jama.281.6.552 PMID:10022112

Association of College and Research Libraries. (2000). *Information Literacy Competency Standards for Higher Education*. Chicago: American Library Association.

Association of College and Research Libraries. (2015). *Framework for Information Literacy in Higher Education*. Chicago: American Library Association.

Beck, S. (1997). *The Good, The Bad & The Ugly: or, Why It's a Good Idea to Evaluate Web Sources*. Retrieved from http://lib.nmsu.edu/instruction/eval.html

Blakeslee, S. (2004). The CRAAP test. *LOEX Quarterly*, *31*(3), 6–7.

Branscomb, A. W. (1981). Knowing how to know. *Science, Technology & Human Values*, *6*(36), 5–9. doi:10.1177/016224398100600302

Bundy, A. (Ed.). (2004). *Australian and New Zealand Information Literacy Framework: Principles, Standards and Practice* (2nd ed.). Adelaide: Australian and New Zealand Institute for Information Literacy.

Catts, R., & Lau, J. (2008). *Towards Information Literacy Indicators*. Academic Press.

Council of Australian University Librarians. (2001). *Information Literacy Standards*. Canberra: Council of Australian University Librarians.

Davisson, A. (2013). Google search: Hyper-visibility as a means of rendering black women and girls invisible. *Journal of Digital and Media Literacy*, *1*(2).

Di Ventra, M. (2018). *The Scientific Method: Reflections from a Practitioner*. Oxford, UK: Oxford University Press. doi:10.1093/oso/9780198825623.001.0001

Dunaway, M. (2011). Web 2.0 and critical information literacy. *Public Services Quarterly*, *7*(3/4), 149–157. doi:10.1080/15228959.2011.622628

Elmborg, J. (2012). Critical information literacy: definitions and challenges. In C. W. Wilkinson & C. Bruch (Eds.), *Transforming Information Literacy Programs: Intersection Frontiers of Self, Library Culture, and Campus Community* (pp. 75–95). Chicago: Association of College and Research Libraries.

Eng, T.R. (2001). *The eHealth Landscape: A Terran Map of Emerging Information and Coummunication Technologies in Health and Health Care*. Princeton, NJ: The Robert Wood Johnson Foundation.

Evans, G. E., & Saponaro, M. Z. (2012). *Collection Management Basics* (6th ed.). Santa Barbara, CA: Libraries Unlimited.

Holone, H. (2016). The filter bubble and its effect on online personal health information. *Croatian Medical Journal*, *57*(3), 298–301. doi:10.3325/cmj.2016.57.298 PMID:27374832

Huber, J. T., & Tu-Keefner, F. (2014). *Health Librarianship: An Introduction*. Santa Barbara, CA: Libraries Unlimited.

International Federation of Library Associations. (2005). *Beacons of the information society: the Alexandria Proclamation on information literacy and lifelong learning*. Retrieved from https://www.ifla.org/publications/beacons-of-the-information-society-the-alexandria-proclamation-on-information-literacy

Kapoun, J. (1998). Teaching Web evaluation to undergrads. *College & Research Libraries News*, *59*(7), 522–523.

Kendall, S. K. (2018). *Health Sciences Collection Management for the Twenty-First Century*. Lanham, MD: Rowman & Littlefield.

Kranich, N. C. (2001). Libraries, the Internet, and democracy. In N. C. Kranich (Ed.), *Libraries and Democracy: The Cornerstones of Liberty*. American Library Association.

Laugksch, R. C. (2000). Scientific literacy: A conceptual overview. *Science Education*, *84*(1), 71–94. doi:10.1002/(SICI)1098-237X(200001)84:1<71::AID-SCE6>3.0.CO;2-C

Logan, R. K. (1995). *The Fifth Language: Learning a Living in the Computer Age*. Toronto, ON: Stoddart.

Mackey, T. P., & Jacobson, T. E. (2014). *Metaliteracy: reinventing iformation literacy to empower learners*. Chicago: Neal-Schuman.

MacRitchie, F. (2018). *The Need for Critical Thinking and the Scientific Method*. Boca Raton, FL: CRC Press; doi:10.1201/9781351255875

Majetic, C., & Pellegrino, C. (2014). When science and information literacy meet: An approach to exploring the sources of science news with non-science majors. *College Teaching*, *62*(3), 107–112. doi:10.1080/87567555.2014.916650

Medical Library Association. (2019). *For Health Consumers and Patients*. Retrieved November 11, 2019, from http://www.mlanet.org/page/find-good-health-information

National Telemedia Council. (1992). Media literacy gains momentum. *Telemedium*, *28*, 12.

Norman, C. D., & Skinner, H. A. (2006). eHealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research*, *8*(2), e9. doi:10.2196/jmir.8.2.e9 PMID:16867972

Oxford English Dictionary. (2019). Available from https://www.oed.com/

Pariser, E. (2011). *The Filter Bubble: What the Internet is Hiding from You*. New York: Penguin.

Reid, G., & Norris, S. P. (2016). Scientific media education in the classroom and beyond: A research agenda for the next decade. *Cultural Studies of Science Education*, *11*(1), 147–166. doi:10.100711422-015-9709-1

Sackett, D. L. (1989). Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest*, *95*(2Suppl), 2S–4S. doi:10.1378/chest.95.2_Supplement.2S PMID:2914516

SCONUL Working Group on Information Literacy. (2001). *The SCONUL Seven Pillars of Information Literacy: Core Model for Higher Education*. Society of College, National and University Libraries.

Staddon, J. (2018). *Scientific Method: How Science Works, Fails to Work, and Pretends to Work*. New York: Routledge. doi:10.4324/9781315100708

Storksdieck, M. (2016). Critical information literacy as core skill for lifelong STEM learning in the 21st century: Reflections on the desirability and feasibility for widespread science media education. *Cultural Studies of Science Education*, *11*(1), 167–182. doi:10.100711422-015-9714-4

Swanson, E. S. (2015). *Science and Society: Understanding Scientific Methodology, Energy, Climate, and Sustainability*. Heidelberg, Germany: Springer. doi:10.1007/978-3-319-21987-5

Tewell, E. (2015). A decade of critical information literacy. *Communications in Information Literacy*, *9*(1), 14–43. doi:10.15760/comminfolit.2015.9.1.174

Tewell, E. (2016). Toward the resistant reading of information: Google, resistant spectatorship, and critical information literacy. *portal*. *Libraries and the Academy*, *16*(2), 289–310. doi:10.1353/pla.2016.0017

UNESCO. (2003). *Prague Declaration*. Towards an Information Literate Society.

UNESCO. (2019). *Building Knowledge Societies*. Retrieved Nov. 12 2019 from https://en.unesco.org/themes/building-knowledge-societies

Valentine, A., & Wukovitz, L. (2013). Using the filter bubble to create a teachable moment. *Pennsylvania Libraries: Research & Practice*, *1*(1), 24–34. doi:10.5195/PALRAP.2013.18

Zurkowski, P. (1974). *The Information Service Envirnomnet: Relationships and Priorities*. Washington, DC: National Commission on Libraries and Information Science.

ADDITIONAL READING

Grassian, E. S., & Kaplowitz, J. R. (2009). *Information Literacy Instruction: Theory and Practice* (2nd ed.). New York: Neal-Schuman.

Kuhlthau, C. C., Maniotes, L. K., & Caspari, A. K. (2015). *Guided Inquiry: Learning in the 21st Century* (2nd ed.). Westport, CT: Libraries Unlimited.

Mackey, T. P., & Jacobson, T. E. (Eds.). (2019). *Metaliterate Learning for the Post-Truth World*. New York: Neal-Schuman.

Thomas, N. P., Crow, S. R., & Franklin, L. L. (2011). *Information Literacy and Information Skills Instruction: Applying Research to Practice in the 21st Century School Library*. Westport, CT: Libraries Unlimited.

Webb, J., & Powis, C. (2017). *Teaching Information Skills: Theory and Practice* (2nd ed.). London: Facet Publishing.

KEY TERMS AND DEFINITIONS

Disinformation: Deliberately false information, esp. when supplied by a government or its agent to a foreign power or to the media, with the intention of influencing the policies or opinions of those who receive it.

Fake News: News that conveys or incorporates false, fabricated, or deliberately misleading information, or that is characterized as or accused of doing so.

Health Literacy: The ability to perform basic reading and numerical tasks required to function in the health care environment . . . to read, understand, and act on health care information.

Misinformation: Wrong or misleading information.

Science Literacy: Includes elements such as the nature of science and scientific knowledge, scientific processes and methods, science concepts, principle and laws, and the ability to link scientific process to the universe around them.

Chapter 2
The Needle in the Haystack:
How Information Overload Is Impacting Society and Our Search for Truth

Dana Tessier

Independent Researcher, Canada

ABSTRACT

Since the invention of the printing press, individuals have created and shared more information at increasing rates, and this has further accelerated with the proliferation of information technology and the increase in Internet accessibility. Humans' ability to absorb and process information has not evolved alongside the speed at which information can be created and shared. This chapter examines what impact this abundance of information has had on society and its ability to process, examine, and retain information. The relationship between information overload and society's ability to discern the veracity of information is discussed. The author makes recommendations for how individuals and organizations can harness their information overload and continue to discern fact from fiction and create a more truthful world.

INTRODUCTION

In a post-truth world, information is being exchanged at a greater rate and in greater quantities than in previous generations. It is estimated that we now have access to five times more information than we did in 1986 (Hilbert & Lopez, 2011). This increase in information sharing is impacting individuals in both their personal and professional lives, across domains from academia to private sector organizations. While having an increase of information at our disposal can be a strength in our society, it can also be a burden; individuals and organizations can experience difficulty absorbing this proliferation of content, which, in turn, can lead to experiencing information overload. Information overload is defined by the Oxford Dictionary as "exposure to or provision of too much information or data." Information overload is something an individual or organization experiences, and therefore it is a subjective experience based on the individual or organization's preferences. Information overload feels like a modern phenomenon,

however, there have always been historical concerns regarding the quantity of information available to the world. Today, information overload has been exacerbated by the increase and exponential impact of information technology. In a review of worldwide Google Trends, the word "information overload" reached peak popularity in early 2004, shortly after Google trending began, followed by another peak in October 2005. Subsequently, the term decreased in overall popularity but has never completely faded away; it has remained around a score of 25 for the past few years, demonstrating constant concern about information overload in the modern world (Figure 1). When people receive more information than can be absorbed, a multitude of different consequences occur; this overload negatively impacts productivity, decision-making, and progress, and causes anxiety, stress, and despondency. Information overload can also trigger a degradation of clear thinking which, in turn, further impacts our ability to absorb information, retain it, and pass on accurate information. The production and reproduction of information has long caused concerns about its accuracy, its truth, and its inherent value. In this chapter, the author will discuss the history of information overload, the impacts of information overload on our society, and some suggestions as to what can be done to tackle information overload in an attempt to preserve truth, accuracy, and our ability to interpret information.

BACKGROUND

The History of Information Overload

While the proliferation of new and emerging information technologies makes information overload seem like a problem created by information technology, there have been concerns of information overload present in pre-modern cultures as well. Since the invention of the written word, academics and public officials have been concerned with what effects writing down and sharing information would have on the world.

Figure 1. Google Trend for the search term 'information overload' from 2004 to present
Source: (Google 2014-Present)
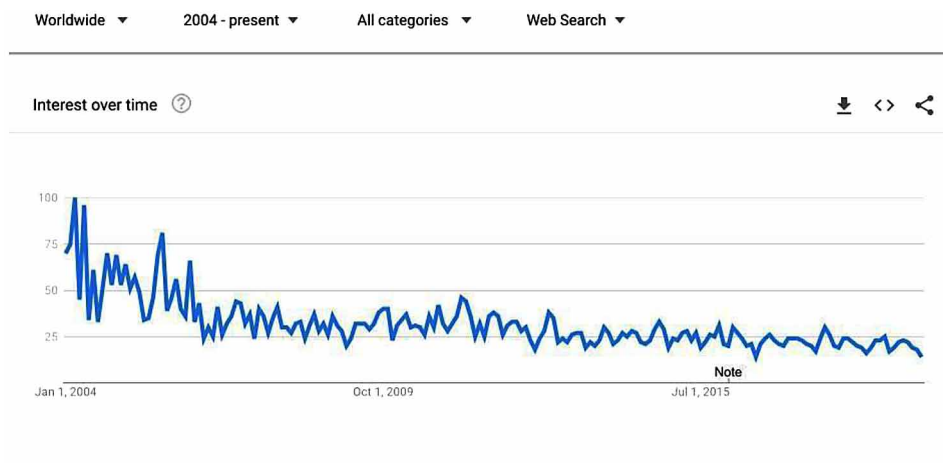
Thamus, King of Egypt, argued that the written word would infect the Egyptian people with fake knowledge. The Greek poet Callimachus said books are a "great evil." The Roman philosopher Seneca the Younger (tutor to Nero) complained that his peers were wasting time and money accumulating too many books … Seneca recommended focusing on a limited number of good books, to be read thoroughly and repeatedly (Levitin, 2014, p. 14).

In each of these examples, the writer expresses concern for how society will ingest this proliferation of content, and if the quality of the content can be maintained as the quantity of content increases. In 1255, Vincent of Beauvais, who wrote one of the main encyclopedias of the Middle Ages, is quoted as saying "the multitude of books, the shortness of time and the slipperiness of memory" (Blair, 2011) to describe his feelings of information overload. Even before the first telegraph was sent, or the invention of the Internet, when the amount of information on offer was drastically less than what is available in our contemporary society, people did not immediately agree that access to more information would be wholly positive.

The invention of the printing press in the 15th century was a significant advance that changed the world radically. With this invention, the proliferation of content could begin in earnest. Concerns about information overload grew alongside this new content proliferation. As it became easier and less expensive to create and disseminate information in the form of books, academics became overwhelmed by the number of books available (Blair, 2011). These academics experienced information overload, expressing concerns about both the quantity and the quality of information being produced, and the effects this abundance of information would have on society. In some cases, academics like Francis Bacon suggested in 1612 that

some books are to be tasted, others to be swallowed and some few to be chewed and digested; that is some books are to be read only in parts; others to be read, but not curiously; and some few to be read wholly, and with diligence and attention (Blair, 2003, pp.13-14).

This indicates that there were concerns about the quality of certain books and the value they offered readers, and academics felt compelled to instruct their students in coping with the abundance of information. René Descartes saw the issue differently. He recommended ignoring books written by others and advised that one should rely on one's own observations (Levitin, 2014). Other academics expressed concerns about the effects of information overload on society. It is interesting to note that Adrien Baillet, the French academic best known as René Descartes' biographer, is quoted as saying in 1685,

We have reason to fear that the multitude of books which grows every day in a prodigious fashion will make the following centuries fall into a state as barbarous as that of the centuries that followed the fall of the Roman Empire (Blair, 2003, p.11).

These concerns continued into the 18th century. Jonathan Swift, the Irish satirist, warned against the dangers of reproduced knowledge and claimed that new books were nothing more than guides to old books (Rosenberg, 2003). Indeed, many writers and scholars lamented the challenges of information being reproduced and how this contributed to the challenge of information overload (Fuller, 2017). However, despite growing concern about the consequences of information overload on society, academics continued to pursue knowledge and generate new books, articles, and collections of information.

Historical Attempts to Assuage Information Overload

As academics tried to cope with this increase in knowledge, they invented ways of organizing information to make content easier to find. Desiderius Erasmus pointed out to his students the connection between memory and reading in his textbook *De Copia*, written in 1512. He recommended that his students annotate their books "to make occurrences of striking words, archaic or novel diction, brilliant flashes of style, adages, examples, and patchy remarks worth memorizing" (Carr, p. 178). Another one of Erasmus' recommendations was that learners set aside notebooks per subject to keep their notes organized and to encourage students to take more notes to improve their memories (Carr, p. 178). Isaac Newton was said to have "dog-eared" many of his texts to keep track of interesting passages he had read (Blair, 2003). Carl Linnaeus, who is known as the father of modern taxonomy, conducted research in the world of botany and organized lists of plants and their attributes in his work, *Systeme Naturae* (Everts, 2016). To accomplish this taxonomy, with far-reaching implications that are still important to science today, Linnaeus leveraged a new invention - the humble index card. By documenting this information on index cards, Linnaeus was able to organize and reorganize his information as new species were identified. This enhanced ability to organize information enabled Linnaeus to cope with large amounts of data and to produce a reference guide that was unparalleled for his time. A variety of different bookmarks were used by academics and others alike, and it is even suggested that ladies in the 18th century used their nails to indent markings in books so they could refer to these passages later (Blair, 2003). Academics and other readers clearly saw the advantages of organizing their information to cope with the effects of information overload.

While the coping methods that academics employed to deal with information overload were somewhat helpful, these techniques created even more information, furthering the experience of information overload.

The perception of an abundance of books fueled the production of many more books, often especially large ones, designed to remedy the problem - from new genres like the universal bibliography and the book review to new (or not-so-new) contributions to well-established genres, including the florilegium, the dictionary, and the encyclopedic compilation (Blair, 2003, p.12).

The creation of the book index was a method of organizing information and coping with the abundance of content. Printers advertised the index or stated that the index has been updated when selling books (Blair, 2003). The invention of new book genres like the encyclopedia required an index as they would be unusable without one. Advertisements of the time demonstrate that readers were looking for indexes or other ways to organize information more effectively and digest it more easily. It was also noted that many academics employed students to assemble notes for them, and that their books would sometimes be cut up and then pasted back into new books to form summaries.

Replication Contributes to Information Overload and Misinformation

While easy information reproduction began with the printing press, technologies like carbon paper, the photocopier, and even growing numbers of professors (hiring growing numbers of graduate students) have made it even easier to produce and reproduce information. These factors have resulted, not only in more information being produced, but ultimately in further reproduction and in an ever-increasing abundance of information (Hemp, 2009). The replication of information has had an interesting effect on

facts and errors. Before the invention of the dictionary in the early 17th century, there was no common spelling of words and no common authority on the definition of words (Gleick, 2011). "[As] philosophers came face to face with the multiplicity of the world's dialects, they often saw language not as a perfect vessel for truth but as a leaky sieve" (Gleick, 2011, p. 90). The lack of commonly accepted definitions of words likely had implications for philosophical and academic debates. Simply organizing words in alphabetical order in dictionaries was a novel method of displaying information in the 17th century. As the methods for creating, organizing, and reproducing information evolved, more information was created. However, methods of organizing information were still in their infancy and were not without their disadvantages. Errors were often transmitted through the reproduction of materials. For example, Gleick describes an attempt to map Ireland in which researchers consulted several different tables of information only to discover that the same errors were reproduced in all the tables, which had clearly been copied from one another and were mere duplicates of each other instead of genuine additions to the body of knowledge (Gleick, 2011, p. 94). The accuracy of content produced became another challenge to rival the volume of content.

As means of creating and sharing information evolved, academics were notably concerned about the impact of this information on society. They therefore developed many different methods to cope with this new abundance of information. While some of the inventions, tools, and techniques of these academics seem unsophisticated now, such as the index or the bookmark, at the time, they were helpful tools for coping with the abundance of knowledge. They offered academics a way to navigate in a world that was saturated with information and growing ever more complex. Many of these tools are still in use today, or have been modernized to reflect new technologies, such as the bookmark and highlight functions in e-readers. The reproduction of information also became a way to reproduce and spread errors, which exacerbated concerns about information overload and its impact on society. The problem of information overload and its impact on content accuracy is therefore not a new one; however, advances in technology have historically made and continue to make this challenge more significant for more people.

Rate of Information Exchange

To explore the impact of information overload on modern society, it is worth recognizing how much more information is being created every day, and how this has greatly accelerated over the past 200 years. The telegraph was invented in the early nineteenth century, which made it possible to share information at a faster rate than ever before. James Gleick notes in his book, *The Information* that "only two hundred miles separated the Stock Exchange on Threadneedle Street in London from the Bourse at the Palais Brongniart, but two hundred miles meant days. Fortunes could be made by closing that gap" (2011, p. 139).

By enabling the rapid transmission of messages, new connections were made which opened up the world even further. The telegraph greatly impacted the news industry and enabled news from all over the world to be sent quickly to the printing house, reproduced in newspapers, and then distributed and sold to large numbers of people who used to wait days or even months for news. The many papers called "The Telegraph" or variations thereon illustrate how significant this invention was to the news industry (Gleick, 2011). However, the telegraph obviously had its limits. A user had to be trained in constructing, transmitting, and deciphering telegraph codes. The telegraph also required specific equipment that was prohibitively priced for most ordinary households.

Technology continued to advance and change the ways in which we communicate. Just as scholars of the 17th and 18th centuries were concerned about the proliferation of text, commentators in the 19th

century were concerned about who would be able to read or hear messages that were sent electronically. Gradually, however, "people began to feel that it was natural to possess machines dedicated to the sending and receiving of messages" (Gleick, 2011, p. 170). The first telephone appeared in the United States during the 1870s and its invention expanded our ability to transmit information at an even faster pace. The telephone was so popular and accessible that by 1895, rural citizens were laying down their own telephone wire rather than waiting for the companies to complete the task, so that they, too, could receive and send messages more quickly (Gleick, 2011).

By the turn of the century, the telephone industry surpassed the telegraph by every measure - number of messages, miles of wire, capital invested - and telephone usage was doubling every few years. (...) By 1890 there were 500,000 telephone users, and by 1914, there were 10 million. The telephone wires connected individuals in an immediate way that had never happened before and became responsible for rapid industrial progress (Gleick, 2011, p. 188 & 191).

Anyone could have a telephone conversation provided that they had the equipment. There was no longer any need for the individual users to learn the codes that powered the telegraph. Because the telephone made technologically-mediated communication easy and available to everyone, it increased rapidly in use and popularity.

By 1948, there were more than 125 million conversations passed daily through the Bell System's 138 million miles of cable and 31 million telephone sets (Gleick, 2011, p 5).

As the public's ability to create and send communications increased, scientific breakthroughs were also facilitated. Continuing scientific innovation led to further discoveries and, of course, more information. For example, "in 1550, there were 500 known plant species in the world. By 1623, this number had increased to 6000. Today [2014], there are a known 9000 species of grasses alone, 2700 types of palm trees, 500000 different plant species" (Levitin, 2014, p. 15). This proliferation of content has impacted all areas of society. The humble act of grocery shopping provides a cogent example. "In 1976, the average supermarket stocked 9,000 unique products; today [2014] that number has ballooned to 40,000 of them, yet the average person gets 80-85% of their needs in only 150 different supermarket items" (Levitin, 2014, p. 5). We are presented with more and more information to consult, which results in more choices to make, in all areas of our lives.

As information has become digitized, barriers to the reproduction and creation of information have been diminished even further (Hemp, 2009). Some of this information is even created without the involvement of humans, such as automated, algorithmic suggestions for new purchases or videos to watch (Hemp, 2009). Our current smartphones are more powerful than the IBM super computers of 30 years ago (Levitin, 2015) and provide us constant access to news, messages, entertainment, and other content. Instead of having to seek out information actively by buying a book or conversing over the phone, we are now more likely to receive constant notifications. Due to this ongoing increase in information, many readers are not able to keep up. The American Press Institute (2014) found that only 4 in 10 Americans read a full article; other readers are only reading the headlines. In his book, *The Organized Mind*, Levitin notes that "during our leisure time, not counting work, each of us processes 34 gigabytes of 100,000 words every day." (Levitin, 2014, p. 6). In the modern world, we have access to information at nearly all times, regardless of where we go, and this has greatly changed our society and our ability to consume content

responsibly. A distracted traveler with their hands full of bags and other belongings is an easy target for a pickpocket; similarly, as individuals continue to be inundated with more information, notifications, and news, we become easy targets for fake news, misinformation, and alternative facts.

IMPACT OF INFORMATION OVERLOAD ON SOCIETY

Information overload causes individuals to experience cognitive load, meaning that they have a lot of information to process which effectively 'clogs up' their ability to process it. In Nicholas Carr's book, *The Shallows: What the Internet is Doing to Our Brains*, he explains that,

The information flowing into our working memory at any given moment is called our "cognitive load." When the load exceeds our mind's ability to store and process the information … we're unable to retain the information or to draw connections with the information already stored in our long term memory … Our ability to learn suffers, and our understanding remains shallow. Because our ability to maintain our attention also depends on our working memory … Experiments indicate that as we reach the limits of our working memory, it becomes harder to distinguish relevant information from irrelevant information, signal from noise. We become mindless consumers of data (Carr, 2011, p. 125).

As the quantity of accessible information increases, we reach a breaking point in our ability to process it. At this point, regardless of whether the next piece of information we encounter is a proverbial piece of gold or the "fool's gold" of fake news, we may not recognize its value or its danger due to our decreased cognitive abilities to process that information.

While having an abundance of information at our disposal can seem like an asset in decision-making, it has been shown in many studies that access to too much information can actually impede decision-making (Vaughan, 2014.) What happens is that the centre of the brain responsible for making decisions, the prefrontal cortex, cannot handle all of the additional stimuli and so it shuts down. (Vaughan, 2014). "Neuroscientists have discovered that unproductivity and loss of drive can result from decision overload" (Levitin, 2014, p. 5). All of this information is interpreted as a series of different choice sets and each choice represents a decision. These choice sets and decisions can open up additional choice sets and so on. Even little decisions take up as much brain processing power as large decisions (Levitin, 2015). This negative impact on decision-making can impact all areas of our lives and our industries. For example, it can negatively impact consumer purchasing as an abundance of choice makes it more difficult for consumers to make buying decisions (Lurie, 2004), given ever-increasing consumer options such as the number of products in grocery stores.

When the illusion of multitasking is layered on top of all this difficulty in decision-making, there are even more negative effects on cognitive load. In reality, the human brain cannot multitask; it simply switches from one task to another in rapid succession. This task switching leads to a decline in brain functioning and it increases the production of stress hormones which also lead to a decline in brain functioning (Levitin, 2015). Further, multitasking also leads the brain to store incoming new information in the wrong areas, leading to more difficulty recalling facts at a later time. A human brain can only input so much information into their working memory at a time; after that, their ability to process this information, hold on to it, and recall it later is reduced (Oldroyd & Morris, 2012). A study conducted in 2011 demonstrated that when individuals look up information online, they are usually able to recall how

they found the information, but not the actual information that they found. This suggests that the Internet has become an "external memory source that we can access at any time" (Sparrow, Liu, Wegner, 2011). Knowing that we can access information from our smartphone and easily recall information makes us less likely to store that information properly in our own brains. With our ability to retain information highly reduced due to Google searches and the dark side of multitasking, it is no wonder that humans are susceptible to fake news and misinformation.

In some ways, the forward march of technology has given us an opportunity to help combat information overload. However, it does not always work. When students began using more computers in the classroom, it was thought that content that was hyperlinked would "strengthen students' critical thinking ability, enabling them to switch easily between different viewpoints." (Carr, p. 126). It was believed that by reading subject matter that could be linked to relevant content more easily, the reader could consider multiple viewpoints at once and accelerate their learning on a given topic. But the technology actually had the opposite effect:

A 1990 experiment revealed that hypertext readers often 'could not remember what they had and had not read' (…) and research continues to show that people who read linear text comprehend more, remember more, and learn more than those who read text peppered with links (Carr, 2011, p. 127).

Accessing an expanded number of viewpoints through one entry point increased the cognitive load on the student and decreased their ability to retain the information and learn from it.

The vessels of information overload cause disruptions to workflow. Emails, texts, tweets, and a variety of other push notifications and alerts are all designed to notify a person immediately when new information is available to them. This disrupts ongoing or in-progress tasks, which leads to further multitasking. It also leads us to consider or be informed of additional information relevant to the subsequent task, so that the cycle of push technologies, multitasking, and information overload continues. Distractions negatively impact our inner work life and reduce our productivity, creativity, and engagement (Amabile & Kramer, 2011).

Technology has changed how we engage with information as well as how we communicate with one another. As individuals, we have moved to more digital means of communicating. These digital communications can be less meaningful than in-person or face-to-face connections.

When you comfortably connect with a colleague, even if you are dealing with an overwhelming problem, the deep centres of the brain send messages through the pleasure centre to the area that assigns resources to the frontal lobes. Even when you're under extreme stress, this sense of human connection causes executive functioning to hum (Hallowell, 2005).

The increase in connection occurring through digital rather than analog means has had a negative impact on our ability to relate to each other. In a 2010 study conducted by the University of Michigan, it was found that college students were 40% less empathetic than students in the 70s or 80s, suggesting that the increase in information overload has dulled our senses, making us less empathetic to others (Gurner, 2015). Hallowell suggests that human connection can help counteract the feelings of being overwhelmed with information, but as we communicate more and more through digital means, this connection occurs with less frequency which further leads to less empathy, and even less means of connecting in a meaningful way with each other.

Impact of Information Overload on Organizations

Organizations are now facing high levels of information overload, which is a cause for management concern. In Paul Hemp's article, "Death by Information Overload" published in the *Harvard Business Review* in 2009, he shares study after study documenting how information overload negatively impacts productivity, decision-making, and even creativity. When employees or other individuals have so much information available to them and are on the receiving end of a barrage of emails and social media content, this has an adverse effect on their ability to be a productive member of an organization. One noteworthy challenge is that not all of the information being shared is relevant to the employee or requires their attention; however, employees must still go through extraneous content to find the important information. This process serves as a distraction and time waster. While the increase in online collaboration tools has made it easier to work with a large number of dispersed individuals, these same tools have also created some problems that must be managed. These tools have made it easier to create content and share it with a wide number of people. As a content consumer, there can be vast amounts of content to review, which, in turn, can lead to employees being unsure which piece of content is complete or contains the most up-to-date information (Levitin, 2014). Workers are left constantly trying to play catch up rather than using their newly gained information to advance their organization. The organization may have invested heavily in digital technologies to facilitate the flow of information between members, but without the correct best practices, they are not able to leverage the increase of information in the organization. They may instead find themselves experiencing the opposite effect.

An increase in information can have its advantages, but too much of a good thing leads to adverse effects. A study of high performing employees demonstrated that as participants progressed in their career and became well-known, their access to information increased, which allowed them to become a subject matter expert. Being a subject matter expert subsequently opened up additional opportunities for participants to obtain further expertise. However, the increase in their expertise also led to an increase in disruptions. After a time, these disruptions caused significant negative effects for study participants, weighing them down and leading to reductions in their productivity, reductions in their status, or the departure of the employee from the organization (Oldroyd & Morris, 2012).

In Edward Hallowell's article "Overloaded Circuits: Why Smart People Underperform," published by *the Harvard Business Review* in 2005, the author describes a neurological impairment that he calls "attention deficit trait." He lists the symptoms as "distractibility, inner frenzy, and impatience" and argues that this state leads to difficulties in staying organized, setting priorities, and managing time. Hallowell discovered this trait through his practice of working with people with learning disabilities. In his practice, he saw an increase in patients with symptoms similar to learning disabilities, but without the physiological presence of any actual learning disorder. His clients were dealing with information overload, and as the information they needed to deal with increased, they became less and less efficient at processing it. As evidenced in other research, the state of information overload does not allow the brain to respond in a productive manner to new information due to the cognitive load it creates. This, in turn, leads to an emotional response that further reduces the brain's capacity to respond in a productive manner. Hallowell states that,

as a specialist in learning disabilities, I have found that the most dangerous disability is not any formally diagnosable condition like dyslexia or ADD. It is fear. Fear shifts us into survival mode and thus prevents fluid learning and nuanced understanding. Certainly, if a real tiger is about to attack you, survival is

the mode you want to be in. But if you're trying to deal intelligently with a subtle task, survival mode is highly unpleasant and counterproductive (Hallowell, 2005).

Hallowell notes that highly successful and productive employees can become unproductive, stressed, and less successful over time due to their cognitive ability being overloaded by too much information.

While many believe that multitasking enhances their ability to process more information and maintain their productivity, it actually has the opposite effect and leads to underperformance in both individuals' personal and professional lives. Human brains struggle to process an abundance of information, which negatively impacts decision-making. As individuals communicate more through digital means, they lack a deep connection with each other, which can reduce empathy. In a world that lacks connection, empathy, and capacity to cope with an abundance of information, it is not difficult to see how our ability to absorb, retain, and share the truth may become degraded. This is a serious risk to our society.

Information Overload, Technology, and Society

Many have called on technologists to improve the platforms that transmit fake news and misinformation. There is a desire for technology to assess the content being transmitted and determine whether it is true or false, based on attributes that that information carries. These attributes include who created a given piece of content, when it was created, how it was transmitted, what words are included, and a variety of other factors. As Ghosh and Scott note in their 2018 article "Disinformation is Becoming Unstoppable," while many want algorithms and automatic filtering to do the work for us, it is unlikely this will completely solve the problem of false information being shared online. Ghosh and Scott say that "the scale of content is simply too large for comprehensive human review, and the vast majority of disinformation would not be taken down anyway because it is perfectly legal despite poisoning to our politics. We will not delete our way out of this problem" (Ghosh & Scott, 2018). Furthermore, the amount of tracking and reviewing required to police this spread of information requires the collection of a vast amount of personal user data, potentially including location, browsing habits, level of education, and purchasing patterns. This is quite a tradeoff: divulge large quantities of personal user data and perhaps see a reduction in the spread of misinformation. Researchers at Stanford University have noted a decline in misinformation being shared on Facebook since the 2016 election, stating that Facebook may have already improved its platform's abilities to deal with misinformation (Allcott, Gentzkow, & Yu, 2018). However, when we contrast Facebook's tentative progress in minimizing misinformation with their most privacy scandal (Anderson, 2018), it is unclear whether we can trust social media platforms with our personal data, even if they are making some progress in slowing the spread of misinformation on their platforms.

In a study on how news is shared on the Internet, researchers found that,

false news was more novel than true news, which suggests that people were more likely to share novel information. Whereas false stories inspired fear, disgust, and surprise in replies, true stories inspired anticipation, sadness, joy, and trust. Contrary to conventional wisdom, robots accelerated the spread of true and false news at the same rate, implying that false news spreads more than the truth because humans, not robots, are more likely to spread it. (Vosoughi, Roy, Aral, 2018)

The prefrontal cortex, the area of the brain that is responsible for decision-making, has a novelty bias and is stimulated by incoming novelties. This may explain why humans are inclined to spread false

information at a faster rate, since it is likely that the false information has been created in a way that enhances its classification as "novel." The finding that people are spreading false information at a faster rate than bots further demonstrates that the spread of false information is a social issue and not necessarily one that technologists can solve on their own.

In 2017, the Pew Research Center and Elon University's Imagining the Internet Center conducted a survey regarding academics and other thought leaders' reactions to fake news. In general, the views were evenly split: some felt that technology could improve this challenge, while others felt that technology would only worsen it. There was a consensus, however, that the spread of misinformation was a social issue. Many commented on the proliferation of information as contributing to the spread of misinformation. David Harries, Associate Executive Director of Foresight Canada said,

more and more, history is being written, rewritten and corrected, because more and more people have the ways and means to do so. Therefore, there is ever more information that competes for attention, for credibility and for influence. The competition will complicate and intensify the search for veracity. Of course, many are less interested in veracity than in winning the competition (Anderson & Rainie, 2017).

As Harries notes, above, while there is an abundance of information, the motives of those sharing the information need to be investigated. News may not always be shared to enlighten but instead may aim to diffuse or deflect political situations or critiques. As Harries says,

The spread of True and False News Online, although, at one time, it may have been appropriate to think of fake news as referring to the veracity of a news story, we now believe that this phrase has been irredeemably polarized in our current political and media climate. As politicians have implemented a political strategy of labeling news sources that do not support their positions as unreliable or fake news, whereas sources that support their positions are labeled reliable or not fake, the term has lost all connection to the actual veracity of the information presented, rendering it meaningless for use in academic classification (Vosoughi, Roy, Aral, 2018).

In sharing novel – but not necessarily accurate – news and in discrediting or ignoring news that contradicts our personal beliefs, we do ourselves and our society a disservice. When novel but fake news stories do battle with true ones for our very limited attention, information overload may 'kick in' and inhibit our ability to find, process, and share what is true. By tackling information overload in both our personal and professional lives, we create conditions in which individuals and societies are more likely to succeed at separating fact from fiction and escaping the negative effects of fake news.

SOLUTIONS AND RECOMMENDATIONS

What Can Be Done to Improve the Effects of Information Overload?

Being able to obtain information from around the world at ever-increasing speeds can be a strength of our society. It can also enable individuals and communities to develop in productive ways that were not previously possible. However, as a society, we have to learn to harness our information overload so that we can leverage it, rather than being overwhelmed and overloaded. This does not mean finding ways to

avoid information overload or ignoring information altogether, because those strategies can have adverse effects on organizations and limit collaboration and teamwork (Oldroyd & Morris, 2012). Minimizing information overload is a complex problem that cannot be easily solved, as demonstrated in this chapter – people have been struggling with information overload for centuries. However, there are two strategies that can help individuals and organizations manage information overload. The first one is to share information responsibly, ensure information is accurate, succinct, and relevant, and refuse to pass on inaccurate information. Sharing responsibly can be achieved in different ways. A simple and effective starting point is to verify that the source of the information is credible and up-to-date. The second strategy is to put in place practices or tools to help manage and organize information. Just as indexes were invented to help readers navigate books to find what they were looking for, organizations can leverage knowledge management best practices to make their organizational content discoverable and usable. In developing best practices on what content to create, share, organize, and consume, organizations can enable their employees to productively leverage collaboration tools, make effective decisions, and, ultimately, achieve a more positive work life. These habits may be adaptable for students, governments, and individuals' personal lives as well. When we have a society that can properly discern accurate and quality information, we will be able to move towards a more truthful world.

While it is clear that information overload negatively affects society, individuals play an important part in our ability to harness or manage this information. As Kalev Leetaru writes,

beneath the spread of all "fake news," misinformation, disinformation, digital falsehoods and foreign influence lies society's failure to teach its citizenry information literacy: how to think critically about the deluge of information that confronts them in our modern digital age (Leetaru, 2019)

Leetaru describes the dearth of information literacy programs in schools and states that Silicon Valley has instead tried to use technology to fix this problem. He says, "the old adage 'Don't believe everything you read on the Internet' has become 'Believe everything on the Web and share it widely'" (2019). As it becomes easier and easier to create and share information, investing in an educated populace and audience ready to apply their own critical thinking skills to determine fact from fiction becomes crucial. Further, given prior research suggesting that novel if inaccurate news spreads faster than "true" news, the need for critical thinking and judicious knowledge sharing becomes even more apparent. Authors Rikke Duus and Mike Cooray agree that technology is not the answer for combating information overload Instead, they insist that "in a complex world with abundant choice, we need good intuitions and smart shortcuts to make decisions" (2015) rather than machines. They state that relying on machines for decision-making will cause us to lose faith in our own instincts, which are based on context, experience, and conversations. In *This is Book is Overdue,* author Marilyn Johnson argues that the cure to information overload, or information sickness, is librarians. She includes countless examples of how librarians are the stewards of the information world, stewards who can provide instruction, advice, and counsel on how to navigate information in an increasingly complex world (2011). Librarians often teach digital and information literacy, research methodologies, and other methods for searching, discovering, and using quality information. As the proliferation of content continues, and as it becomes more difficult to discern fact from fiction, it will indeed be helpful and necessary for society to value these stewards of the information world. Moreover, even simple best practices, such as ensuring that a news source is credible before believing its stories, can make a big impact.

Librarians have long known the value of organizing information and leveraging information organization structures to deal with large bodies of information. However, these best practices can be adapted for smaller bodies of content as well. The historians reviewing Linnaeus's method of collecting data and using index cards noted that "in this 21st-century digital world, with its overabundance of information, managers and creators of big data may find their inspiration in the most analog of collections" (Everts, 2016). They found, in a review of natural history museum collections, that the collectors had preserved attributes about each item in the collection, which allowed large volumes of data to be stored and made this data more easily searchable. The greater the metadata that was collected, the more easily collectors and users could navigate the collection. Metadata can be leveraged in all manner of collections, from individuals' personal photograph collections to museums with large collections of natural history artifacts. In individuals' personal lives, Levitin also notes that organizing items or information into categories enables us to remember things and to sort through them more easily (Levitin, 2014, p. 67). As previously noted, individuals now have access to more information and more choices than ever before. By employing personal methods of organizing our information, we have a greater chance of being able to sort through it and leverage its value, without being overwhelmed and falling prey to misinformation or degraded cognitive abilities.

Another benefit of living within a society that is thoroughly connected through technology and that is capable of organizing large quantities of information is the ability to "crowdsource." Crowdsourcing allows us to collect and organize large volumes of data with the help of volunteers. Amber Alerts, in which a notification is sent to cell phones with an alert regarding a missing child, are an example of crowdsourcing. A notice is pushed to a large number of people asking for help in the recovery of the missing child. This increases the ability of law enforcement agencies to sort through the vast amount of data they have access to so they can find the missing child (Levitin, 2014, p. 116). As Levitin says, "crowdsourcing is 'true enough' most of the time and more cost effective than highly paid experts. The larger the network, the more true" the information is (Levitin, 2014, p. 120). When targeted, the benefits of crowdsourcing are huge. When mismanaged or unsupervised, however, networks can erode, taking truth with them. Crowdsourcing can be leveraged for a variety of different informational needs, by both individuals and organizations.

For organizations, a meaningful way to harness their information overload is quite simply considering and critiquing how they are organized in the first place.

As Adam Smith wrote in The Wealth of Nations in 1776, one of the greatest advances in work productivity was the division of labor. Dividing up tasks in any large human enterprise has proved extremely influential and useful (Levitin, 2014, p. 269).

Organizational hierarchies impact how information and decision-making occur within an organization. When these factors can be optimized, and, especially, when coupled with proper knowledge management systems, productivity can be increased. In APQC's book *The New Edge in Knowledge*, authors Carla O'Dell and Cindy Hubert describe how organizations can benefit from knowledge management. They describe how Best Buy, a company that sells consumer electronics, achieved success due to their ability "to share what they know and act on it" (p. 1). Best Buy leveraged knowledge management programs to ensure their representatives were informed about their products. This knowledge, in turn, became Best Buy's competitive advantage.

APQC defines knowledge management as a systematic effort to enable information and knowledge to grow, flow, and create value. The discipline is about creating and managing the processes to get the right knowledge to the right people at the right time and help people share and act on information in order to improve organizational performance (O'Dell & Hubert, 2011,p. 2).

This is a proven method for organizations to combat information overload and ensure their workforce can be productive, creative, and capable of good decision-making despite the influx of content in today's world. O'Dell and Hubert recommend that knowledge management programs should

[connect] employees to one another to help them excel at their jobs; connect employees to knowledge assets (just enough, just in time, and just for them); [and] connect those with experience or know-how with those who need it (O'Dell & Hubert, 2011,p. 2).

It is important to note that these knowledge management recommendations include connecting employees, not just to content, but also to each other so that they can collaborate and create new knowledge which improves the organization. When an organization can leverage the knowledge that it has, and when it can continue to learn constantly and generate new knowledge, the organization becomes a learning organization. Being a learning organization can help the organization adapt quickly to change, improve its rate of innovation, and ultimately thrive.

Despite technological and social advantages facilitating information creation and consumption, human cognitive load and capacity have not evolved at the same rapid or in the same exponential fashion. While organizing information and making it discoverable can facilitate information use, they do nothing to improve the problem of constant notifications and disruptions. As discussed above, these disruptions come with a cost to cognitive processing, productivity, and creativity. A simple way for organizations to assist employees in combatting information overload is to provide times when it is culturally acceptable to ignore incoming calls, emails, and notifications by setting aside disruption-free time (Levitin, 2015). Many authors state that while email filters and other controls can help with information overload, it is best if organizations establish cultural norms for how the organization will create and consume information, with the aim of reducing the sharing of unnecessary or counterproductive information. Leveraging disruption-free times for thinking and reflecting can be useful at work as well as at home, especially when reviewing information relevant to important decisions, such as an insurance provider to sign a contract with, or which candidate to vote for in an election.

David Brooks, a journalist with the New York Times, is quoted as saying,

I had thought that the magic of the information age was that it allowed us to know more… but then I realized the magic of the information age is that it allows us to know less. It provides us with external cognitive servants - silicon memory systems, collaborative online filters, consumer preference algorithms and networked knowledge. We can burden these servants and liberate ourselves (Carr, 2011, p. 180).

There is definitely a need for external methods for people to store the information they may need, and this need is being recognized by technologists and investors. Blinkist (blinkist.com) is an app that provides book summaries written by editors with input from authors. The app summarizes non-fiction books. It has been advertised as helpful for people who "don't have time to read" and who may instead benefit from summaries of books which they can read in fifteen minutes. In 2018, this German com-

pany raised 18.8M dollars (Lunden, 2018). This level of investment suggests that investors are seeing the value in a tool that enables individuals to combat information overload. It is interesting to note that these summaries are an example of knowledge being reproduced, which, admittedly, runs the risk of creating inaccurate information. However, the company states that they work in tandem with authors and editors alike. Perhaps this is an example of how a network of people can be leveraged appropriately to combat information overload without the negative effects of crowdsourcing. It is too early to tell, but if we combine our ability to create information with our ability to leverage our networks and organize the information we have available to us, perhaps we will be able to see the signal through the noise and harness the power of information overload so that this information becomes usable, accurate, and discoverable.

FUTURE RESEARCH DIRECTIONS

While there has been research on the spread of misinformation and fake news online, as well as research on disruptions, multitasking, cognitive load, and choice fatigue, it would be interesting to combine these two areas and study the role that information overload plays in spreading fakes news. Research exploring the impact an overabundance of information has on people's ability to discern the truth and then make decisions could provide important guidance on healthy habits for consuming news. Such research could, in turn, supplement and contribute to sound digital and information literacy practices.

CONCLUSION

As a society, it is unlikely that we will move backwards and cease or slow the process of scientific discovery or the pursuit of knowledge. As social beings, we will continue to seek new ways to connect with each other, and these ways may very well spur the creation of new information, leading to even greater information overload than we have ever seen before. As discussed in this chapter, information overload is not a new problem and is therefore unlikely to go away or to be completely resolved anytime soon. This abundance of information must be managed. As a society, we must pull together to make use of what should be one of our greatest strengths. As information technology has progressed from the book to the telegraph, the telephone, and the Internet (not to mention other tools along the way that were also instrumental in creating or copying information), a pattern has emerged. Each new technology spurs social concern about the amount of information on offer and how this quantity of information will impact the quality of information, as well as society as a whole. As scholars from earlier centuries suggest, good note-taking and personal organization are still great ways to harness information overload and leverage our information for our benefit, without being consumed by it. As with the invention of the index or of the peer-reviewed article, many are hopeful that both scientists and technology can define, implement, and evolve practices to improve our digital literacy and ensure that more accurate information will be produced, consumed, and shared. However, as history tells us, invention, reproduction, and scientific discovery will nevertheless result in errors being transmitted. Technology alone is unlikely to resolve this issue completely. Instead, our coping mechanisms will need to evolve alongside the growing waves of information. As we continue to navigate a world of growing complexity, we must cease to be distracted travelers with our hands full who are inviting targets for pickpockets and must become, instead, savvy travelers who are aware of and protected from the dangers of the open road.

REFERENCES

Allcott, H., Gentzkow, M., & Yu, C. (2018, October). *Trends in the diffusion of misinformation on social media.* Retrieved from https://web.stanford.edu/~gentzkow/research/fake-news-trends.pdf

Amabile, T., & Kramer, S. J. (2011). *The Progress Principle*. Harvard Business Review Press.

Anderson, J., & Rainie, K. (2017). *The future of truth and misinformation online*. Retrieved from https://www.pew Internet.org/2017/10/19/the-future-of-truth-and-misinformation-online/

Anderson, M. (2018, April 6). *Facebook privacy scandal explained*. Retrieved from https://www.ctvnews.ca/sci-tech/facebook-privacy-scandal-explained-1.3874533

Blair, A. (2003). Reading strategies for coping with information overload. *Journal of the History of Ideas*, *64*, 11–28. PMID:12841169

Blair, A. (2011, March). *Information overload's 2300 year old history*. Retrieved from https://hbr.org/2011/03/information-overloads-2300-yea.html

Carr, N. (2011). *The shallows: What the Internet is doing to our brains*. Norton & Company.

Duus, R., & Cooray, M. (2015). *Information overload is killing our ability to make decisions.* Retrieved from https://www.businessinsider.com/information-overload-is-killing-our-ability-to-make-decisions-2015-7

Everts, S. (2016). *Information Overload.* Retrieved from https://www.sciencehistory.org/distillations/magazine/information-overload

Fuller, S. (2017). Prolegomena to a deep history of "information overload.". *Journal of Information Ethics*, *26*, 81–92.

Ghosh, D., & Scott, B. (2018). *Disinformation is becoming unstoppable*. Retrieved from https://time.com/5112847/facebook-fake-news-unstoppable/

Gleick, J. (2011). *The information: A history, a theory, a flood*. Vintage Books.

Gurner, J. (2015). *Information overload is destroying our ability to relate to others*. Retrieved from https://time.com/collection-post/4110976/empathy-decline/

Hallowell, E. (2005, January). *Overloaded Circuits: Why smart people underperform*. Retrieved from https://hbr.org/2005/01/overloaded-circuits-why-smart-people-underperform

Hemp, P. (2009, September). *Death by Information Overload*. Retrieved from https://hbr.org/2009/09/death-by-information-overload

Hilbert, M., & López, P. (2011). The world's technological capacity to store, communicate, and compute information. *Science*, *332*(6025), 60–65. doi:10.1126cience.1200970 PMID:21310967

How Americans get their news. (2014, March) Retrieved from https://www.americanpressinstitute.org/publications/reports/survey-research/how-americans-get-news/

Johnson, M. (2010). *This book is overdue! How librarians and cybrarians can save us all*. Harper Collins.

Leetaru, K. (2019, July 7). *A reminder that fake news is an information literacy problem not a technology problem*. Retrieved from https://www.forbes.com/sites/kalevleetaru/2019/07/07/a-reminder-that-fake-news-is-an-information-literacy-problem-not-a-technology-problem/#70c046966a6f

Levitin, D. J. (2014). *The organized mind: Thinking straight in the age of information overload*. Canada: Penguin.

Levitin, D. J. (2015). *Why the modern world is bad for your brain*. Retrieved from https://www.theguardian.com/science/2015/jan/18/modern-world-bad-for-brain-daniel-j-levitin-organized-mind-information-overload

Lunden, I. (2018, June 20). *Blinkist raises 18.8 M for its condensed reading platform for non-fiction books*. Retrieved from https://techcrunch.com/2018/06/20/blinkist-raises-18-8m-for-its-condensed-reading-platform-for-non-fiction-books/

Lurie, N. H. (2004). Decision-making in information-rich environments: The role of information structure. *The Journal of Consumer Research*, *30*(4), 473–486. doi:10.1086/380283

Mahaffey, D. (2016, June 29). *How to improve productivity by managing information overload*. Retrieved from https://www.forbes.com/sites/forbescoachescouncil/2016/06/29/how-to-improve-productivity-by-managing-information-overload/#5855c6af7840

O'Dell, C., & Hubert, C. (2011). *The new edge in knowledge*. American Productivity & Quality Centre.

Oldroyd, J. B., & Morris, S. S. (2012). Catching falling stars: A human resource response to social capital's detrimental effect of information overload on star employees. *Academy of Management Review*, *37*(3), 396–418. doi:10.5465/amr.2010.0403

Rosenberg, D. (2003). Early modern information overload. *Journal of the History of Ideas*, *64*(1), 1–9. doi:10.1353/jhi.2003.0017

Shin, L. (2014, November 14). *10 steps to conquering information overload*. Retrieved from https://www.forbes.com/sites/laurashin/2014/11/14/10-steps-to-conquering-information-overload/#75ee192a7b08

Sparrow, B., Liu, J., & Wegner, D. M. (2011, August 5). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, *333*(6043), 776–778. doi:10.1126cience.1207745 PMID:21764755

Vaughan, M. (2014) *Know your limits, your brain can only take so much.* Retrieved from https://www.entrepreneur.com/article/230925

Vosoughi, S., Roy, D., & Aral, S. (2018, March 9). *The spread of true and false news online.* Retrieved from https://science.sciencemag.org/content/359/6380/1146

Weinberger, D. (2014). *Too big to know: Rethinking knowledge now that the facts aren't facts, experts are everywhere, and the smartest person in the room is the room*. Basic Books.

ADDITIONAL READING

Blair, A. (2011). *Too much to know: Managing scholarly information before the Modern Age*. Yale University Press.

Kahneman, D. (2013). *Thinking, fast and slow*. Anchor.

Levitin, D. J. (2014). *The organized mind: Thinking straight in the age of information overload*. Penguin.

Levitin, D. J. (2017). *Weaponized lies: How to think critically in the post-truth era*. Penguin.

McKeown, G. (2014). *Essentialism: The disciplined pursuit of less*. Crown Business.

O'Dell, C., & Hubert, C. (2011). *The new edge in knowledge*. American Productivity & Quality Centre.

Shin, L. (2014, November 14). *10 steps to conquering information overload*. Retrieved from https://www.forbes.com/sites/laurashin/2014/11/14/10-steps-to-conquering-information-overload/#75ee192a7b08

Standage, T., & Stevenson, S. (2018, November 7). Infinite scroll. *The secret history of the future.* Podcast retrieved from https://www.listennotes.com/podcasts/the-secret-history/s1e10-infinite-scroll-q62VkOM_rmj/

KEY TERMS AND DEFINITIONS

Crowdsourcing: Gathering input and information from a large number of volunteers in order to produce reference material or achieve an outcome. Examples of crowdsourcing: Wikipedia, IMDB, and Amber Alerts.

Information: Text, images, and/or sound conveyed to create meaning, a message, or facts. Examples of information: a book, an article, and a Facebook post.

Information Literacy: The ability to investigate information, locate new information, and think critically about the information source and how that might impact what information is being conveyed.

Information Overload: The experience of being inundated with an excess of information.

Information Technology: The use of electronic systems to create, store, and share information. Examples of information technology: a computer, a smartphone, and email software.

Knowledge Management: The ability to identify, store, share, and make knowledge discoverable within an organization.

Metadata: Attributes that make different pieces of data identifiable and can be used to organize the data.

Chapter 3
Ten Lessons for the Age of Disinformation

Thomas Joseph Froehlich
 https://orcid.org/0000-0002-5720-7606
Kent State University, USA

ABSTRACT

This chapter outlines the structure and content of a course devoted to developing strategies to cope with the massive assault of disinformation on American democracy. Ten lessons for the age of disinformation will provide pedagogical techniques to teach high school, college students, or adult learners how to cope with our current environment, which the author calls the "Age of Disinformation." It provides a multifaceted approach in which each facet reinforces the others. The 10 lessons are (1) characteristics of the age of disinformation; (2) the varieties of false information; (3) knowledge, opinion, and second-hand knowledge; (4) deception and self-deception; (5) psychological factors; (6) cognitive authorities; (7) social media, intellectual freedom, and libraries; (8) logical fallacies; (9) ethical principles; and (10) information, media, and digital literacies and personal, political, and professional commitments. Each lesson outlines the key ideas for each lesson and provides exercises that reinforce the key ideas of each lesson.

INTRODUCTION

It is essential to develop pedagogical techniques to teach students to preserve their understanding of truth in the Age of Disinformation. To be effective, teachers must take a multifaceted approach, each facet of which reinforces the other. A course or workbook to cope with the Age of Disinformation would involve ten different lessons: (1) characteristics of the Age of Disinformation; (2) the varieties of false information; (3) knowledge, opinion and second-hand knowledge; (4) deception and self-deception in disinformation; (5) psychological factors; (6) cognitive authorities; (7) social media, intellectual freedom and libraries; (8) logical fallacies; (9) ethical principles; and (10) information, media and digital literacies and personal, political and professional commitments. Exercises accompany each lesson.

LESSON 1: CHARACTERISTICS OF THE AGE OF DISINFORMATION

Key ideas:

- While disinformation has always been around, we are now engaged in global InfoWars, whereby true information is challenged by the varieties of ignorance and false information so that we have truly entered the Age of Disinformation.
- The Internet, self-publishing, and online trolls have dramatically increased the level, breadth, and speed of disinformation.
- The InfoWars between truthful information and disinformation are not balanced. To insist that the two sides have equivalent value falls prey to the notion of false equivalences. While there may be two sides to every story, each side is not equally supported, grounded, or deserving of being entertained.
- The side of disinformation insists on invalidating every opinion but its own.

As long as there have been human beings, there has been disinformation. The term itself is based upon a calque of a Russian word, *Dezinformatsiya,* which was supposedly invented by Joseph Stalin as a French-sounding word, after World War II, according to Ion Mihai Pacepa, a high-ranking official in Romania's secret police who defected in 1978 (Pacepa & Rychlak, 2013). It was derived from the name of a KGB (Russian Committee for State Security) black propaganda department, which disseminated a kind of propaganda that suggested that it was generated by those that it was supposed to discredit. The 1952 Great Soviet Encyclopedia called disinformation the "dissemination (in the press, on the radio, etc.) of false reports intended to mislead public opinion" (Taylor, 2019). It came into use in the 1960s and came into widespread use in the 1980s (Taylor, 2019). Its characterization has not changed much from the Soviet one, although it may have broadened its reach. Disinformation is false information with the intent to deceive, whether personally, socially, or politically. What has changed is its pervasiveness, speed, and the extent and variety of communication channels available to spread it. The Age of Disinformation has at least two dimensions: (1) the perpetuation of disinformation as a political strategy through all forms of media; and (2) the attack on reliable information, based on facts, reason, and evidence, intensified by the political structure which asserts if the current political establishment does not agree with it, it is, therefore "fake news." The disinformed are not merely disinformed; they often assert that only *their* "information" is true and contrary views must be rejected.

The Age of Disinformation is, to some degree, the Age of the Anti-Enlightenment. The Enlightenment advanced the notion that knowledge is gained systematically and through careful observation of the environment. It promoted ideals of individual liberty, constitutional government, separation of church and state, and religious tolerance. Now anti-science agendas, such as those that deny the value of vaccinations or the reality of climate change, and anti-humanitarian propaganda, such as the criminality of all immigrants, transmit disinformation through cable broadcasting and social media. Individual liberty produced such agendas so that one can say that the Enlightenment has not been an unmitigated good. For example, the notion of a universal reason that applies equally to all men, women and cultures and the radicalization of individual liberty are problematic. Sr. Joan Chittister, a Benedictine nun, describes the Enlightenment as increasingly favoring radical individualism and denigrating the common good (Landers, 2018). With the Internet, radical theories have been embraced and amplified, seducing and aggregating

vulnerable individuals as a force against the common good. However, it is a travesty to discard reason in favor of a pseudo-rationality or tribal beliefs. Evidence and facts matter.

A case in point: while many vaccine deniers are sincerely concerned about the welfare of their children and about the supposed risks of vaccination, they fail to provide any scientific evidence for their views, except for a long-discredited and retracted article or colloquial evidence spread by those misinformed or disinformed about the scientific evidence. Sometimes such "evidence" is pushed by Russian trolls intent on sowing discord in American democracy. One of the concerns of anti-vaxxers is the inception of autism in their child as the result of vaccination, but symptoms of autism appear before any vaccinations occur (Vaccines Myths Debunked, 2019). What is new in the Age of Disinformation is that anyone who believes anything can find support for it, no matter how ignorant, wrong, or true, whether it is a conspiracy theory, the flat-earth society, white supremacy, or aliens visiting earth. Google indifferently supplies both information and disinformation.

There is a war at hand, a war of information versus forms of false information. While Alex Jones peddles disinformation of the vilest sort, the title of his program, InfoWars, correctly indicates a global problem. The war of false information against real information is not only for the health of America's democracy but also is a threat to all democracies throughout the world. The author calls it a World War because it is quite global; throughout the world, the Internet is inflaming discord in many democracies, elevating autocrats and fascists. The New York Times has reported that researchers at Oxford University discovered at least 70 countries that had disinformation campaigns (Alba & Santariano, 2019). Its insult to freedom lies not only in what is spread on the Internet but also what it suppresses and challenges. In countries around the world, there is a battle to continue to anchor political decision making in science, reason, evidence, fact, democratic values, and humanism. The Age of Disinformation is one in which misinformation, lies, and obfuscation does war against the evidence and truth, and power and greed seek simplistic solutions to complex problems. While the war is predominately on the political front, it occurs in other areas. There was in 2019 an attempt to seek a referendum of Ohio House Bill 6, which passed by a slim margin and which, according to its detractors, bailed out utility companies that were bankrupt and poorly run, maintained nuclear power plants, and gutted the clean energy industry. The advertisements supporting retaining HB 6 alleged that the Chinese were coming to take Ohioans' jobs and take over Ohio's power grid, allegations that had no basis in reality. It touted the meme, "decline to sign," which was so effective the when the public was asked to sign a petition for the referendum, many who might be inclined to support the referendum would not even bother to find out what the petition was about (Bischoff, 2019).

The notion of false equivalences asserts that for any issue, there are two equally valid opinions. But in the Age of Disinformation, this no longer holds. The sides in the war are not balanced, for the one side not only spreads disinformation but actively challenges, abuses, and attacks those who are committed to truth, evidence, facts, and logic. Climate change denial is a case in point. It suggests that those who believe in the vast scientific consensus have no valid grounds for their beliefs. In a supreme example of false equivalences, all opinions are equal, but the one opinion outweighs and trumps all others. Not all opinions are equally informed or justified. Some opinions are formed from false information, and such opinions do not have the same standing as ones that are well-formed: that is, ones based on rational arguments, evidence, and logic. To insist that they are equivalent is a mistake in reasoning. We may note that the evidence for the opinions of the right or extreme right is often found lacking. Yochai Benkler, Robert Faris, and Hal Roberts, in their book *Network Propaganda: Manipulation, Disinformation, and Radicalization in American Politics* (2018), argue that false stories are launched on a series of extreme

Web sites, such as InfoWars, "none of which claim to follow the norms or processes of professional journalistic objectivity" (Benkler, Faris, & Roberts, 2018, p. 14). These stories unfortunately often find their way to such venues as Fox News that do not take the time to verify them.

Exercise suggestions will call on participants to consider the following questions:

1. How do you describe your political viewpoint, if any? Conservative or liberal? If one of these, find information on one of your pet peeves on the side with which you do not agree and decide whether your pet peeve is justified or whether your understanding is limited. If you believe that you are apolitical or not engaged in politics, explore the soundness of any pet peeve you may have on any subject matter.
2. On what media do you rely? What bias does it represent? To what extent is the bias known?
3. How do you respond to the claim that you cannot remain neutral in the InfoWars? Doing nothing is the same as supporting the destruction of American constitutional democracy and, ultimately, the destruction of habitability on the planet.
4. Describe six characteristics of fake news or disinformation. Supply examples that exemplify one or more of those characteristics, explaining why.

LESSON 2: THE VARIETIES OF FALSE INFORMATION

Key ideas:

1. There are a variety of forms of false information and ignorance on the Internet, and we must distinguish among them: lies per se, ignorance per se, misinformation, paltering, disinformation, and missing information, with particular focus on two forms of information deceit, doxing and fake news.
2. The key characteristic of disinformation is the intent to deceive, whether in doxing, fake news, or other instances of disinformation.

There are a variety of forms of ignorance or false information available in various media, particularly on the Internet:

- Lies per se: While in earlier ages, we might expect lies to gain no traction (with some exceptions, e.g., Bill Clinton's "I did not have sex with that woman"), one of Trump's achievements is to make the lie a hallmark of his leadership style. Some of his supporters and supporting media may be convinced about or are indifferent to those lies because they believe that he represents some of their core grievances. According to those counting the number of lies he has uttered, it surpassed 10,000 in his first couple of years in office (Kessler, Rizzo, & Kelly, 2019).
- Ignorance per se: Lacking knowledge or awareness, being uninformed about a specific subject or fact. Unfortunately, Donald Trump provides another strong example: his lack of knowledge of the Constitution and how it forms the nature of our democracy, how government works, the separation of powers, or the role of the First Amendment seems to elude his understanding. Unfortunately, there appear to be many areas of ignorance among the American populace: civics, American history, world affairs and leaders, and geography. While the research is dated but still relevant,

Andrew Romano in "How Ignorant are Americans?" explains areas of ignorance of Americans and why it is the case (Romano, 2011).

- Disinformation: Supplying misinformation or lies with the ***deliberate aim to mislead***. The pro-moters of such untruths can include foreign governments, government agencies, corporations, or political parties, movements, or candidates. Fallis (2014) distinguishes lies from "true disinfor-mation." When President Bill Clinton asserted that "he did not have sex with" Monica Lewinsky, he was arguably not lying, as they had not had sexual intercourse, but he was unquestionably misleading. True disinformation is related to paltering and doxing because accurate information is supplied, but it is not the complete story.

- Misinformation: Providing information that is incorrect or inaccurate. The difference between misinformation and disinformation is that the former does not have the intent to deceive. Misinformation may be just a mistake, such as getting the time of a movie wrong, or a false ru-mor, such as frequently appears on Facebook: It was claimed that an 11-year old girl was raped by a group of Muslim Refugees in Germany (Fisher & Taub, 2019, February 12). There was no basis for this rumor or, in an extension of that rumor, that the police were involved in a cover-up.

- Missing Information: Omitted information that makes it impossible to understand facts and make decisions. Its absence may be due to negligence, incompetence, or the desire to mislead; if it comes from a desire to mislead, it is disinformation. For example, after many mass shootings, the National Rifle Association and its supporters spread a meme stating that in Switzerland, one person in two has guns and it has the lowest crime rate in the world. They fail to mention that Switzerland has a mandatory military service for all able-bodied persons (e.g., men and women), that training in gun use is mandatory for all gun owners, and that it has a strong culture of gun responsibility and safety that is anchored in society and passed from generation to generation (Brueck, 2018).

- Paltering: An attempt to mislead by telling the truth, but not the whole truth. If your mother asks you whether you have finished your yard work and you reply that you were working on mowing the grass, this may be accurate, but if you were also supposed to weed the garden, you are palter-ing. Paltering is related to missing or omitted information, but it is a common ploy of politicians so that it deserves its own category. When Trump asserted that there had been zero admission of guilt in a 1973 federal lawsuit that charged his family's firm with housing discrimination, he was telling the literal truth, but he did so in order to falsely suggest that there was no legal recognition that Trump Corporation had committed housing discrimination, despite the fact that the conclu-sion of the suit included stipulations to desegregate Trump properties (McGregor, 2016).

- Doxing: searching for and publishing private or identifying information about an individual or group on the Internet, typically with malicious intent, such as shaming, extortion, coercion, or harassment. The publication is against their will, and often deliberately distorts the meaning of that private information. As a particular form of disinformation, doxing is related to "true dis-information" (Fallis, 2014). The term comes from a variation in the spelling of the abbreviation "docs" (for "documents") and according to Wikipedia, refers to "compiling and releasing a dossier of personal information on someone" (Doxing, 2019). For example, during the presidential elec-tion, Russian hackers targeted Democratic candidates and the Democratic National Committee headquarters by doxing those candidates and the Party. Hilary Clinton may have already had weaknesses as a candidate, but they were compounded by recurrent issues with her private email server and the statements by former FBI director James Comey. However, most Clinton supporters

and the intelligence communities believed that the Russian assault of doxing and disinformation campaigns played a fundamental role in her electoral defeat.

Another example of doxing is a 2014 GamerGate controversy, in which a woman, Zoe Quinn, was harassed over a text-based game that she developed, called *Depression Quest*, based on her experiences with depression. Other gamers thought that the game was a disincentive to the profession and decided to seek retaliation by posting her name, address, phone number, and other personal details, such as an ex-boyfriend's claims about her affairs with five other men. The last detail then developed into a conspiracy theory, maligning her reputation. It became such an extreme threat that she had to leave her home (Hathaway, 2014).

- Fake news: another common form of disinformation, a type of "yellow journalism" (news stories with catchy headlines but with little or no factual basis) that consists of deliberate disinformation, hoaxes or fraudulent stories, spread in traditional media, cable news, or online social media. A national poll characterized the meaning of fake news for most Americans: "Just 25% say the term 'fake news' applies only to stories where the facts are wrong. Most Americans (65%), on the other hand, say that 'fake news' also applies to how news outlets make editorial decisions about what they choose to report" (National: 'fake news' threat to media; editorial decisions, outside actors at fault, 2018). This lesson takes the majority position. Fake news may differ from ordinary disinformation, in that its purveyors posit a narrative, such as a conspiracy theory or a meme, which Richard Dawkins originally defined in his book *The Selfish Gene* (1976) as "a unit of cultural transmission" (Chapter 11). A meme is a concept or behavior that spreads quickly from person to person that includes beliefs, fashions, stories, and phrases. Fake news is published with the intent to distort or "mislead in order to damage an agency, entity, or person, and/or gain financially or politically" (Fake news, 2019). A recent fake news story or meme claims that refugees in the United States get three times more money in federal government assistance than Social Security beneficiaries (Debunking false stories archives, 2019). Such claims are false.

This taxonomy of the varieties of false information may not be complete, but it covers most cases available in current media.

Exercise suggestions will call on participants to consider the following question:

1. Of the eight varieties of false information given above, can you find different, specific examples of 6 of them? In each case, provide the example, provide its source (e.g., its URL), and why it illustrates the specific category well. Be aware that many examples may illustrate more than one category, in which case discuss how a particular instance manifests different forms of false information or ignorance.

LESSON 3: KNOWLEDGE, OPINION, AND SECOND-HAND KNOWLEDGE

Key ideas:

1. We must distinguish between opinion and knowledge, between what we can know for sure (or to do the research or to get the education or to have the experience to have such knowledge) and opinions that may or may not be convertible into knowledge.
2. Because we do not and cannot have knowledge about everything, we often rely on second-hand knowledge that we acquire from others to help us navigate through life, possibly originating in advice from parents about what sources to use to solve a problem.
3. This second-hand knowledge is derived from cognitive authorities. This "knowledge" really exists as opinion in consumer's minds with varying degrees of certainty based on the degree to which they trust and believe their cognitive authorities. This knowledge as a source grows as the result of this second-hand knowledge is confirmed as trustworthy. It converts from pure opinion to some assurance about the opinion.
4. Persons, news institutions, or social media can act as cognitive authorities, whether genuine or false.
5. These authorities can be genuine or false, the paradox being that one can have high certainty about their cognitive authorities and yet it may be misplaced.
6. These opinions (to us as we hear or see them, though not to the cognitive authority) can be true, false, or a matter of taste: true, if one can do or does the research to verify it; false, if after research, it cannot be established as true; or a matter of taste, if based on one's tastes or preferences, being neither true or false.
7. Consumers of information sources may tend to assume that their opinions are knowledge when they are at best second-hand knowledge or at worst false opinion(s).

We need to consider the distinction between knowledge and opinion. While Plato and some of his commentators did not find his definition of knowledge to be entirely satisfactory, it is a good start. Plato characterized knowledge as "justified true belief" (*Theaetetus,* 201 c-d), i.e., one can supply a rationale for what one knows, based on reason and evidence or facts. Wikipedia offers a relatively straightforward approach:

Knowledge is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning"(Wikipedia, Knowledge, 2019).

It is a cognitive state by which we understand something as the result of our experience, education, research, or cognitive processing. There is overwhelming knowledge in books, such as scientific knowledge, but this knowledge is latent to us until we each do the work of converting and processing the signs, symbols, and meaning of the texts and acquiring the appropriate experiences into knowledge. Knowledge has a quality of certitude, perhaps not immediately, but after a deliberative process.

While contrary to conventional notions about opinion, the author is expanding on the notion of opinion by arguing that opinions come in three general types: (1) true opinions; (2) opinions that are preferences, being neither true or false; and (3) false opinions. The author argues for these distinctions because when one hears various kinds of information from, for example, one's preferred news sources, what is the cognitive status of this information? The kinds of information that one hears or reads do not exist as knowledge in most news consumers, save for those who have amassed a certain level of knowledge on a particular matter. There are exceptions as to when such information is simply received as confirmation bias

and there are occasions where one feels warranted to accept second-hand knowledge without needing to establish its actual truth. When information is received from an information source, it is opinion or what can be called second-hand knowledge (see below). "True opinion" is opinion that could be turned into knowledge through experience, education or research, such as seeking evidence from reliable sources. If one did not know that the hypotenuse of a right triangle is the square root of the sum of its sides squared, one could take a course in geometry to learn it. If one believes that Pizzagate is a fake news story, one can do the research using reliable sources for confirming that assessment. If I think that Adele is a better singer than Lady Gaga, that may be true for one person and not another. Matters of taste, for which one can make arguments, are never true per se. They are matters of opinion that will vary among individuals or groups, even though one can advance arguments for why one would prefer one over the other. There are "false opinions," e.g., climate change denial, which cannot be converted into truth. Thus the author wants to distinguish among opinions that can be true, false, or a matter of taste: true, if one does or can do the research to verify it or has the experience or education; false, if after research, it cannot be established as true; or as a matter of preference; a matter of taste, if based on one's preferences. For example, at a July 2019 re-election rally, Trump made the following claims: that there was not an empty seat at this event or other Trump events; that Ilhan Omar praised al Qaeda and terrorism; that patients with preexisting conditions were protected more by Republicans than Democrats; that Hispanics have low employment because they want a strong border wall; that in the Ninth Congressional District, the liberal Dan McCready wants to take away Americans' guns, wants to raise taxes, and likes socialism and open borders (Dale & Subramaniam, 2019). These are false opinions, despite his supporters' embrace of or indifference to them (for example, many of Trump's supporters do not care if he utters lies), and yet they are touted as knowledge and often received or believed as knowledge. A somewhat confusing scenario needs to be sorted out: consumers receive information that pretends to be knowledge and that may be received as knowledge by the consumer, based on their belief in a cognitive authority (such as a political leader). However, what is, at best, in the consumer's mind, second-hand knowledge may in actuality be opinion and even false opinion. Depending on the context, it could be true opinion as well, but it only becomes converted into knowledge based on education, experience or research. In settings like political rallies or cable news programs, the information provided is often a conflation of all three types. The point is that we have to sort out what cognitive states someone claims to have from what they actually are, despite the certainty with which believers hold them.

Interestingly, Plato also proposed a category of "imagining," (*Republic*, 510a) a cognitive state inferior to the category of opinion (or in my extrapolation, false opinion). This cognitive state involves taking on a distorted perception of the sensible world. Conspiracy theorists often have such distorted perceptions: e.g., QAnon theorists assert such beliefs that John Fitzgerald Kennedy, Jr. is alive and well and working with Trump (Dickson, 2019). False opinions are false perceptions of the world (e.g., that Trump's rallies are always full or overcrowded) whereas false imaginings build on constructed frameworks that have no corollary in experience, e.g., that there are bodies of aliens that the government has secured from Roswell, NM and hidden from the public. Such conspiracies theories, whether from the right or the left, are so pervasive and so commonly entertained that we might think of adding another category to the taxonomy of false information in lesson 2, "imagined realities." These are fanciful interpretations of real or fictional events, deemed to be true, just as the prisoners in Plato's *Republic*, who are chained from birth in a cave where they can only see images of objects parading before them, believe that their experience is the only reality (*Republic*, 514a–520a).

Patrick Wilson explores the construction of knowledge in *Second-Hand Knowledge: An Inquiry into Cognitive Authority* (1983). He argues that we can construct knowledge in one of two ways: (1) based on our experience; and (2) from or through others. Since our experience is limited, we must rely at times on second-hand knowledge, something that we do not know for sure but take at the word of others. These others may exist on a spectrum from very knowledgeable to outright liars. Cognitive authority is a phrase that Wilson coined to explain our understanding of others as being authorities. Cognitive authorities must have both credibility and trustworthiness. The second-hand knowledge that one gets from them really exists as opinion in consumer's minds with varying degrees of certainty based on the degree to which they trust and believe their cognitive authorities. This knowledge as a source grows as the result of this second-hand knowledge is confirmed as trustworthy. It converts from pure opinion to some assurance about the opinion. We will explore how cognitive authority occurs both for real news and fake news, and how second-hand knowledge can be confused or embraced as first-hand knowledge or, more correctly, unwarranted or false opinion.

We need cognitive authorities. If we had to prove everything that we know, we would be paralyzed from making any progress in our lives. It seems probable that Trump's followers see Trump himself and Fox News and other ultra-right figures and associations as cognitive authorities. Similarly, liberals may embrace MSNBC and *The Washington Post* as their cognitive authorities. Are these cognitive authorities genuine? Do they have the properties and characteristics that we associate with real cognitive authorities? Or are they something that we might call pseudo-cognitive authorities or false cognitive authorities? If so, how do we distinguish among these cognitive authorities? This issue will be explored further in Lesson 6.

Exercise suggestions will call on participants to consider the following questions:

1. In your experience, what do you count as genuine knowledge?
2. Can you think of any opinions that you have that could be turned into knowledge? How? For example, if you believe that Pizzagate is a fake news story, you can do the research using reliable sources to show this is a case of fake news. Consider some other fake news stories or memes,
3. Can you think of false opinions that you held and may remember? How did you go about determining that they were false and not a matter of opinion or preference?
4. Name some of your personal authorities. On which subjects do you trust each of them? How do you justify your trust in them? Were they always reliable?
5. Who or what are your cognitive authorities in media (e.g., newspapers, television or cable channel, or social media site)? Do they exhibit a bias? Do you think that you use them to bolster your view (as confirmation bias)?
6. Who or what are examples of false cognitive authorities? On what grounds can you assert that they are false?

LESSON 4: DECEPTION AND SELF-DECEPTION

Key ideas:

1. Self-deception may be a way in which we can embrace any of the forms of ignorance or false information.

2. Self-deception is a way in which we can maintain our beliefs while ignoring or avoiding contravening evidence. Von Hippel and Robert Trivers describe five varieties of self-deception: (a) biased information search; (b) biased interpretation; (c) misremembering; (d) rationalization; and (e) convincing oneself that a lie is true.

3. Self-deception is a socializing and socialized strategy. We convince ourselves of our false beliefs as we convince others, and vice versa. This reciprocity is social self-deception.

4. There are two cases each of social self-deception each of which has two aspects, positive and negative: (a) situating (i) positive – by seeking like-minded people and (ii) negative – by avoiding people who disagree; and (b) persuasive (i) positive -- by trying to convince people to become like-minded or (ii) negative – by withholding information that would deter a person from becoming like-minded.

5. Collective self-deception elevates social self-deception into group behavior.

The difference between disinformation and other forms of false information or ignorance is the intent to deceive. However, deception often involves self-deception. Sartre set self-deception, which he also called bad faith, as a key to understanding how people live inauthentically: holding or living a contradiction at one and the same time or believing what you do not believe, such as believing that your vote does not matter, while recognizing the slim margin by which Trump won the electoral college. In bad faith, people may deceive themselves into thinking that they do not have the freedom to make choices for fear of the potential consequences, i.e., that they would have to be responsible for themselves. We might file forms of "willful ignorance" under this category, knowing something but consciously or unconsciously ignoring it, e.g., choosing to believe that the Confederate flag or statues of Confederate leaders are not symbols of racism.

Self-deception is an important way in which we embrace false information, whether misinformation, disinformation, missing information, incomplete information, or even true information used in paltering, though it seems rampant in disinformation. There are two types: motivated and unmotivated. In motivated self-deception, we push a form of self-deception for conscious political, social, ethical or personal gain (e.g., proposing that all Muslims believe in Sharia Law and support jihad). Stephen Colbert's notion of "truthiness" is probably the best contemporary expression of motivated self-deception. Wikipedia described it as a "belief or assertion that a particular statement is true based on the intuition or perceptions of some individual or individuals, without regard to evidence, logic, intellectual examination, or actual facts" (Truthiness, 2019). We practice truthiness when we adhere to some belief that we want to be true despite clear evidence to the contrary. Truthiness is common among Trump supporters who cannot find any fault in or ignore Trump's lies or behavior. But it can be found in liberals who want to believe that all corporations are corrupt and have no interest in consumers or consumer behavior, except as profit margins. Unmotivated self-deception involves succumbing to one's biases, motivated to the degree that it accords with one's a priori bias; in other words, we seek information that confirms our a priori beliefs, which is precisely known as confirmation bias. Many people are inclined to information avoidance as one technique of confirmation bias, that is, avoid any information or sources that contradict what one wants to believe, e.g., that Trump is a great leader or that MSNBC is a flawless critic of the Trump administration.

Von Hippel and Trivers (2011) describe five varieties of self-deception: They are (1) biased information search, (2) biased interpretation, (3) misremembering, (4) rationalization, and (5) convincing oneself that a lie is true. With respect to the first variety, the information seeker avoids information by

limiting his/her exposure, holding onto a partial truth, rather than confronting the whole truth. When Trump supporters hear a negative report about Trump, such as that he paid money to women with whom he had affairs before the election, they restrict their listening to Fox News or to blogs, social media, or friends who support the same views.

Biased interpretation occurs when attitudes stay the same in the face of new, contradictory facts. Von Hippel and Trivers (2011) cite the case of two groups of people with strong, differing attitudes toward capital punishment. They were each presented with some evidence that suggested capital punishment was a deterrent of crime and with evidence that it was not. Both groups remained polarized in their opinion (p. 9). There are many such issues for Trump supporters and Trump critics: the success of the talks with North Korea about denuclearization; the renegotiated free trade agreement (USMCA – formerly NAFTA) with Mexico and Canada; the success of his tariffs on foreign-made products, such as steel and aluminum; and the benefits of the new tax law. Each set of persons focus on the evidence that backs their original opinion.

The third self-deceptive strategy Von Hippel and Trivers (2011) describe is misremembering. This can happen when one gets new information that is inconsistent with one's preferences. (p. 9). An obvious example is all the Trump supporters who voted for and appreciated the presidency of Barack Obama. Under the tutelage of Trump, his supporters and media venues, they have become despisers of him and his programs, despite his legislation that was beneficial to them, e.g., Obamacare. They want healthcare but no longer Obamacare.

Rationalization occurs, according to Von Hippel and Trivers (2011), when one

"avoid[s] telling oneself the whole truth by reconstructing or rationalizing the motives behind the original behavior to make it socially more acceptable" (p. 9).

One can imagine a Trump supporter who asserts, referring to non-white Congresswomen, that "to go back to your country" is not a racist comment. One can also imagine a liberal spouting ideological purity when a candidate does not live up to their expected behavior in a green new deal.

Finally, convincing oneself that a lie is true. Perhaps the most famous example was when Trump, at a rally on July 24, 2018, proclaimed that "Just remember: what you're seeing and what you're reading is not what's happening" (Holmes, 2018). The irony is that this is precisely what Trump supporters should be thinking about the things Trump says. But it should not be that surprising that as the title and content of a psychological study assert, "Self-deceived individuals are better at deceiving others" (Lamba & Notyananda, 2014). Trump appears to be a good example of a self-deceived individual, as he claims to be the one person who can fix monumental national and international problems. Another good example is that of Rudy Giuliani, Trump's lawyer who asserted that "truth isn't truth" (Morin & Cohen, 2018) on the television program, "Meet the Press," when explaining why Trump should not have testified before special counsel Robert Mueller for fear of perjury if he were caught in a lie.

Self-deception is not only a learned behavior but a socialized and socializing one as well. Roy Dings (2017), in a paper on "Social strategies in self-deception," claims that self-deception can be "a process that is distributed across the social context of a self-deceiver." Other people may be the means to our self-deceptive ends. That is, we may mislead other people, withhold information or straightforwardly deceive them, and all of these actions may be part of our self-deceptive endeavors. Dings defines self-deception in the following manner: as

(i) a process that originates in (ii) a motivation or intention …, which leads to (iii) a self-deceived end state (which can be the formation of a novel belief or the maintenance of an existing belief or other attitude) (Dings, 2017, p. 17).

In social self-deception, other people are a means to the self-deceptive process. Other people include, Dings writes, "in a practical and broad sense, their behavior, which includes verbal statements, facial expressions, body language but also the lack of behavior" (Dings, 2017, p. 17). While self-deception does not require others to participate, it can be stronger when someone else enables it. Dings describes two cases, each of which have two aspects positive and negative: situating (a) positive – by seeking like-minded people (e.g., going to a partisan political party rally) and (b) negative – by avoiding non-like-minded people (e.g., as a liberal changing channels from Fox News); and persuasive (a) positive -- by trying to convince people to be like-minded (e.g., entering into political arguments that support one's political views) or (b) negative – such as by withholding information that would deter a person from becoming like-minded (e.g., describing Trump as an excellent steward of the economy even though many of the policies that drove growth largely stemmed from his predecessor). The latter two seem to highlight common strategies of news organizations like Fox News: convincing Trump's supporters of the president's inflated success rate or not mentioning that white nationalists have been found guilty of racist crimes or failing to mention the evidence for Trump's impeachment. The easily accessible Internet and its many social media sites make such strategies easy to undertake: to find people who share the same disinformation, misinformation, conspiracy theories, etc., linking from one reinforcing site to another and avoiding sites that provide evidence that conflicts with one's a priori bias or political viewpoint.

Collective self-deception extends social self-deception into group behavior. Deweese-Boyd (2017) defines collective self-deception

as the holding of a false belief in the face of evidence to the contrary by a group of people as a result of shared desires, emotions, or intentions (depending upon the account of self-deception) favoring that belief (Section 7.1).

In this case, a group of individuals share levels of resentment about the status quo and share "the same belief for similar reasons and by similar means." One can imagine a group of Trump supporters who share a belief in the success of his presidency by watching the same media outlets (e.g., Fox News), which in turn are reinforced by their peers, evangelical leaders, and like-minded associates.

What distinguishes collective self-deception from solitary self-deception is its social context, namely, that it occurs within a group that shares both the attitudes bringing about the false belief and the false belief itself. Compared to solitary self-deception, self-deception in a collective or group is both easier to foster and more difficult to escape, as it is abetted by the self-deceptive efforts of others within the group that reinforce group norms (Deweese-Boyd, 2017). This is how Trump's supporters reinforce each other's collective beliefs.

Exercise suggestions will call on participants to consider the following questions:

1. Can you think of ways in which you may be deceiving yourself?
2. Can you think of ways you may be involved in behaviors or beliefs that can be described as social self-deception, either in your experience or on the web?

3. Have you ever been involved in behaviors or beliefs that can be described as collective self-deception, either in your experience or on the web?
4. Can it be argued that the white evangelical view that Trump was appointed by God in the manner of King Cyrus is a form of collective self-deception?

LESSON 5: PSYCHOLOGICAL FACTORS

There are psychological factors that predispose the uninformed, misinformed or disinformed to ignore information or to accept or perpetuate disinformation.

1. Willful or deliberate ignorance: the conscious choice not to know.
   a. There are varieties of willful ignorance, and they have both positive and negative dimensions.
   b. Willful ignorance is different from self-deception because willful ignorance is always intentional, whereas self-deception is not: the willfully ignorant can recognize that they are willfully ignorant, whereas the self-deceived are typically not fully aware that they are self-deceived. Willful ignorance (being more conscious) is, therefore, more culpable than self-deception.
2. Information avoidance is not the same as willful ignorance and may not be the same as self-deception.
   a. Information avoidance is "any behavior intended to prevent or delay the acquisition of available but potentially unwanted information" (Sweeny et al., 2010, p. 341).
   b. Reasons for information avoidance include: the information may demand a change in one's beliefs or an undesired action, or the information itself or the decision to learn information may cause unpleasant emotions or diminish pleasant emotions (p. 342).
3. There is a growing literature on the social psychology of gullibility, summarized by Forgas and Baumeister.
   a. Gullibility is "a failure of social intelligence in which a person is easily tricked or manipulated into an ill-advised course of action" (Forgas & Baumeister, 2019, p. 2).
   b. Gullibility can occur in one of two situations: "Either an individual's beliefs are manifestly inconsistent with facts and reality, or an individual's beliefs are at variance with social norms about reality" (p. 2).
   c. The psychological foundation of gullibility "appears to be the universal human capacity for trust – to accept second-hand information we receive from others as a proxy for reality" (p. 5).
   d. Forgas and Baumeister look at six psychological mechanisms of gullibility.
      i. The search for patterns and meaning: because human beings want to make sense of reality, they often find patterns and causation where there is none. (p. 8).
      ii. Acceptance bias: "the near-universal tendency for human beings to accept rather than reject information" (p. 9).
      iii. The power of heuristics: "Human beings are more prone to believe interesting, captivating stories and narratives that are salient and easy to imagine" (p. 9).
      iv. Overbelief in the self: we are prone to "self-serving biases and distortions" (p. 10).
      v. Social mechanisms of gullibility: "all symbolic knowledge is socially constructed and shared. Comparing our views and ideas with the views and ideas of others is the way all symbolic reality is constructed" (p. 10).

vi.   Epistemological failures to monitor and correct. Human beings fail to monitor and evalu-
ate incoming information correctly in terms of their logical merits (p. 11).
4.   Factors related to Trump supporters.
a.   Pettigrew (2017) outlines five factors that influence the uncritical acceptance of Trump by
his supporters:
i.   authoritarianism
ii.   social dominance orientation (SDO, i.e., they prefer to associate only with socially
dominant groups)
iii.   prejudice
iv.   low intergroup contact (i.e., a little familiarity with groups other than themselves)
v.   relative deprivation (i.e., feeling that others are much better off than they are)
b.   Trump supporters are less motivated by perceived economic anxiety than a loss of status
c.   There is a diversity of motivations among Trump supporters: resentment, greed, power, need
to significance, prejudice, with different supporters prioritizing different values.

Part of the problem of dealing with persons imbued with espousing or promoting fake news is that one
tries to approach them rationally. Taking clues from the previous lesson, there are many psychological
factors at play that enable the success of various forms of self-deception, where rational arguments do
not work. The first factor is what is called willful ignorance, which is not a matter of accepting or pro-
moting disinformation but of ignoring information. Hertwig & Engle (2016) developed a taxonomy for
deliberate ignorance: it is a device for emotional regulation and regret avoidance, suspense and surprise
maximization, performance enhancement, strategic behavior, impartiality and fairness, and cognitive
sustainability and information management (pp. 361-364). While the authors do not answer the ques-
tion of when this deliberate choice is right for the individual or society, it can be "beneficial, rationally
or ethically appropriate" (p. 365). Nevertheless, they are aware that there is a sinister side to it, "when
it is used to evade responsibility, escape liability or defend anti-intellectualism" (p. 365). Gigerenzer &
Garcia-Retamero (2017) agree that, contrary to the view that willful ignorance is irrational and coun-
terintuitive, it has beneficial aspects in certain circumstances: when dealing with issues such as death
and divorce as well as pleasurable events (p. 195).

Kevin Lynch argues that willful ignorance is different from self-deception because willful ignorance
is always intentional, whereas self-deception is not. The willfully ignorant can recognize that they are
willfully ignorant, whereas the self-deceived are typically not fully aware that they are self-deceived.
Willful ignorance (being more conscious) is, therefore, more culpable than self-deception. (Lynch, 2016,
p. 521). Alicke (2017) agrees, arguing that willful ignorance tends to be more adaptive than self-deception,
and is "a "cognitive strategy that people adopt to promote their emotional well-being," whereas "self-
deception is less controllable and more likely to be detrimental" (n.p.). Self-deception is less manageable
(given its unconscious nature) because there are few resources to have the self-deceived face the truth.

Information avoidance is not the same as willful ignorance and may not be the same as self-deception.
Sweeny et al. (2010) define information avoidance as "any behavior intended to prevent or delay the
acquisition of available but potentially unwanted information" (p. 341). They suggest that the reasons for
information avoidance include: the information may demand a change in one's beliefs or an undesired
action, or the information itself or the decision to learn information may cause unpleasant emotions or
diminish pleasant emotions (p. 342). They note that these are not the only reasons for information avoid-
ance. Golman, Hagmann, & Loewenstein (2017) take an approach that shares in some of the modes of

self-deception. For the methods of information avoidance, they include physical avoidance, inattention, biased interpretation of information, forgetting and self-handicapping (choosing tasks that poorly match their capabilities) (pp. 99-104). The reasons they posit for the varieties of information avoidance share some of Hertwig & Engel's six motivations for deliberate ignorance (above): hedonically driven information avoidance (such as risk, loss and disappointment aversion, anxiety, regret aversion, optimism maintenance or dissonance avoidance); belief investments, such as intrapersonal strategic avoidance (e.g., resisting temptation, motivation maintenance, avoiding projection biases, or abdicating responsibility) or interpersonal strategic avoidance (pp. 104-120). Many of these methods of information avoidance or the varieties of information avoidance can provide the strategies of the disinformed to remain disinformed.

There is a growing body of research in social psychology about the phenomenon of gullibility. Gullibility is defined by Forgas and Baumeister (2019) as "a failure of social intelligence in which a person is easily tricked or manipulated into an ill-advised course of action" (p. 2). It is related to credulity, the tendency to accept assertions that are not supported by evidence. According to them, gullibility can occur in one of two situations: "Either an individual's beliefs are manifestly inconsistent with facts and reality, or an individual's beliefs are at variance with social norms about reality" (p.2). While the former would seem to challenge and deny those who believe in the flat earth or who believe that John Kennedy, Jr is alive and well and working with Trump (as QAnon theorists believe), the latter is harder to pin down.

We often use the term gullible to describe persons whose beliefs violate some consensual rather than scientific standard of how reality should be viewed (p. 2).

As long as knowledge is incomplete and subject to future falsification, identifying gullibility is more a matter of consensual value judgment rather than a statement of inconvertible fact. Gullibility may thus often be a matter of perspective, residing in the eye of the beholder (p. 3).

Having said that, it seems clear, based on a consensual understanding, that the balance of powers in the federal government is being undermined. What has aggravated matters is the rise of the Internet. Before mass communication and self-publishing, there was

the privileged class of experts, truth-seekers, and truth-tellers who … were institutionally established in our social systems and whose job was to discover and communicate the truth. They have now lost their privileged position and information monopoly. And now it seems that truth in public life is now also at risk (p. 5).

There is slippage in loyalty to national newspapers, which used to be arbiters of consensual truth. This slippage has been partly aggravated by claims by Trump that they publish fake news when their stories about him are critical.

Why are people gullible? According to Forgas and Baumeister,

One of the psychological foundations of gullibility, paradoxically, appears to be the universal human capacity for trust – to accept second-hand information we receive from others as a proxy for reality (Deutsch & Gerard, 1955). Indeed, our evolutionary history (Harari, 2014; Pinker, 2018; von Hippel, 2018) suggests that perhaps the most revolutionary cognitive development of our species occurred when we made the dramatic leap from being creatures who are bound by immediate reality to becoming crea-

tures who can accept and act on consensual symbolic information or "memes" as if they were reality (Dawkins, 1976; Dennett, 2017). This ability to accept symbolic information from others and treat it as real is also one major foundation of all human cultural evolution (Harari, 2014, p. 5).

The authors then look at the psychological mechanisms of gullibility. They present five: (1) Imagined causation or pattern recognition: because human beings want to make sense of reality, they often find patterns and causation where there is none. (p. 8). (2) Acceptance bias: "the near-universal tendency for human beings to accept rather than reject information" (p. 9). Information provided tends to be treated as true, and time and effort must be made to render it false. The authors add: "The acceptance bias shows how gullibility occurs when people are distracted by other information, emotion, or time pressure." Given the din of hundreds of information channels and the emotionally charged political atmosphere, it is no surprise that people rally around a few sources. (3) Power of heuristics: "Human beings are more prone to believe interesting, captivating stories and narratives that are salient and easy to imagine (Kahneman & Tversky, 2000). When we are exposed to salient, frequent, and thus easily remembered information, due to a strange 'mental bug' in our information processing system, such information will also be seen as more true, reliable, and valid" (p.9). Coupled with the first two mechanisms, we can easily see the effect of Fox News or MSNBC or other news or social media channels. "Typically, what is familiar, readily available, salient, focal, representative and colorful captures our imagination and attention and is given far more credence than it deserves" (p. 9). (4) Overbelief in the self: related to the Dunning-Kruger effect (see Lesson on Cognitive Authorities), we are prone to "self-serving biases and distortions" (p. 10). People hold onto their beliefs considerably more than is warranted. (5) Social mechanisms of gullibility: "all symbolic knowledge is socially constructed and shared. Comparing our views and ideas with the views and ideas of others is the way all symbolic reality is constructed" (p.10). Perhaps grounding Dings' assertions that in social self-deception, other people are a means to our self-deceptive processes, Forgas and Baumeister assert that

In an inherently ambiguous and uncertain environment, humans will spontaneously construct shared norms and standards that, however arbitrary, will impose a semblance of consensual order and predictability on their view of reality (Sherif, 1936, p. 10).

Once these consensual norms are established, they are difficult to modify. When we think of the notion of consensual reality promoted by Fox News, all fostered by the previous psychological mechanisms, we can believe that their viewers' notion of reality will be difficult to change, mainly because it is reinforced by so many channels: friends, colleagues, political associates, church fellowship members, social media, etc.

What others think and do continues to have a powerful normative influence on human behavior, even if those norms are not internalized, and indeed, disbelieved (Asch, 1951). It turns out that the very process of openly discussing divergent views about reality can be a mechanism that promotes the acceptance of more extreme and biased views, as the voluminous research on group polarization phenomena shows.… (Sherif, 1936, p. 11).

The final psychological mechanism that Forgas and Baumeister consider is (6) Epistemological failures to monitor and correct. Human beings fail to monitor and evaluate incoming information correctly in

terms of its logical merits, based on what Forgas and Baumeister call "metacognitive myopia," a failure to think about our thinking. Unfortunately, this is not a natural way in which human beings think, despite all the textbooks on formal logic and scientific successes built upon it. The lessons on logical fallacies and ethical principles were included in Lessons 8 and 9 to help address this issue.

In addition to the research on gullibility, there is also a significant amount of psychological literature dedicated to trying to understand the factors that influence supporters of Trump. Thomas Pettigrew's (2017) paper, "Social Psychological Perspectives on Trump Supporters," shines a light on this group. Without dismissing the political factors that may be at work or claiming that this list is exhaustive, he identifies an array of factors reflecting five major social psychological phenomena that account for the bulk of Trump supporters' devotion: authoritarianism, social dominance orientation (SDO, i.e., they prefer to associate only with socially dominant groups), prejudice, low intergroup contact (i.e., little familiarity with groups other than themselves), and relative deprivation (i.e., feeling that others are much better off than they are).

Pettigrew finds that many Trump supporters are attracted to authoritarian characters. Authoritarianism is characterized by such traits as

deference to authority, aggression toward outgroups [meaning any group with which the individual does not identify], a rigidly hierarchical view of the world, and resistance to new experience" (Pettigrew, 2017, p. 108).

Authoritarians see the world as dangerous, and fear guides their response to it. While there is a debate among social psychologists about whether authoritarianism is a personality construct or a political ideology, Pettigrew argues that "there is no necessary conflict between these two perspectives" and that authoritarianism usually starts as a personality orientation, which then leads to an engagement with right-wing political ideology. From an authoritarian view, the motivation lies in fear, and the rhetoric of Trump provides fuel for the fire, which leads his supporters to consider him to be an authority of matters of American security, leading them to support him in his efforts to secure the borders against outgroups, including through family separation and a border wall between the United States and Mexico.

Pettigrew defines SDO is as "an individual's preference for the societal hierarchy of groups and domination over lower-status groups" (p. 108). People who want to maintain the current social hierarchy have an SDO. They believe members of other groups are inferior to members of their own. People with strong SDO are "typically dominant, driven, tough-minded, disagreeable, and relatively uncaring seekers of power" (p. 108). Trump's assertions that he alone can solve the nation's problems and that those who oppose him are "losers" are good examples. Losers now include all newspapers and media who are critical of him, while Fox News, Republicans, and conservatives are winners. Trump's supporters' embrace of authoritarianism and SDO also makes them more likely to accept outright lying by commission or omission or by paltering as part of the morally acceptable behavior of politicians, according to research published in the journal *Personality and Individual Differences*, by Jonas De Keersmaecker and Arne Roets of Ghent University in Belgium. This approach is generally more applicable to Republicans rather than to Democrats (De Keersmaecker & Roets, 2019).

Pettigrew's third factor points out that Trump supporters are anti-outgroup generally as well as anti-immigrant. In the 2016 election, Trump launched rhetorical attacks on immigrants, Mexicans, and Muslims. His actions in office have reinforced that stance: bans on entrants to the country from certain Muslim countries, harsh restrictions for asylum seekers, the separation of children from their parents at

the border as a measure to discourage immigration, and public claims that some white nationalists are "very fine people." Support for Trump correlates highly with a standard scale of modern racism, which Trump has fully articulated in such remarks that Congresswomen Representatives Alexandria Ocasio-Cortez of New York, Ilhan Omar of Minnesota, Ayanna S. Pressley of Massachusetts and Rashida Tlaib of Michigan, should go back to where they came from, making references to their ethnic origins, and by having his supporters at his rallies chant: "send her back" (Davis, 2019).

Pettigrew (p. 108) also observes that there is growing evidence that Trump's white supporters have little contact with groups other than their own. They have less experience with minorities such as Muslims, Mexicans, or even Black Americans than other Americans. Low intergroup contact makes it easier to dismiss members of other groups as foreign, un-American, or inferior. Ignorance of others allows one to self-enforce negative stereotypes, as in Trump's references to immigrants as "animals" (Davis & Chokshi, 2018).

Pettigrew's fifth factor, relative deprivation, is particularly supportive of collective social self-deception. A myth arose after the 2016 election that Trump had won because he appealed to poor and unemployed people. However, Trump supporters were less likely than others to be unemployed, employed part-time, or looking for work. Moreover, those voters living in districts with more manufacturing were less inclined to vote for Trump. However, the original narrative rightly identified a sense of deprivation. It just failed to identify that this was a perception of deprivation, not its actuality. Trump supporters felt that other members of society were better off than they were and that their expectation of where they would be in life had been severely contracted.

In the *Proceedings of the National Academy of Sciences* of May 2018, Diane Mutz reports that Trump supporters are less motivated by perceived economic anxiety than loss of status. She says that their "changing preferences were related to changes in the [Republican] party's positions on issues related to American global dominance and the rise of a majority-minority America: issues that threaten white Americans' sense of dominant group status" (Mutz, 2018).

Trump supporters nurture resentment, perhaps less so for economic issues than for loss of status, which motivates their deception and self-deception. Hours of Fox News and social media sites denigrating "welfare queens," welfare programs, the more frequent appearance of minorities on media, and the media's and advertising's version of what an ordinary American home is supposed to be like are fanning the flames. Trump supporters feel impotent to regain their dominant position as white people, but feel they can gain potency through elevating their in-group by supporting someone who promises to defend the existing social hierarchy. They feel that they are victims of the forces of politics, corporations, education, and demographic shifts, and the president's focus on those themes makes them feel empowered. Trump's notion of self-empowerment ironically lies beside his claim that they have little power, but the irony appears to elude them.

Tobin Smith, a former Fox News Commentator, suggests that their programming fosters an addictive and resentment-based process to:

- "Understand the elderly white conservative viewer's pre-tribal mindset, which is a compilation of their resentments, indignations, cultural values, religious values, political values, racial perspectives, regional outlooks, and worldviews.
- Scare or outrage the crap out of viewers by boring down on a recently exposed tribal nerve like a psychic dentist with a drill, presenting a heresy or an innately scary image of non-white/non-Christian foreigners, immigrants, or terrorists doing horrible things.

- Produce each seven-minute rigged outcome opinion-debate segment around the carefully selected partisan heresy such that the "fair and balanced" debate is massively rigged for the conservative pundits on the program to . . .
- Deliver the climactic and righteous rhetorical victory for the partisan right-wing viewer to trigger the jolt of dopamine and serotonin that the addict anticipated and knew was coming" (Smith, 2019, pp. 474-475).

In this lesson, we see that there are many psychological factors that affect or predispose whether someone accepts information or ignores or avoids it, how we are gullible with respect to it, and how we are susceptible to social and collective forms of enforcement or reinforcement with streams of information or avoidance of streams of information. We looked at some of the issues that drive the motivations of Trump supporters.

Exercise suggestions will call on participants to consider the following questions:

1. Can you remember the occasions in which you were gullible? Can you sort out which psychological mechanism(s) may have been involved: the search for patterns and meaning, acceptance bias, the power of heuristics, overbelief in the self, social mechanisms of gullibility, or epistemological failures to monitor and correct?
2. Can you find a few well-founded psychological studies that show how the misinformed or disinformed engage in one or more of the following behaviors to maintain their ignorance, disinformation, or self-deception?
   a. Sustaining oneself in ignorance - deliberately choosing not to know.
   b. Preexisting attitudes and the continued influence of misinformation or disinformation, in a manner of confirmation bias.
   c. Information avoidance.
   d. Misperceptions: understanding false and unsupported beliefs about politics.
   e. The role of cognitive ability on the impact of false information on social impressions.
   f. Use of social media to increase racist behavior.
   g. Self-deception as a function of social status.
   h. In addition to the study above, psychological studies regarding Donald Trump's supporters (or any other cult or cultish leader).
   i. Unfalsifiability (the practice by which people, when confronted with facts, reframe an argument in a way that makes it impossible to test to validate their viewpoint).
3. Discuss and evaluate the following article in terms of psychological concerns: Kolbert, Elizabeth (2017). "Why Facts Don't Change Our Minds," *The New Yorker*, February 27, 2017. https://www.newyorker.com/magazine/2017/02/27/why-facts-dont-change-our-minds

LESSON 6: COGNITIVE AUTHORITIES

Key ideas:

1. Cognitive authority is related to credibility, competence, and trustworthiness.

2. Cognitive authority exists on a continuum, exists in relation to a sphere of interest, and involves at least two people.
3. Cognitive authorities can be friends, colleagues, peers, news media, Internet blogs, Twitter feeds, news channels, social media sites, etc.
4. Examples of cognitive authorities are news sites representing different points of a political spectrum: e.g., Fox News or MSNBC.
5. For news sites, the measure of their credibility or trustworthiness is related to consumer loyalty. This observation is true for both authentic and false cognitive authorities.
6. News media can produce assertions as "true opinions," "false opinions," or "preferential opinions." They exist as opinions in the minds of the consumers until they are verified or not, or whether or when there are grounds for not needing to pursue their verification.
7. Human beings may employ heuristics or mental shortcuts to deal with information. Unfortunately, "These mental shortcuts exacerbate the human inability to see the world as it really is" (Forgas & Baumeister, 2019, p. 9). The use of these mental shortcuts is common to liberals, conservatives, and actors of other political stripes.
8. Consumers of news media hear content from Fox News or MSNBC and may absorb the provided opinions as second-hand knowledge. This regular consumption may result in a heuristic, to trust this source, regardless of its actual basis in truth or evidence.
9. The ultimate determination of whether a cognitive authority is genuine or false is not a measure of consumer loyalty, but whether their posted content *can* be ultimately authenticated and verified. There are enhancers or accelerators that make such news, particularly fake news, more plausible:
   a. Psychological factors addressed in the last lesson, such as prejudice, resentment, greed, power, or other motivations, predispose those disinformed to embrace and perpetuate disinformation.
   b. Repeating information, whether true or not, increases its believability; this applies to newspaper headlines, statements, or speeches (Pennycook, Cannon & Rand, 2018). It also applies to cable news platforms and their pundits, their consumers, their peer groups, party or viewpoint, associates or associations, and leaders (including religious leaders).
   c. There are bubble filters or propaganda feedback loops that reinforce biased content, particularly on the right (Morrison, 2018).
   d. The Dunning-Kruger effect suggests that people are uncritical about their own abilities and their own lack of critical thinking. To put it simply, people of poor intelligence lack the intelligence to recognize their impaired critical thinking ability (Dunning–Kruger effect, 2017).
   e. Once acquired, false information is hard to dispel.
   f. Agnotology is a specialized technique for spreading misinformation that makes information seekers more doubtful of views or information that they already hold (Agnotology, 2016).
10. Addiction to tribal identity politics.

Wilson (1983) notes several properties of cognitive authority: (1) Cognitive authority is related to credibility. A person who has cognitive authority on a particular subject is regarded as a credible source for that topic. A friend who has installed many computer networks for friends and colleagues can be a cognitive authority on the subject of network installation. Wilson writes that credibility consists primarily of "competence and trustworthiness" (p.13). For example, I trust my competent friend to instruct me properly on how to install a network in my home. (2) Cognitive authority exists on a continuum. A person may know a lot or a little about a subject. For example, a person who has worked on network

installation in a professional environment has more expertise than someone who had only done it for friends. Wilson notes that some cognitive authorities have so much knowledge that they become arbiters of settled opinion on a subject (p. 18). Newspapers such as *The New York Times* and *Washington Post* once played that role, perhaps less so today than in the past, given the growth of social media. Unfortunately, a steady campaign of false allegations about the reliability of their content has chipped away at many people's faith in these authorities. (3) Cognitive authority exists in relation to a sphere of interest. These spheres can be well-defined or ill-defined: an expert on the orchestral recordings of Beethoven has a different authority than a general expert in classical music. (4) Cognitive authority involves at least two people. One can have cognitive authority without being a recognized expert. A person who has worked as a science journalist for a reputable publication has less cognitive authority than a doctor, who may have less cognitive authority than a medical researcher. A person may become a cognitive authority for a specific person or set of persons for a specific topic or set of topics. For example, we may have friends we ask for their book reviews because we share their taste and trust their judgment, but our friends are not professional book critics. (5) There are brands of expertise not related to knowledge, expertise that may not justify the qualification of cognitive authority.

Cognitive authorities can be friends, colleagues, peers, news media, Internet blogs, twitter feeds, news channels, social media sites such as Instagram, etc. For the purposes of developing this research to include such institutions as news media and news organizations, I have extended Wilson's original view.

In order to provide a focus for this issue, we will take two cable news channels, that of MSNBC and Fox News. Both are cognitive authorities for those that access them. The measure of one's commitment to them can be gauged in terms of loyalty. The results of the Pew Research study show the diversity of media in play, the variety among news consumers, and their differing levels of loyalty to diverse media. Older Americans are more attached to traditional media and television (Mitchell, Barthel, Shearer, & Gottfried, 2016). MSNBC and Fox News exhibit comparable levels of bias: on a scale of extreme left, left, left center, least biased, right center, right, extreme right, Media Bias/Fact Check rates MSNBC as "left" and Fox News as "right" (MSNBC, n.d.; Fox News, n.d.). The author has tried to use a case where there are legitimate comparisons and contrast. There are many cases that could be discussed, but the ones chosen seemed to be the most comparable and accessible for the purposes of this lesson.

With respect to news channels such as MSNBC, trustworthiness implies that reporting is based on evidence or facts. If there is a question, it can be traced back to sources of evidence or facts, as they are known at the time of reporting. Factual reporting means that the disclosure of truth may be progressive or even regressive. The first details of an event may be sketchy, if not incorrect, and what matters is that the reporting is consonant with the latest details of an event and that it is faithful to the evidence. MSNBC primarily relies on NBC reporters for their news, and while their factual rating is mixed, that is due to MSNBC's use of political pundits. Reliable cognitive authorities only change the facts they report if they actually change. When they discover errors in their reporting, they make corrections (MSNBC, n.d.). While experts are used, they appear to make appropriate assessments and judgments based on their experience and knowledge. However, many liberals may fall into self-deceptive and collective self-deceptive practices, if they accept MSNBC assessments without independently verifying the basis of such assessments or their integration into their current state of understanding (beyond confirmation bias). Fox News, like MSNBC, claims to be trustworthy and have expertise. They tout a lineup of daily reporters and experts who claim to be reliable and credible. They have convinced their viewers that their position is accurate and reliable. Their only source for fact-checking tends to be limited when it is employed, the *Wall Street Journal* (Fox News, n.d.)

Their pro-Trump stories continuously report factually incorrect data. For example, Trump declared that the Mueller Report completely exonerated him, and all of Fox News and its pundits echoed that view. During the impeachment hearings, the evidence from Fiona Hill and Gordon Sondland of a factual bribery action demand from Ukraine by Trump was ignored and replaced by the President's distorted interpretation derived from a portion of Sondland's assertions, that he wanted nothing from Ukraine. However, this is not necessarily the viewpoint of all conservatives or conservative institutions. With respect to Fox News, the Mueller Report explicitly stated that the special prosecutor could not and did not exonerate the president. When reporting that a "witch hunt" had tarnished Trump's otherwise un-blemished reputation, Fox News and its pundits rarely reference the large number of indictments and guilty pleas of Trump associates that resulted from the Mueller investigation. While many Americans have little trust in Fox, there are selected audiences who trust it deeply. According to a Pew Research Center survey, "Fox News was the main source [of news] for 40% of Trump voters" during the 2016 election (Mitchell, Gottfried & Barthel, 2017). Another Pew survey summarizes, "When it comes to choosing a media source for political news, conservatives orient strongly around Fox News. Nearly half of consistent conservatives (47%) name it as their main source for government and political news" (Mitchell, Matsa, Gottfried & Kiley, 2014). This number appears to have increased since his election and residence in office.

A real cognitive authority would present stories that are consistent, cohesive, and coherent over time, with few inconsistencies or reversals. This description does not apply to Fox News (Zorn, 2018). Inconsistencies abound in the network's news reporting: the diverse, inconsistent views of the president are repeated on the news without acknowledging such changes, and the conservative vision of not so many years ago seems to have disappeared as Republican leaders and administrators demonstrate a lack of moral character, a failure to implement fiscal responsibility, and, contradicting the libertarian wing of the conservative movement, increasing government intrusion in the form of the carceral state, interference with women's reproductive rights, and immigration restriction. Instead of promoting second-hand "knowledge," Fox News often promotes second-hand opinion at best, opinion that could rarely, if ever, be converted into knowledge or fact. It generally promulgates a cognitive state that can produce neither opinion, right opinion, or knowledge, but where demonstrably "false knowledge" is presented as fact and where relevant data is ignored. In the impeachment hearings of Trump, they reported none of the evidence provided by credible witnesses (e.g., Alexander Vindman, Fiona Hill) about Trump's quid pro quo with Ukraine and defended Trump's characterization of the proceedings as a Democratic hoax. When questioned about the beliefs uttered by Fox News, their viewers repeat their talking points but are generally unable to make a coherent justification of the talking points and resort to irrelevant remarks to cover their inability to defend them. This inability to defend Fox News's assertions seems to prove that what is presented by them is opinion, however, it is claimed to be knowledge. Even more so, what is absorbed by the viewers is opinion, even false opinion, of which and about which there can be no justification. Irrelevant retorts to critiques are provided: e.g., "All businessmen make deals," an assertion that ignores the wrongful nature of the deal where Trump was withholding Congress-approved national security funds from Ukraine to advance his personal interests rather than the national interests. The same could be said of MSNBC viewers if they are content to live at the surface of such second-hand "knowledge."

News media can produce assertions as "true opinions," "false opinions," or "preferential opinions." These assertions exist as opinions in the minds of the consumers until they are verified or not, or if there are reasons consumers do not need to attempt to verify them. As noted in the lesson on psychological factors, human beings often employ heuristics to deal with this kind of information. As Forgas and

Baumeister note, "When we are exposed to salient, frequent, and thus easily remembered information," such as occurs on Fox News or in the *New York Times,* this information will be regarded as "true, reliable and valid" (p. 9). Unfortunately, "These mental shortcuts exacerbate the human inability to see the world as it really is" (p. 9). The use of such shortcuts can be true of those who are either conservatives or liberals or political actors of another stripe. These are reinforced by endorsement or repetition through social media, colleagues, peers, political and religious leaders, news pundits, etc.

Consumers of news media hear content from Fox News or MSNBC and may absorb the provided opinions as second-hand knowledge. This regular consumption may result in a heuristic, to trust this source, regardless of its actual basis in truth or evidence. Such consumption may amount to confirmation bias unless the consumer can verify the produced assertions in facts, evidence, or reason or have grounds for accepting second-hand knowledge without pursuing verification. In the latter case, consumers may be quite knowledgeable about the provided information and its sources and accept it as an information processing heuristic. Unfortunately, the same can be said of those who ingest false information from a company that claims cognitive authority. The ultimate determination of whether a cognitive authority is genuine or false is not a measure of consumer loyalty, but whether their posted content *can* be ultimately authenticated and verified or coalesces with the consumer's verifiable knowledge or expertise. We must strive to be vigilant and critical of our comfortable heuristics. The problem is that many disinformation consumers are unwilling to do the work of authentication and choose to acquiesce to their confirmation bias and to their self-deception and collective self-deception. The same can to said to a lesser degree of information consumers that have a long history with an information source that appears to be consistently reliable, accurate, trustworthy, and committed to acknowledging errors or repealing stories that lack any foundation. There are grounds for the acquiescence to information heuristics for credible cognitive authorities that do not exist for discreditable ones, though for the disinformed, they might appear to be the same.

What makes fake news consumers and disseminators work so well are what can be called accelerators or enhancers, many of which are traceable to the psychological mechanisms of gullibility mentioned in the last lesson. Many fake news consumers are preconditioned by the psychological factors enumerated in the lesson above, such motivations as prejudice, resentment, greed, power, etc. A study entitled "Prior exposure increases perceived accuracy of fake news" reported that repeating information, true or not, increases its believability, and this applies to newspaper headlines, statements, or speeches (Pennycook, Cannon & Rand, 2018). This research is reinforced by "echo chambers," defined by Törnberg (2018) as "online social media groups that reinforce perspectives and enable confirmation bias." See also social mechanisms of gullibility in the last lesson. There are "filter bubbles" or propaganda feedback loops through self-selected information channels that reinforce biased content, particularly on the right (Morrison, 2018).

There is also the Dunning-Kruger effect that suggests that people are uncritical about their own abilities and uncritical about their lack of critical thinking. That is, people of poor intelligence lack the intelligence to recognize it (Dunning–Kruger Effect, 2017). This effect seemed to be further verified by a study by De Keersmaecker & Roets (2017) that indicated that the first impressions of fake news cannot be corrected by showing that the information was incorrect, especially in those with lower cognitive abilities, who tend not have the cognitive ability to be flexible in their attitudes. Even after learning that the original information was incorrect, it has a persevering negative influence on their social impressions. This approach is also supported by overbelief in the self, articulated in the previous lesson.

Once acquired, false information is hard to dispel. David Rapp's research on memory and learning reveals that our brains retain information without retaining its source, and, therefore, we do not recall a key fact about its validity. He also finds that it is difficult to remember that the information we had previously believed is false (Waters and Hargadon, 2017). This research is echoed in the psychological mechanism of epistemological failures to monitor and correct, seen in the previous lesson. There is a lingering effect that shows up, for example, in the Fox News' propagation of false conspiracy theories or in the publication of a medical report that incorrectly ties a list of problems, including autism, to vaccinating children.

Finally, Robert N. Proctor coined a word for the study of culturally-induced ignorance or doubt, agnotology. He identified a specialized technique for spreading misinformation that makes information seekers more doubtful of views or information that they already hold (Agnotology, 2016). By way of example, Proctor described the tobacco industry's use of advertising to generate doubt that smoking causes cancer or other illnesses. Climate change deniers, proponents of fracking, pesticide manufacturers, and opponents of allegedly "fake news" use a similar approach. The echoing of Trump's attacks on the justice department, the FBI, the Democratic party, and other intelligence agencies on Fox News and alt-right social media play the same role.

All these factors seem to reflect Tobin Smith's understanding of Fox News programming as fostering an addictive process, mentioned in the lesson on Psychological Factors, based in addictive anger and resentment, that is played and replayed over and over again, and validated by a chosen-in-bad-faith, restrictive environment (i.e., their filter bubble) in which Fox News viewers live and dwell (i.e., peers, friends, political associates, religious affiliates, social media sources, etc., that reinforce their confirmation biases). He calls it an addiction to "tribal partisan pornography" (Smith, 2019, pp. 460-465). Undoubtedly, there is a form of addiction to left-wing news adherents; that, too, is based in anger and resentment but of a different sort. The source of their bias may be indignation and a concern for truth and respect for professionalism in the political sphere, not to mention that their views may be sourced in and likely verifiable in evidence and facts.

Exercise suggestions will call on participants to consider the following questions:

1. Who or what are some of your cognitive authorities? How do you evaluate their credibility, trustworthiness, and competence?
2. What are your favorite news sources? Are they biased? If biased, do they report facts and evidence impartially? Does its bias skew what is reported? Check the sources at the site Media Bias (https://mediabiasfactcheck.com/) for an indication of bias. How loyal are you to your sources that may be biased?
3. When you tune into your favorite news source, what kind of opinions does it assert ("true opinions," "false opinions," or "preferential opinions")? How do you sort them out? Can you convert what might be considered a true opinion into some form of knowledge? How? What do you do about false opinions or preferential opinions?
4. Can you name some occasions where news sources made assertions that you took as confirmation of something you already believe?
5. Discuss cases a genuine cognitive authority and a false cognitive authority, paralleling the comparison and contrast of MSNBC and Fox News. How do you make that evaluation? How does the false cognitive authority enhance its "credibility" though one or more of the accelerators or enhancers? How have they promoted credibility through social self-deception or collective self-deception?

6. Can you find occurrences of collective self-deception? What cognitive authority or authorities facilitate that self-deception? What are the enhancers for such collective self-deception? Consider the white evangelical view that Trump was appointed by God in the manner of King Cyrus or that the United States is a Christian nation whose governmental agencies should conform to Christian precepts or that the United States is a nation founded for and run by white people.

LESSON 7: SOCIAL MEDIA, INTELLECTUAL FREEDOM AND LIBRARIES

Key ideas:

1. Social media are the hotbed of information and disinformation: it is in social media where much disinformation is found, exchanged, supported and spread, and where the InfoWars are inflamed.
2. Specific social media, such as Instagram and Facebook, cultivate, support, and perpetuate disinformation and conspiracy memes.
3. While one can explore such media to find the origins of certain memes or conspiracy theories, there is little regulation of their content, except for the possible intervention of their creators, but such interventions are rare, under the mandate of free speech or the First Amendment.
4. There is a major concern for maintaining intellectual freedom (the freedom to hold, receive and disseminate ideas without restriction) or the freedom of expression, speech, and the press (the freedom to say or post ideas of whatever character).
   a. A book entitled *The Freedom to Lie: A Debate About Democracy* (1989), a book of essays by John Swan and Noel Peattie, anticipates the issues of freedom of expression in social media.
   b. It articulates the tension between what one might call a liberal position (John Swan) versus a conservative position (Noel Peattie) about whether such works as David McCalden's *The Holocaust Did Not Happen* should be included in a library's collection.
      i. Swan's position is that a library is about free access, not truth, and therefore such works belong in the collection.
      ii. Peattie says that among other factors (e.g., cost, balance, relevance to patron population), truth does and should matter in collection decisions, which in most cases would mitigate against including such works.
5. In a similar vein, Zuckerberg argues that freedom of expression must be maintained on Facebook, permitting politicians to lie about their opponents. This position of Facebook can be extrapolated to all social media.
   a. This approach seems naïve in the onslaught of disinformation on the Internet, awash with propaganda, and systems (e.g., cable news, religious and political leaders, government agencies, and pseudo-cognitive authorities) that reinforce that propaganda.
   b. Is there a limit to free expression when that expression leads to harmful acts to demonized populations, the destruction of trust in political, governmental and media institutions, the loss of expertise, and the denigration of science and evidence?
6. There are particularly noxious forms of social media, the rabbit hole effect of YouTube, and the empowerment of hate groups by aggregating like-minded individuals around a particular forum, such as 8Chan.

7.   A subsequent lesson on digital, media and information literacies will address ways to deal with some of these issues.

Social media, including Facebook, YouTube, WeChat, Instagram, Weibo, Twitter, Tumblr, Telegram, Reddit, Baidu Tieba, LinkedIn, LINE, Snapchat, and Pinterest, among many others, are a hotbed of information and disinformation. According to *Wikipedia*, social media sites share the following properties: they are interactive Internet-based applications; they live on user-generated content (e.g., posts, texts, videos, photos); they create profiles for the app or website that are maintained by its social media creators; and they facilitate the interactions of members or groups (Social Media, 2019).

A book about intellectual freedom in libraries, by Noel Peattie and John Swan (1989, 2012), *The Freedom to Lie: A Debate about Democracy*, anticipates the issues of disinformation on social media on the Internet. In it, John Swan and Noel Peattie discuss whether books such as David McCalden's book, *The Holocaust Did Not Happen*, a Holocaust revisionist tract should be banned from the library. Swan takes the side of intellectual freedom. In his view, the point of libraries is to provide access to patrons, and there should be no constraints impeding that access. John Swan takes a cautious view. He looks variety of controversial things that could be in libraries: mathematical and logical truths; empirical truths (e.g., the earth is round); opinions, on which people may honestly differ (e.g., right or left politics, best restaurant); matters of taste (e.g., agree/disagree with current fashion trends); moral questions: is abortion or homosexuality right or wrong?; minority theories or opinions, not generally accepted by scholars in the field, but carrying no extra moral or political weight, no hidden agenda (e.g., Bacon wrote Shakespeare's plays); offensive language; bullshit; and outright lies, false statements knowingly made to mislead, frighten or hurt people: e.g., the Holocaust did not happen, or black people are ineducable, etc. (Swan & Peattie, 1989, p. 33). He argues that the last category can justifiably not be added to the library collection. Further, he argues that there are many considerations (e.g., budget, cost, relevance, access) that go into the decision to include or exclude a book or other resource in a library collection. The fact that something is untrue is a major factor for considering exclusion from the collection. In other words, in specific contexts like non-fiction, truth does matter in library collections.

Correspondingly, there is the issue of freedom of expression on the Internet, perhaps best exemplified by remarks by Mark Zuckerberg in a speech at Georgetown University where he argued that Facebook should be unfettered in intellectual freedom, including political advertisements of outright lies (e.g., pro-Trump reelection campaign advertisements that spread lies about his opponents). He takes the view that the marketplace will work it out – the lies will be discovered, eventually rejected or ignored. He bases his view, as do other free speech advocates, on the First Amendment, but Yochai Benkler, an author and the Professor of Entrepreneurial Legal Studies at Harvard Law School, argues that this is not a correct interpretation of the First Amendment. He argues that the First Amendment is only about government involvement in speech and does not apply to private speech or private parties, of which Twitter and Facebook are examples (Morrison, 2018). Despite or because of this observation, untruths are not sorting themselves out in the (dis)information marketplace. The disinformation that is asserted is rapidly spread across the Internet, any corrections are ignored, and disinformation memes reinforce a priori biases. Fox News, for example, echoes Trump's and his supporters' talking points, which are often patently false. Correspondingly, in social media sites like 8chan, white supremacists will defend their right to be racist and espouse hate rhetoric.

The logic of the view that the truth will win out is a belief in the trust in the individual, which John Swan sees the censors as not trusting or trying to control:

There are those who believe that they can devise noble universal principles of advocacy that exclude damned lies, or deny communication of ideas with pernicious regimes, and thereby concentrate their resources upon those worthier of free expression. The idea is tempting, not unlike the idea that you ought to be able to slip a warning label into a racist or sexist book according to some general principle of right thinking. But it is nothing more, I believe, than another manifestation of this distrust of the real act of independent decision-making (Swan & Peattie, 1989, p. 22).

The view that individuals are capable of sorting out the truth for themselves seems to be the rationale for the revocation of the fairness doctrine of the Federal Communications Commission (FCC) that was introduced in 1949 and which required broadcast license holders to present both sides of issues of public importance in a manner that was honest, equitable, and balanced. It was eliminated in 1987 on the basis that it "restricts the journalistic freedom of broadcasters ... [and] actually inhibits the presentation of controversial issues of public importance to the detriment of the public and the degradation of the editorial prerogative of broadcast journalists." (FCC Fairness Doctrine). In 1987 in an FCC Video, NBCUniversal made a claim, "Today we reaffirm our faith in the American people. Our faith in their ability to distinguish between fact and fiction without any help from government" (FCC Fairness Doctrine, footnote 18 of *Wikipedia* entry). Not long after the doctrine was eliminated, radio and television programs emerged that touted unorthodox political and religious opinions, such as the Rush Limbaugh Show.

Obviously, this is a noble ideal, but what does one do in the midst of an information system (i.e., the Internet) awash with propaganda, and systems (e.g., cable news, religious and political leaders, government agencies and false cognitive authorities) that reinforce that propaganda? In the Age of Disinformation, this approach seems too simplistic. Is there a limit to free expression when that expression leads to harmful acts to demonized populations, the destruction of trust in political, governmental and media institutions, the loss of expertise, and the denigration of science and evidence? At the beginning of the impeachment inquiry of President Trump in October 2019, an American values survey by PRRI (Public Religion Research Institute) indicated that while 37% Republicans overall asserted that almost nothing-could dissuade them from approving of Trump, over 50% of Republicans whose primary news source is Fox News approved of Trump. Those Republicans whose primary news source was other than Fox News had only a 30% approval rating of the President (Bump, 2019). Such data have led to descriptions of Fox News as "Trump TV", in which virtually all criticism of or about him is abandoned, conspiracy theories he espouses, including those about governmental agencies, are indulged, factual evidence against him is ignored, and the channel and its pundits become the source of "real news" for Trump and his followers.

In addition to Fox News's propagation of fake news, social media are immensely important for the spread and speed of disinformation. Researchers have determined that false information spreads more quickly and broadly than genuine information and that those on the right are more susceptible to believe and more prone to disseminate false information than those on the left (Vosoughi, Roy & Aral, Sinan, 2018).

Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information, and the effects were more pronounced for false political news than for false news about terrorism, natural disasters, science, urban legends, or financial information. We found that false news was more novel than true news, which suggests that people were more likely to share novel information (p. 1146).

Social media disinformation is spread by trolls, such as the Russians, and Trump and right-wing supporters on the one side, and liberals and progressives on the other side. There are also click-bait entrepreneurs whose allegiance is to making money and generally not to either side, though this allegiance leads them to be more likely to promote right-wing ideology because the conservatives are more easily seduced with news or clicks that support their confirmation bias. (Ingraham, 2019).

There is also the rabbit hole phenomenon on YouTube. When perusing YouTube videos for a particular content, such as a specific conspiracy theory, the algorithm that drives YouTube suggests more provocative videos to view, which in turn suggest more provocative videos to view, and so on (the rabbit hole). This phenomenon led one researcher, Zeynep Tufekci, to declare YouTube to be "one of the most radicalizing instruments of the 21st century" (Tufekci, 2018). It is claimed that the success of the election of the ultra-right leader, Bolsonaro, in Brazil was primarily driven by YouTube videos (Fisher & Taub, 2019, August 11). All this is driven by the profit motive – the more clicks, the more profit for Google. The political consequences are conveniently ignored.

Before the Internet, people had a much more difficult time congregating in groups to form hate speech collectives. Physical proximity tended to be a constraint. With the advent of the Internet and social media groups, it is easier for persons with radical ideas to find like-minded individuals, creating a forum with a loud voice, that in turn can convince others to join their cause. It creates a crowd effect that there appears to be a large audience for a particular theory or belief. Postings at 8chan, a social media group that permits anonymous postings, apparently influenced the mass shooter of mostly Latino people at the El Paso Walmart. 8chan is described in Slate in the following way: "An anonymous, meme-filled Internet backwater, 8chan has easily been a place for white supremacists to indoctrinate others – particularly white men – into bigoted ideologies" (Glaser, 2019). Social media like 8chan not only aggregate a forum, but self-deceptively entice their followers to believe that they have a loud voice and that their group numbers are more abundant than what they actually are, luring more members to the group.

Facebook is an illustration of the broader problem of regulating speech on the Internet, particularly hate speech or conspiracy theories. The problem with conspiracy theorists is that any attempt to correct their theories by appealing to some form of contrary evidence is itself seen as confirmation and extension of that conspiracy theory, another conspiracy theory to attack their conspiracy theory, or a sign of more cover-ups. Is there a limit to free speech? The First Amendment asserts that the "Congress shall make no law. . . abridging the freedom of speech, or of the press." But the apparent absoluteness of that prohibition had long been subverted by the problematic statement by Justice Oliver Wendell Holmes in Schenck v. United States (1919):

the character of every act depends on the circumstances in which it is done. The most stringent protection of free speech would not protect a man from falsely shouting fire in a theater and causing panic. [The] question is every case is whether the words are used in such circumstances and are of such a nature as to create a clear and present danger that they will bring about substantive evils that Congress has a right to prevent (Schenck v. United States, 1919).

There does not seem to be much doubt that the man who creates panic in a theater should be chastised. Yet the hate speech and conspiracy theories on the Internet have gotten to the point where physical harm may, in fact, result in: e.g., physical assaults on Jews, Muslims, members of the LGBTQ+ community, immigrants, etc. There is a concern for regulating such rhetoric beyond the issues of Facebook. The issue may not be panic in a crowded theatre, but support of false ideas and ideologies to the extent that

previous institutional norms and trust in expertise are so consistently undermined that the foundation of a liberal democracy has been catapulted into chaos, where sources or institutions are politicized and not trusted (e.g., the intelligence community, the Justice Department), thereby attacking the very essence of democracy and democratic institutions.

We are reminded of John Swan's comments:

The most effective advocacy of truth is insuring the widest possible access to all versions thereof.... ... debate, dialogue, and exploration are all essential to an understanding of truth, whatever its nature. It does mean that shutting off exposure to false information and pernicious ideas before they enter the stream of debate will in all likelihood not kill them nor protect the good ideas they seek to devour….

The basic flaw in the position of those who would defeat falsehood by denying it a place in our libraries and library programs is that it fails to take into account the simple but profound fact that the truth must be perceived by individuals, not dictated to them.... The worst falsehoods, the damnest lies, have their origins not in ideas but in pathologies, and suppressing symptoms does not cure the disease (Swan & Peattie, 1989, p. 17-18).

But how do we cope with collective self-deception, where the truth is a contrived second-hand or false opinion, paraded as knowledge? The willingness of individuals to seek the actual truth appears to be significantly diminished, given that *their* cognitive authorities have all the truth and that *only their* venues have access to the truth. Independent inquiry, by contrast, is fraught with seductive pitfalls designed to send one to hell, figuratively if not literally, based on one's religious persuasion (e.g., white Evangelicals who believe that Trump was appointed by God). The Athenians put Socrates to death for questioning social and religious orthodoxy. In these days, orthodoxy is no longer 'right opinion,' but a contrived constructed reality, that one can call genuine fake news.

There are many techniques for the spread of disinformation in social media, such as bots, deep-fake videos, fake accounts that mimic the genuine interests of average individuals and hate groups whose enticements tend to promote not only speech but action. In Lesson 10 on media, digital and information literacies, we will review potential methods to deal with some of these issues.

Exercise suggestions will call on participants to consider the following questions:

1. Discuss the role of intellectual freedom in the Age of Disinformation, its benefits, and drawbacks. One cannot yell 'Fire!' in a crowded theatre when it is not true. Should there be any restrictions on social media or cable news channels? Mark Zuckerberg has indicated that Facebook will post political ads that are blatant lies, based on the First Amendment and freedom of speech. See Zuckerberg's defense of intellectual freedom at Romm, T. (2019, October 17). Zuckerberg: Standing for Voice and Free Expression. *The Washington Post.* Retrieved October 25, 2019, from https://www.washingtonpost.com/technology/2019/10/17/zuckerberg-standing-voice-free-expression/. This web site contains the text of Zuckerberg's speech. The video is at https://www.youtube.com/watch?v=hcLSU17M3Lw (42 minutes). For one critique of his speech, see Vaidhyanathan, S. (2019, October 18). Mark Zuckerberg does not understand free speech in the 21st century. *The Guardian.* Retrieved October 25, 2019, from https://www.theguardian.com/commentisfree/2019/oct/18/mark-zuckerberg-free-speech-21st-century. Find two other evaluations of Zuckerberg's speech (positive or negative) and base your essay on these materials and your own thoughts. When disinformation

and misinformation become the core information of a democracy, is not that democracy destroyed from within?

2. Can you provide specific examples of social media in your experience and/or in web sites that exhibit extensive levels of disinformation, bias, deceit or conspiracy theories?

3. For manipulated videos, see "Seeing Isn't Believing, The Fact Checker's guide to manipulated video," *The Washington Post* (2109) at https://www.washingtonpost.com/graphics/2019/politics/fact-checker/manipulated-video-guide/?utm_term=.cd779e27a0d0&wpisrc=nl_most&wpmm=1. See also "The Future of Fake News" at http://futureoffakenews.com/. Can you find occurrences of manipulated video? How was it manipulated? How do you know?

LESSON 8: LOGICAL FALLACIES

Key ideas:

1. Logical fallacies are instances of deceptive or specious reasoning that make weak arguments appear to be superficially attractive. They are sleights of hand that attempt to divert attention from the core issue to irrelevant considerations.

2. There are hundreds of logical fallacies that have been cataloged, but this lesson will focus on those that some politicians and disinformation specialists often employ, including argumentum ad hominem, the straw man fallacy, and the argument from pity.

3. One is only successful with this strategy of confronting logical fallacies if the proponents are willing to engage in rational discourse, although the fact that they are using them is likely to indicate that this would not be the course. However, one can point out the nature of the fallacy to third-party observers.

4. A given argument can entail more than one fallacy.

A fallacy has two general meanings: (1) a false or erroneous statement, something that is untrue, and (2) deceptive or specious reasoning. Logical fallacies fall into the latter category because they are attempts to weaken one's opponent's arguments by trying to deflect attention away from the content of the argument to irrelevant issues. Fallacious arguments can be quite persuasive, at least to the casual reader or listener. One can find dozens of examples of fallacious reasoning in newspapers, advertisements, and all through political rhetoric, whether of a liberal or a conservative stripe. Mastering the recognition of or understanding logical fallacies provides a rhetorical advantage in being able to deflect the intended effect of fallacies, to deceive and misdirect.

There are hundreds of logical fallacies, as given in such compendiums as Bo Bennett's *The Ultimate Collection of over Three Hundred Logical Fallacies* (2019) (https://www.logicallyfallacious.com/tools/lp/Bo/LogicalFallacies/205/What-is-a-Logical-Fallacy-Exactly). For illustrations, we will sketch a few cases of them, but others can be included in an elaborated lesson.

The *argumentum ad hominem*, an argument against the person. This fallacy occurs when one attacks the character of the person advancing the argument, rather than addressing or refuting the argument itself. It moves the discussion from issues to personalities or characteristics of one's opponent. Demolishing an argument by attacking the opponent's motives, background, or personal traits is an *ad hominem* attack. This is a fallacy because the only way to address an issue is with reasons or evidence with regard

to claims of the person advancing the argument, not comments about their character. It is perhaps the most heavily used logical fallacy in Trump's arsenal of fallacies. Some of Trump's early advertisements attacked Hillary Clinton's health instead of her policies: "Hillary Clinton doesn't have the fortitude, strength or stamina to lead in our world. She failed as Secretary of State. Don't let her fail us again" (Beckwith, 2016). *The New York Times* has kept track of the victims of Trump's *ad hominem* tweets, which are mostly examples of name-calling, and it publishes these in an ongoing list (Lee & Quealy, 2019 - started in 2016, but current – as of May 2019, 598 persons).

The straw man fallacy. This fallacy occurs when one distorts the opponent's position and frames it into easily refutable terms. By criticizing this distortion, the fallacy maker claims victory over the opponent, whose original argument was quite different. Trump claimed that "Hillary Clinton wants to take your guns away, and she wants to abolish the Second Amendment!" While she advocated for gun control, she never has suggested that she wants to eliminate guns. The NRA produced an ad called "Don't Let Hillary Clinton Leave You Defenseless," which depicts a woman who is alone at night when her house is breached. She reaches for her gun, but Hillary and her Supreme Justices have taken gun rights away, so there is no gun. Because it takes too long for the police to arrive, the woman becomes a victim for the reason that she could not defend herself (Dumenco, 2016).

Appeal to Pity (*ad misericordiam*). Donald Trump has repeatedly claimed that no president in history has been treated worse than him, ever. For example, at the commencement ceremony for the U.S. Coast Guard Academy, he said: "No politician in history, and I say this with great surety, has been treated worse or more unfairly" (Nakamura, 2017). On one level, that may be true, but he seems to be unaware that it is the result of his actions, policies, appointments and administration.

A given case can illustrate more than one logical fallacy. Responding to Ilhan Omar's supposedly "anti-Semitic" tweet about Israel, Sarah Huckabee Sanders, one of the White House press secretaries under Trump, defended President Trump's assertion that the Democratic Party has become "anti-Israel" and "anti-Jewish":

The president has been an unwavering and committed ally to Israel and the Jewish people, and frankly the remarks that have been made by a number of Democrats and failed to be called out by Democratic leadership is frankly abhorrent, and it's sad, and it's something that should be called by name (Moore, 2019).

This assertion could be seen as a Red Herring fallacy. It involves drawing attention to irrelevant points, changing the subject or dodging the issue. "Red Herring" is a hunting term that refers to dragging a herring on the hunting course to lead the hounds away from the pursuit of the prey. Sanders does not discuss the issue of the Democratic party being anti-Jewish; instead, she talks about how Trump supports the Jewish people. That fact may or may not be true, but it has nothing to do about the stance of the Democratic party.

Sanders's remarks also exemplify the Hasty Generalization (or Jumping to a Conclusion) fallacy. That is, it is drawn from inadequate evidence. Sanders indicates that remarks by some Democrats such as Ilhan Omar must mean that all Democrats are anti-Semitic.

Sanders's remarks can also be seen as instances of Begging the Question or Circular Reasoning. That is, something is assumed to be true that has yet to be established or demonstrated. In this case, she implies that because Democrats failed to challenge those statements, they must be anti-Semitic. Thus, she proves something not with evidence but with a lack thereof.

While Trump frequently engages in psychological projection, a psychological process in which persons defend themselves against their own unconscious qualities or impulses by denying their occurrence in themselves while projecting them onto others. For example, he portrays himself as a man of the people, while arguing that Hillary Clinton was the embodiment of special interests, when, in fact, it is more the case with him. He accuses others, such as the Clintons of running a criminal foundation, while denying it in his foundation (which the New York Attorney General had pressured to dissolve because of a "shocking pattern of illegality" (Goldmacher, 2018)). Any news with which he disagrees he deems fake news, yet his assertions are often examples of fake news. The Daily Kos characterizes his projection issues as a Projection Derangement Syndrome, which has the following characteristics:

- The behavior and traits of the subject are perceived as being in someone else.
- The behavior and traits exist in the subject to an extreme degree
- The other person accused of the behavior barely manifests these traits or behaviors, if at all.
- The subject has no awareness he has the behavior or traits he sees in others.
- This projection frequently causes great harm to self or others.
- This pattern of projection is pervasive and persistent (Dreyfus, 2019).

It seems that this process, typical to many politicians and their rhetoric, is not simply psychological but fallacious as well. Such projections can be seen either a form of *tu quoque* argument or the kettle-calling-the-pot black argument (E.g., you are a fine one telling me not to cheat on my income tax, you do it all the time), though in this case, the politician seems unconscious of his own flaws; or a red herring argument in which one draws attention to irrelevant points, changes the subject or dodges the issue. Rather than confronting his own racist rhetoric, Trump accuses Democrats of being racists.

Exercise suggestions will call on participants to consider the following questions:

1. Using a guide such as Lily Lou's *Spot the Flaw in a Politician's Argument With This Guide to Logical Fallacies* (2017), https://lifehacker.com/spot-the-flaw-in-a-politicians-argument-with-this-guide-1796333209 or Bo Bennett's *The Ultimate Collection of over Three Hundred Logical Fallacies* https://www.logicallyfallacious.com/tools/lp/Bo/LogicalFallacies/205/What-is-a-Logical-Fallacy-Exactly, can you find specific cases of logical fallacies in advertisements, in political speeches or on the Internet, and explain why each instance is a specific case of one or more logical fallacies?

LESSON 9: ETHICAL PRINCIPLES

Key ideas:

1. There are commonly accepted ethical principles characteristic of Western culture, with versions often found in non-Western cultures.
2. Many political actions and policies advocated by the disinformation proponents or politicians or governmental agencies violate one or more ethical principles.
3. The general domain of "information ethics" addresses ethical concerns in the sources, creation, organization, dissemination, transmission, packaging, use, and evaluation of information
4. "Digital ethics" has emerged to address specific issues that arise within digital media.

In addition to logical fallacies that are rampant in the disinformation marketplace, many ethical principles are violated. While there is some disagreement about the priority and number of foundational ethical principles, we can assert, at least for Western culture, that there are five common ones: (1) Respect the moral autonomy of self and others (in other words, do unto others as others would do unto you, or in Confucian terms, do not impose on others what you yourself do not desire); (2) Seek justice or fairness; (3) Seek social harmony; (4) Act in such a way that the amount of harm is minimized or, better, that existing functional relationships are maintained or promoted; and (5) Be faithful to organizational, professional, or public trust. This list is not intended to be comprehensive, and some of these values can admittedly conflict with each other. For example, seeking social harmony or the maximum amount of happiness for the greatest number of people is sometimes inconsistent with respect for individuals. Universal vaccination, for example, may infringe on individual liberty. Refusing it, or allowing broad exemptions from vaccination, respects the first principle, but infringes the fifth by causing medical problems for the unvaccinated and members of the population whom they may encounter. Yet some situations violate all five principles, such as Trump's treatment of immigrants seeking asylum at the southern border. Principle 1 states that we must respect the moral autonomy of each and every human being, a principle embodied in Kant's categorical imperative (Treat others as ends and never merely as means) and which is echoed in many religions' precepts (e.g., many foundational sacred texts explicitly mandate care for the poor, the sick, and the stranger). Treating asylum seekers as having no rights (e.g., violating Geneva Conventions), separating children from their parents, and keeping children in dangerous and unsanitary conditions are profound violations of this principle. If we look at the second principle, seek justice or fairness, we also see violations: to ignore or delay due process of asylum claims is neither just or fair. Trump and his administration do claim that their policies will protect the social harmony of the United States (principle 3), arguing that many asylum seekers are rapists, crooks, and job displacers. However, these claims are false. The growth and happiness of the United States are, in fact, due to the inclusion and integration of immigrants, those who have come and those who continue to come. The policies also fail to minimize harm. Instead, the administration seems intent on a high level of cruelty, under that notion that it may deter immigration: e.g., separating children from parents (with no plan to reunite them), delaying legal procedures for asylum seekers, trying to prevent asylum seekers from stepping on US soil, keeping them in abysmal conditions, etc. These policies destroy functional relationships, such as those between parents and their children and other relatives (principle 4). (5) Finally, the president's policies violate the ethical principle of being faithful to organizational, professional or public trust. To uphold his role in the public trust, the President is to uphold the Constitution, enforce established procedures for asylum seekers, and seek the common good. He fails the public trust in these and other cases.

Information ethics is the general domain that addresses ethical concerns in the sources, creation, organization, dissemination, transmission, packaging, use, and evaluation of information. It is the latter (use and evaluation) that are highlighted in these lessons. However, the packaging is also of critical concern. For example, in website creation, there is what is called "dark patterns," explored by Harry Brignull (https://www.darkpatterns.org/) (Brignull & Darlo, n.d.), ways of creating a website that forces the user to take action that they would not normally do. For example, when a product-seeker goes to amazon.com, after perusing a particular product, the Amazon screen displays such information as" "the following products are bought together" (including the product at hand), leading the purchaser to think that the price for the 2 or 3 items mentioned was less than the items purchased separately, when in fact it is the same products with the combined price and no discounts. We might want to add another subcategory of disinformation that we could call "dis-sonance-information" or "muddling disinforma-

tion," because while this disinformation is intended to deceive, it is designed to confuse or mislead the consumer, e.g., in this case, to imply that one can get a discount where there is none. Amazon.com will often assert that there are only two items left in stock, suggesting urgency to buy, when, in fact (if it were true), most items could be quickly reordered. Another example occurs when users download Adobe Reader to install on their computer in order to read pdf files. In order to get this "free software," there is a checked box to include a download of Google Chrome as well (previously it was McAfee Anti-Virus software), which would have to be unchecked in order not to download this additional software. Most users do not recognize this pre-choice or forced choice and unwittingly download the included program.

There is an extensive collection of concerns in information ethics that can be glimpsed at The International Center for Information Ethics (https://www.i-c-i-e.org/) and its journal, the *International Review of Information Ethics* (http://www.i-r-i-e.net/index.htm). The Center was founded in 1999. At these and similar sources, one can explore the rapidly growing field of information ethics and the related domains that it has expanded to embrace.

There has also emerged a field of digital ethics, which, as Daniel Richards asserts, "encompasses how users and participants in online environments interact with each other and the technologies and platforms used to engage." Richards adds, "[an] important part of maintaining a solid digital ethos is critically reflecting on your choices of online self-representation and whether or not these choices reflect your goals as a student and as a professional" (Richards, n.d.). Given a particular context, are one's choices of self-representation or for the representation of others ethical? The basic idea behind Richard's comment is that the ethical principles that we invoke in other environments should be invoked online and on digital media such as cell phones: e.g., do not spread rumors about others that you would not have spread about yourself. However, Jonathan Terrasi points out that "[p]ersonal digital ethics encompass how individual users honor one another's right to self-determination online. What makes these unique compared to the typical ethics guiding interpersonal conduct is that, given the nature of online infrastructure, communication is almost always mediated by some private interest or third-party" (Terrasi, 2019). As noted earlier about social media, these platforms are hosting sites in which users participate but which they do not control, though they can control what they contribute or share on the platform. If a friend sends one a photo of oneself, such photos should not be shared in social media without the friend's consent. Terrasi contrasts personal digital ethics with corporate digital ethics, which "revolve around the practices of online platforms like social networks collecting sensitive information about users" (Terrasi, 2019). Google, Amazon, and other large online companies collect information about their users, and there is no clear expectation of what can and should be done with such information, including the right of users to control the data about themselves.

The Zur Institute applies the notion of digital ethics to the realm of mental health professionals, defining it as "how to manage oneself ethically, professionally and in a clinically sound manner via online and digital mediums" (Zur Institute, n.d.). The concern is whether it is ethical to use the Internet or cell phones, for example, to learn about patients or clients; whether it is appropriate to friend them; and whether and, if so, how professionals should react to negative, even scurrilous, online reviews. It is easy to extrapolate these views to all professions and personal online behavior, much in the same manner as the Pro-Truth pledge, but to modify it to include the application of ethical norms in digital media which are often mediated by third parties. Ethics has not changed, but its field of application has galloped ahead thanks to expanded communication technologies and their effect on the environment at large. Adam Henshall suggests that there are currently three hot issues in digital ethics. (1) Is computer code an instance of speech and regulation? Lawrence Lessig argues that computer code is a form of

regulation, but not in a favorable sense. Rather than promoting more freedom, Lessig believes that "as this code changes, the character of cyberspace will change as well. Cyberspace will change from a place that protects anonymity, free speech, and individual control, to a place that makes anonymity harder, speech less free, and individual control the province of individual experts only" (Lessig, 2016). (2) A second issue is how much social and governmental control will be relegated to computer programs, whether we will move to a future where computers may be largely in control. Given that the computations are becoming increasingly complicated, there may come a time when their recommendations cannot be adequately assessed. Furthermore, (3) how do we combat digital monopolies, such as Google, Facebook, Amazon and Apple? (Henshall, 2018). This third concern echoes Terrasi's concerns about corporate digital ethics. While these broad issues will have consequences which we must address, for this lesson, it is important to focus on what we can do immediately: personal digital ethics or professional digital ethics – acting responsibly in the environment of digital media, not to mention engaging in and promoting media and information literacy.

Exercise suggestions will call on participants to consider the following questions:

1. Can you find specific instances, actions, or policies of politicians or the government that violate one or more of the given ethical principles? Give details about the case, actions, or policies (with source documentation, such as URL) and explain precisely how specific ethical principles are violated.
2. Consider Eric Reiss's presentation on "the Ethics of AI" on YouTube dealing with ethical issues in website creation, particularly tricks in getting the user to do or buy things they do not typically want to do, (what are called "dark patterns"): https://www.youtube.com/watch?v=UAARKi8v0-ps&fbclid=IwAR1Y9LQp9yKrMPQXJ7Gpbuv7NXtARI13ghr1zZpEebmSdkrmPKvLuapmt6o (28 minutes, but quite enlightening). Alternatively, check the web site, https://www.darkpatterns.org/, created by Harry Brignull, in particular, consider https://www.darkpatterns.org/types-of-dark-pattern. Discuss the "dark patterns" that you have encountered in your interactions with websites. Be specific in your response.
3. Check out the site for international information ethics at https://www.i-c-i-e.org/ and its journal, the *International Review of Information Ethics* (http://www.i-r-i-e.net/index.htm). Pick out a particular theme and discuss key ideas: e.g., the domains the field contains, the Internet of things, etc.
4. If you were embracing digital ethics, what postings would be permissible on a social media site? What postings would be unethical? Be specific in your responses.

LESSON 10: INFORMATION, MEDIA AND DIGITAL LITERACIES AND PERSONAL, POLITICAL AND PROFESSIONAL COMMITMENTS

Key ideas:

1. One can compare and contrast different literacies: information literacy, media literacy, and digital literacy
    a. Media literacy is "the ability to access, analyze, evaluate, create, and act using all forms of communication" (Media literacy defined, 2010).

b.   Information literacy is a "set of skills needed to find, retrieve, analyze, and use information" (Information literacy glossary, 2006).

c.   Digital literacy is "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (Heitin, 2016).

d.   These literacies are complementary, but media literacy and digital literacy can be employed to enhance information literacy.

2.   There are forms of information literacy using rational techniques for potentially open audiences

a.   determining the credibility of web sites and other online sources;

b.   learning how to locate, evaluate, and use effectively the information sought for information needs;

c.   learning the merits, defects, and effective use of search engines;

d.   promoting information literacy programs;

e.   learning about the structure of information sources to learn how to use them effectively;

f.   explaining the differences between knowledge, opinion, second hand-knowledge and the role of cognitive authorities;

g.   detecting logical fallacies;

h.   detecting violations of ethical principles.

3.   There are dimensions of information literacy when addressing closed audiences, those who live in an information filter bubble, or those in a closed propaganda loop. These considerations are less about solutions and more about why some partisans are shackled to their positions.

a.   Cults

b.   Addiction to tribal identity porn

c.   Filter bubbles or propaganda feedback loop

d.   Conspiracy theories

e.   Litigation

f.   The reinstitution of the fairness doctrine

g.   Socratic Techniques

4.   Personal, Professional, and Political Commitments

a.   Pro-Truth Pledge

b.   Promote the public good

c.   Profession of ignorance

In the arena of coping with disinformation, two kinds of literacies have been suggested, media literacy and information literacy, usually based on one's perspective, that of journalism and mass communication or communication studies in the first case and that of library and information science in the second case. What are their relationships and their differences?

The National Association for Media Literacy Education defines media literacy as, "the ability to access, analyze, evaluate, create, and act using all forms of communication"; it "is the ability to encode and decode the symbols transmitted via media and the ability to synthesize, analyze and produce mediated messages" (Media literacy defined, 2010). Like information literacy, it is interdisciplinary, and it is concerned with a critical approach to the content of messages. Unlike information literacy, it looks at the specific framework and medium of the message. Given a particular message, a critical analysis would involve evaluating the purpose and point of view of the message, how it was constructed, whether it was

trying to promote bias, propaganda, profit or some other agenda. Media literacy also aims to educate about how to create and develop messages. The Young African Leaders Initiative (YALI) characterizes media literacy with 5 core concepts:

(1) all media messages are constructed; (2) media messages are constructed using a creative language with its own rules; (3) different people experience the same media message differently; (4) media have embedded values and points of view; and (5) most media messages are organized to gain profit and/or power (Media literacy: Five core concepts, n.d.).

Media literacy can be seen as complementary to information literacy. To understand this claim, we must define information literacy.

The American Library Association (ALA) characterizes information literacy as the "set of skills needed to find, retrieve, analyze, and use information," including "competencies in formulating research questions and in their [students'] ability to use information as well as an understanding of ethical and legal issues surrounding information" and skills "in critical thinking" (Information literacy glossary, 2006).

With information literacy training, information seekers would:

1. know when they have a need for information
2. identify information needed to address a given problem or issue
3. find needed information and evaluating the information
4. organize the information
5. use the information effectively to address the problem or issue at hand. (adapted from Presidential committee on information literacy: Final report, 2006)

The difference in information literacy and media literacy is the primary channel sought for information. A significant concern for information literacy is the use of formal information systems, such as libraries and other information supplying organizations, as a source for information. Media literacy looks at all channels through which information is communicated. Unfortunately, this distinction is not so clear because (1) information seeking is often not all that conscious (e.g., seeking content for confirmation bias); (2) information-seeking behavior is not restricted to formal information systems – in fact, the typical information seeker uses search engines first to satisfy their information needs: they are interested in "satisficing" their needs, in finding something that minimally fits their needs, not necessarily in finding the best content for their needs; (3) because of this default information-seeking posture, information literacy programs challenge information seekers to evaluate information from the web, whether from Google, social media or other information channels. When using non-formal information systems, the information seeker has to be trained to be wary of information content, and that is why media literacy is also useful. The context of the message in authorized information systems is pretty straightforward: to provide reliable sources of information (in general – libraries do not regularly stock or promote "outright lies" except as an example of, e.g., hate literature), whether knowledge, opinion or orthodoxy. On the web, one has to be critical of the content, context, intent, structure, channel, and reliability of the message. One can argue that media literacy is an extension of information literacy, given that we are looking at it in the context of information-seeking behavior. The American Library Association has decided to consider media literacy training in public library programs in addition to information literacy (Media literacy @ your library, 2017). At one point, they addressed the issue of

a "digital literacy" that combines media and information literacy: "Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills." (Heitin, 2016). The upshot is that both information and media literacy are essential in information seeking on the Internet, but for this lesson, I will conceive a broader notion of information literacy to include media and digital literacies.

It seems useful to divide information literacy, including media literacy and digital literacy, into two aspects: (1) aspects of information literacy that are useful for potentially open audiences, such as students at all level, adult learners, and persons trying to understand the disinformation landscape; and (2) aspects of information literacy that attempt to address issues for closed audiences, such as die-hard conservatives, right-wing or left-wing groups that live within their filter bubble or those who live in a propaganda feedback loop.

There are many forms of information literacy that can be used to address the first group. The first is determining the credibility of web sites, especially those espousing fake news, by analyzing their currency, the authorship (if available), the quality of their links and supporting resources such as bibliographic references, and by checking with experts or with fact-checking sites, such as PolitiFact (http://www.politifact.com/), FactCheck (https://www.factcheck.org/) or Snopes (https://www.snopes.com/fact-check/). These sites, too, can reflect bias (though not necessarily an invalidating bias, one that it ignores or distorts the interpretation of the facts or evidence): https://www.makeuseof.com/tag/true-5-factchecking-websites/ (Eillis, 2019). For a comprehensive approach to web site evaluation, see http://www.citationmachine.net/mla/cite-a-newspaper/search?utf8=%E2%9C%93&q=new+york+times&commit=Search+Newspapers (Citation Machine, n.d.).

Another information literacy skill is to learn how to effectively locate, evaluate, and use information sought for information needs in formal information systems such as library catalogs or online databases. While menu-driven systems are useful in searching online databases, there are unknown hazards if one is trying to do a comprehensive or precise search. For example, if one is looking in the research database, ARTbibliographies Modern, for a list of publications, by Yves-Alain Bois from 1980 to the present, one would typically enter the author name as given or interpreted in the search query: e.g., Bois, Yves-Alain. However, it turns out that the database has six variations of the author's name: ("Bois, Yve Alain" OR "Bois, Yve-Alain" OR "Bois, Y -A" OR "Blois, Yve-Alain" OR "Bois, Y A" OR "Bois, Yves-Alain"). If one used only the name given to them (Bois, Yves-Alain), one would get a partial result because they would get results only for the one variation of author name that they used, not any from any of the other variations of author name. Many, if not all, users think that computers automatically map all variations of an author's name to a single entry, but it does not. A few systems which have what is called strong authority control, such as the Library of Congress, do link, for example, Jacqueline Kennedy Onassis (their preferred entry) with Jacqueline Bouvier Kennedy, Jackie Kennedy, Jackie Onassis, Jacqueline Bouvier, Jiagulin (Chinese variant) or Jackie, all of the forms of her name that an information seeker may use to find information by or about her. But these systems are few, and many information databases do not have this feature. This problem of a lack of authority control is not only true for ARTbibliographies Modern but many others. It is easy to fail to make a comprehensive search in databases such as these or miss a relevant entry because of not using the correct form of author name or not using all forms of the author name in the database. What magnifies this problem is that different database producers do different forms of indexing of author name and may have different entries for a particular author name so that when does multiple database searching (for which most libraries provide), especially database searching from different vendors, the results are severely flawed.

Furthermore, one can increase the precision of one's results from organized information collections, such as information databases, by learning about the indexing or subject terms used to construct the database. For controlled databases, the indexers try to be consistent in assigning subject term vocabulary to the intellectual content of articles in the database. If one uses the assigned term for a particular concept for a particular database, one can achieve a precise result, i.e., all articles that have been assigned a particular subject term will be clustered in the result. The result will be the consequence of an intellectual process undertaken by indexers and not a computer algorithm that does not understand the meaning of terms. Unfortunately, the assignment of subject terms varies among different databases and database producers, so that terms used in one database may not be used in another. Multidatabase searching using a single search term or phrase will produce flawed results, unless one takes the trouble to use the correct term, if it is available, for each of the databases being searched. There are many other skills to master in database use, and issues to understand about database construction, that could enhance one's ability to search more effectively. However, it is important to note that if the information seeker just wants anything related to the search topic (i.e., anything about a particular concept or anything by a particular author), something that "satisfices" their information need (i.e., seeking the minimum acceptable outcome or choosing the first satisfactory option that one comes across), then rigor in using search systems, seeking what is called high precision (i.e., looking for many articles directly on target) or high recall (i.e., looking for many articles closely related to their information need) is not required. Google satisfices many information needs, which is why it is so popular. The unfortunate side effect of searching ease is failing to learn and not wanting to learn about how to achieve depth or breadth in one's searches. There could be much better information to satisfy one's information need if the seeker understood how to find it. Unfortunately, many library search systems have been dumbed down to menu-driven systems that not only hide their search issues but also make it difficult to correct them.

Even with the ease of access to search engines, such engines are poorly used, and the nature of the results is poorly understood. The next important information literacy tool is learning the merits, defects, and effective use of search engines. The following are an outline of key points:

1. The choice of vocabulary in a search engine is important. A search on *kidney neoplasms* will generally produce qualitatively better results than *kidney cancer* because the former is the accepted medical terminology, used in scientific studies, and is likely to occur in research-based web sites or resources. Having said that, *kidney cancer* sites may be more accessible to the layperson. The point is that the choice of search terms can greatly affect the nature and quality of the results.

2. The use of search engine qualifiers will improve the quality of one's search, such as these Google techniques, Refine Web Searches (https://support.google.com/websearch/answer/2466433?hl=en&ref_topic=3081620) or Advanced Search Techniques (https://support.google.com/websearch/answer/35890?hl=en&ref_topic=3081620). One can restrict searches to specific domains (e.g., .gov), to specific time frames, to particular words or phrases, to alternative words or phrases, to language, to file type, to image type, or to image color, or to exclude any of these, to mention a few options).

3. All search engines exhibit bias. There are 200 factors that affect how Google ranks its search results (https://backlinko.com/google-ranking-factors), but most factors do so only slightly (https://optinmonster.com/seo-ranking-factors/). For example, new sites often rank low, the most popular sites (built on the notion of link popularity – the more sites that link to a particular site are call link popular) are high on the output list. However, what is popular may not be the best. Sites that load

slowly on mobile phones are ranked low but may have good information. Since 95% of searchers never go beyond the first page of search results, this is a serious problem because there may be more valuable resources below the splash page or pages (Santora, 2019).

4. Ideally, information seekers will learn how to learn by understanding how knowledge is organized and indexed and about pitfalls in failing to critically reflect on issues in information systems, such as library catalogs and information databases.

There are some other techniques for information literacy. Many libraries offer information literacy programs that provide hands-on training in the skills mentioned above. There are also many sites that offer guidance. The International Federation of Library Associations (IFLA) suggests the following criteria for spotting fake news:

1. consider the source – investigate the site, its mission and contact information;
2. read beyond the given site or source, especially if the content is outrageous or intended to inflame;
3. check the author to see what credentials they have or whether they are real;
4. check the kind of supporting resources that are provided – follow the links and where they lead one to, to assess the credibility of supporting resources;
5. check the date of the story – old news may be old and not currently relevant (though many sites offer perennial insight);
6. determine whether the site is a spoof or satire, such as many stories that appear in The Onion (http://www.theonion.com/);
7. check your own biases – no one is unbiased – make sure that you do not prey on your own biases, liberal or conservative; and finally
8. ask the experts – consult a librarian or subject expert or check a fact-checking site, like Politifact (http://www.politifact.com/). (How to spot fake news, n.d.).

Many libraries post information about the CRAAP test, a guide for evaluating sources found on the Internet. CRAAP is an acronym for evaluating such properties as Currency, Relevance, Authority, Accuracy, and Purpose. An example can be found at https://guides.library.illinoisstate.edu/evaluating/craap.

CONCLUSION

There are also strategies offered in the lessons above: helping others understand the varieties of ignorance and false information on the web (lesson 2); the differences among knowledge, opinion, second hand-knowledge in media use (lesson 3) and the role of cognitive authorities in validating information or validating disinformation (lesson 6); the detection of logical fallacies (lesson 8) and the detection of violations of ethical principles (lesson 9).

The more difficult problem is trying to develop information literacy options for addressing closed audiences, those who live in an information bubble or those in a closed propaganda loop. Information literacy here means not that we have a solution, but why a solution may not be forthcoming, i.e., understanding why the problem defies simple solutions. Several related phenomena may be involved.

One can start with cults. Janja Lalich, who has studied cults extensively, suggests that members of "totalistic" cults—those that consider their ideology the one true path—share four key characteristics. They

1) espouse an all-encompassing belief system; 2) exhibit excessive devotion to the leader; 3) avoid criticism of the group and its leader; and 4) feel disdain for non-members (Jacobs, 2018).

She believes that followers of Trump may belong to a cult. Steven Hassan authored a book, *The Cult of Trump* (2019), that obviously agrees (given the title of his book) that Trump is the leader of a cult because of "his air of absolute confidence, his grandiosity, - 'only I can fix this' – his practice of sowing fear and confusion, his demand for absolute loyalty, his tendency to lie and create alternative 'facts' and realities, his shunning and belittling critics and ex-believers" (Hassan, 2019, Introduction). He compares Trump to a line of cult leaders, such as Sun Myung Moon (of which the author was a former member), L. Ron Hubbard, David Koresh, Lyndon LaRouche, and Jim Jones. The only strategy that seems to work is being deprogrammed, physically removing the cult member from the cult context and challenging their belief system, until they see the unreality of their cult existence. This process was what happened to Hassan and had stimulated his interest in the psychological processes that bring cult leaders into total control. The problem with such methods, including legal constraints, is that the deprogramming must be continuously enforced, else going back to the cult environment will devolve into a relapse.

This seductive context is related to another aspect of cult devotion: filter bubbles or the propaganda feedback loops. In the current situation, many political partisans live in a filter bubble, where only select sources enter the partisans' information stream, and others are ignored (as described in the lessons on deception and self-deception and cognitive authorities). According to Yochai Benkler, they live in a propaganda feedback loop, that not only controls the propaganda streams that are allowed attention but also where these streams reinforce one another (Morrison, 2018) (anticipated in the lessons of deception on self-deception and cognitive authorities). As we have seen, Fox News is an illustration. As we noted earlier, at the beginning of the impeachment inquiry of President Trump in October 2019, an American values survey by PRRI (Public Religion Research Institute) indicated that while 37% Republicans overall asserted that almost nothing could dissuade them from approving of Trump, over 50% of Republicans whose primary news source is Fox News approved of Trump. Those Republicans whose primary news source was other than Fox News had only a 30% approval rating of the President (Bump, 2019). According to Eric Wemple, the influence of Fox News cannot be underestimated:

There's simply no outlet that dominates any other part of the political spectrum in the way Fox News dominates the right. With that dominance, Fox News has done great damage. It's not as if Fox News's influence extends to only however many millions may be viewing in prime time. There's what experts call a "media ecosystem" out there, where people take nonsense uttered on Fox News, then share it on Twitter, on Facebook, with their neighbor. Nonsense has a high pass around rate (Wemple, 2019).

The Trump cult seems to be somewhat different from typical cults. Cults revolve around a singular leader, and the channels of communication are strictly controlled by him/her. In Trump's case, the communication channels are not strictly controlled by him, but by those who want to support his regime (e.g., Fox News, Sinclair Broadcasting) in a sort of set of self-regulating and promoting propaganda machines. Their support may not be only to their leader, but the power, money, and control that they obtain by promoting his leadership and government. One former Fox News commentator, Tobin Smith, refers to the consumption of Fox News as addiction to "tribal identity porn," based on cultural and political resentment that "trigger feelings of hate, anger and outrage - the addictive trifecta of tribal partisan pornography" (Smith, 2019, p. 459).

Another troubling example of the filter bubble is found within social media sites that espouse various conspiracy theories. The problem is that when one attempts to offer evidence to counter a specific conspiracy theory, it is often met with a retort that the evidence provided is part of the conspiracy plot or higher conspiracy plot. All evidence is deemed by the conspiracy conceit as non-evidence or evidence of a more extensive conspiracy theory. People involved in such sites seem to be engaged in a version of Plato's imagining state of Cave dwellers mentioned in Lesson 3.

One solution to these problems is litigation, suing social media platforms for slander or infringements on privacy. However, Section 230 of the Communications Decency Act (CDA) of 1996, asserts that "[n]o provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider" (47 U.S.C. § 230). What this means is that Internet Service Providers (ISPs) and other third-party online intermediaries that host or republish content are safeguarded from many laws that might hold them otherwise legally liable. There are limited and context-specific exceptions for criminal actions and intellectual property infringement. As slanderous and hateful speech proliferates on the Internet, there might be some consideration for curtailing such broad freedom of speech. The irony is that the CDA was created to promote "decency." But it seems to have created the opposite in many instances, leading scholar Rebecca Tushnet to refer to the online intermediaries, such as Facebook, as "power without responsibility" (Tushnet, 2008).

One possible solution to many of these problems is the reinstitution of the Fairness Doctrine. The original 1949 Doctrine required broadcast license holders to present both sides of issues of public importance in a manner that was honest, equitable, and balanced. It could be argued that this regulation should apply to all news sources, whether radio, television, or cable news, as well as social media platforms like Twitter, Facebook, and other social media sites. As in the original Doctrine, it could be regulated by the Federal Communications Commission (FCC). However, other federal agencies could also be involved, such as the Federal Trade Commission (FTC). One major challenge inherent in this proposal is that such regulations might apply to media in the United States (unless incoming data streams from other countries could be regulated as well), but not internationally. Given the international character of the Internet, there would be countries with widely permissive policies, as there are now. Perhaps regulations by the EU or the UN might mitigate some of these circumstances. These fixes would be difficult to apply in that most platforms are not likely to be regulated in a uniform manner. In the current political environment, such regulations are unlikely to be enacted, and self-regulation does not appear to work very well, given that competitors of a given social media site could provide unfettered platforms.

While there are no clear techniques for ensuring that all citizens and all consumers of misinformation can be freed from its influence, we might suggest trying the Socratic approach. In the Platonic/Socratic view of true education, there are two salient metaphors: (1) Socrates as a stingray, electric eel or gadfly (to which he is referred in various Platonic writings), who shocks or benumbs his interlocutors into an awareness of their ignorance, i.e., into acknowledging that what they thought they knew with confidence they actually do not know. The purpose of this shock is to clear away what one unidentified commentator referred to as "the conceit of false knowledge." (The author remembers the phrase and its insight but cannot find the original Plato commentator). Ignorance and false knowledge, like false opinions, are conceits, i.e., mistaken beliefs that we are owners of *the truth.* The second salient Platonic/Socratic image is (2) Socrates as a midwife – using questions skillfully to guide his interlocutors to a self-realization of their true condition, hopefully with a willingness to be open to real learning (and to ceasing to indulge their confirmation biases). This second technique echoes John Swan's sentiments regarding "the simple but profound fact that the truth must be perceived by individuals, not dictated to

them" (Swan & Peattie, 1989, p. 18). The paradox is that those who listen to false cognitive authorities seem to believe that truth *can* be dictated to them. However, this process does not always succeed, as many are secure in their state of ignorance and unwilling to change: e.g., when a liberal is confronted by an unpleasant fact about or consequence of his/her position, he or she may retort with such remarks as "I'm entitled to my own opinion!" rather than working through the difficulties in supporting his or her position. There is heat but no enlightenment with a battle of opinions, however ill-founded or well-founded they are. Enlightenment may only occur through a genuine dialogical process. We must admit that an interlocutor in a dialogue may lack the wit to follow the logical conclusion of Socrates' questions or the questions of the leader of the dialogue. This inability is evident in the case of Meno, the central character of Plato's *Meno*, who is left in a state of befuddlement when Socrates shows that his opinions about virtue, the dialogue's subject, lack foundation (*Meno*, 71b-78e). A victim of false cognitive authorities, the Sophists, Meno was merely echoing the assertions of his teachers. He lacked the wit to supply a proper rationale for his definitions, no doubt because there was none. He is left with opinions, most likely false opinions. At least he comes to know that he does not know, and that the opinions that he parrots from his Sophist teachers do not hold water.

Appealing to Socratic techniques, if a Trump supporter tells you his vote for Trump "… was a wise decision … for working-class Americans who are tired of their jobs being taken by illegals" (Lafond, 2018), one can ask what illegals is he talking about and what jobs? One can point out that while it is true that there are 7.5 million undocumented immigrants in US jobs, the majority of these jobs are not ones that most US citizens would want (e.g., farm laborer or chicken plant processor). One might also admit that such jobs depress good wages, but that this is hardly the fault of the laborer, but rather an unwillingness on the part of companies to pay decent wages for such work (Olsen, 2019). It is equally true that student immigrants have earned advanced degrees, remained in the US, and been hired for high-paying jobs in various businesses and educational institutions. That opportunity is also available to many Americans if they are willing to do the work. If the Trump supporter is annoyed with such observations, he/she may respond with silence or with retorts to the effect that Trump has done other great things. Such an example illustrates the Socratic technique of benumbing. It also illustrates a case where the interlocutor is unwilling to change.

Rick Alan Ross of the Cult Education Institute suggests that if conversing with a Trump supporter, one should pick an emotionally charged issue, such as reproductive health rights, and explain that Trump supports defunding Planned Parenthood and holds outmoded opinions about women (Matthews, 2018). These observations might act as a benumbing moment, challenging the interlocuter into an awareness that her idol holds a position contrary to her beliefs. Ross also suggests some other techniques. To sway a Trump supporter, one can start by identifying persons that she respects, looking for people who have spoken in opposition to Trump. In this way, one can play the role of a midwife by suggesting other high-profile figures or sources that the interlocuter respects. Ross indicates that "the key to introducing more critical thinking is pointing out ambiguity and nuance, rather than challenging core beliefs directly" (Matthews, 2018).

Such reflections suggest possibilities for trying to open the closed minds of many political partisans. However, there are also personal, professional or political agendas to which one can commit. One can commit to the Pro-Truth Pledge (https://www.protruthpledge.org), personally, politically and professionally, too, unless we are acting in a profession such as librarianship, in which the librarians are charged "to provide materials and information presenting all points of view on current and historical issues. Materials "should not be proscribed or removed because of partisan or doctrinal disapproval" (Library Bill of

Rights). However, there is a bit of a tension in that commitment, for the Library Bill of Rights also states: "Books and other library resources should be provided for the interest, information, and enlightenment of all people of the community the library serves." (Library Bill of Rights) Spreading untruths and promoting websites full of disinformation cannot be said to support patron enlightenment, except perhaps in a negative way—by offering negative examples and chances to observe the disinformation with which propagandists want to flood the Internet, much in the same way that a pro-white-supremacy book in a library collection could illustrate hate speech and the varieties of misinformation or disinformation that support such a philosophy. If we take the Pro-Truth Pledge, we promise only to share verified truth as completely as possible, to honor truth (to acknowledge and defend it) and to encourage truth (to ask for lies to be retracted, to educate ourselves and others, and to acknowledge genuine experts). This Pledge could help address and beat back the verbal pollution that exists in the public sphere.

There is a final idea that we can learn from Socrates. If you recall many of Plato's dialogues, they start with Socrates' profession of ignorance. His interlocutor in a dialogue, e.g., Meno in the *Meno,* brings up a topic to be discussed. Socrates' response is an enthusiastic willingness to learn because he professes that he has little or no knowledge of the topic at hand. His profession of ignorance has been referred to as ironic, because ultimately, his knowledge of the topic, as 'limited' as it is professed to be, turns out to be the most substantial. This profession of ignorance is not false. It is a reminder from Socrates to himself to stay open to learning, to consciously recognize our biases and our particular history, and to avoid pitfalls that may hinder our real learning or our real understanding of our interlocutors and what they have to offer. It reminds us to recognize that we are a community of learners trying to work for a common, public good, a purpose that often gets lost in partisan bickering.

Exercise suggestions will call on participants to consider the following questions:

1. Can you locate two specific web sites and evaluate their credibility?
2. Taking a specific research question, can you locate, evaluate, and use information effectively from one specific library or library database and one Internet source (e.g., Google Scholar)?
3. Can you create three searches on Google, where you use at least two of its advanced features for each search? See Google techniques, Refine Web Searches (https://support.google.com/websearch/answer/2466433?hl=en&ref_topic=3081620) or Advanced Search Techniques (https://support.google.com/websearch/answer/35890?hl=en&ref_topic=3081620). Can you explain the merits and defects of the results of your searches?
4. Can you find out about and take Pro-Truth Pledge (https://www.protruthpledge.org/)?
5. What techniques can you find other than those in the lesson whereby those involved in a political filter bubble or closed propaganda feedback loop can be effectively challenged in their assumptions (in the way of Socratic benumbing) or actually moved forward to begin to change their beliefs (in the way of Socratic midwifery).

The inclusion of a glossary would be helpful for quick access to key concepts.

NOTE

In addition to the new material, this chapter is derived from three sources: Froehlich (2017); Froehlich (2019); and the course, *The Age of Disinformation*, which the author created and taught, Kent State University (Spring, 2018; Spring, 2019).

REFERENCES

Alba, D., & Satariano, A. (2019, September 26). At least 70 countries have had disinformation campaigns, study finds. *The New York Times.* Retrieved September 29, 2019, from https://www.nytimes.com/2019/09/26/technology/government-disinformation-cyber-troops.html

Alicke, M. (2017, September 10). Willful ignorance and self-deception. *Psychology Today.* Retrieved July 30, 2019, from https://www.psychologytoday.com/blog/why-we-blame/201709/willful-ignorance-and-self-deception

Beckwith, R. T. (2016). Donald Trump's new ad attacks Hillary Clinton's health. *Time.* Retrieved March 4, 2019, from http://time.com/4526724/donald-trumps-new-ad-attacks-hillary-clintons-health/

Benkler, Y., Faris, R., & Roberts, H. (2018). *Network propaganda: manipulation, disinformation, and radicalization in American politics*. Oxford, UK: Oxford University Press. doi:10.1093/oso/9780190923624.001.0001

Bennett, B. (2019). *The ultimate collection of over 300 logical fallacies*. Retrieved June 30, 2019, from https://www.logicallyfallacious.com/tools/lp/Bo/LogicalFallacies/3/Book-Contents

Bischoff, L. A. (2019, October 21). With millions at stake, fight over Ohio energy bill takes ugly turn. *Dayton Daily News*. Retrieved October 28, 2019, from https://www.daytondailynews.com/news/local/with-millions-stake-fight-over-ohio-energy-bill-takes-ugly-turn/pybZYrQ9XW2uY6bgOMpgJI/

Brignull, H., & Darlo, A. (n.d.). *Dark patterns*. Retrieved December 5, 2019, from http://www.darkpatterns.org/

Brueck, H. (2018). Switzerland has a stunningly high rate of gun ownership — here's why it doesn't have mass shootings. *Business Insider.* Retrieved January 14, 2019, from https://www.businessinsider.com/switzerland-gun-laws-rates-of-gun-deaths-2018-2

Bump, P. (2019, October 21). The most loyal Trump allies are Republicans who watch Fox News. *The Washington Post.* Retrieved October 25, 2019, from https://www.washingtonpost.com/politics/2019/10/21/most-loyal-trump-allies-are-republicans-who-watch-fox-news/

Citation machine. (n.d.). Retrieved July 23, 2019, from http://www.citationmachine.net/apa/cite-a-website

Communications Decency Act (CDA) of. 1996. Section 230. (47 U.S.C. § 230). (n.d.). Retrieved August 10, 2019 from: https://uscode.house.gov/view.xhtml?req=(title:47%20section:230%20edition:prelim)%20OR%20(granuleid:USC-prelim-title47-section230)&f=treesort&edition=prelim&num=0&jumpTo=true

Dale, D., & Subramaniam, T. (2019, July 18). Trump made 20 false claims at his North Carolina rally. *CNN Politics*. Retrieved July 21, 2019, from https://www.cnn.com/2019/07/18/politics/trump-false-claims-in-greenville-north-carolina-rally/index.html

Davis, J. H. (2019, July 16). House condemns Trump's attack on four congresswomen as racist. *New York Times.* Retrieved July 21, 2019, from https://www.nytimes.com/2019/07/16/us/politics/trump-tweet-house-vote.html

Davis, J. H., & Chokshi, N. (2018, May 17). Trump defends 'animals' remark, saying it referred to MS-13 gang members. *New York Times.* Retrieved September 13, 2018, from https://www.nytimes.com/2018/05/17/us/trump-animals-ms-13-gangs.html

Dawkins, R. (1976). *The selfish gene*. Oxford University Press.

De Keersmaecker, J., & Roets, A. (2017). 'Fake news': Incorrect, but hard to correct. The role of cognitive ability on the impact of false information on social impressions. *Intelligence*, *65*, 107–110. doi:10.1016/j.intell.2017.10.005

De Keersmaecker, J., & Roets, A. (2019, June 1). Is there an ideological asymmetry in the moral approval of spreading misinformation by politicians? *Personality and Individual Differences*, *143*, 165–169. doi:10.1016/j.paid.2019.02.003

Debunking false stories archives. (2019, July 19). Retrieved July 21, 2019, from https://www.factcheck.org/fake-news/

Deweese-Boyd, I. (2017). Self-deception. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Fall 2017 ed.). Retrieved April 24, 2018, from https://plato.stanford.edu/entries/self-deception/

Dickson, E. J. (2019, July 3). QAnon followers think JFK Jr. is coming back on the 4th of July. *Rolling Stone*. Retrieved December 5, 2019, from https://www.rollingstone.com/culture/culture-features/qanon-jfk-jr-conspiracy-theory-854938/

Dings, R. (2017, December). Social strategies in self-deception. *New Ideas in Psychology*, (47), 16-23.

Doxing. (2019). In *Wikipedia*. Retrieved June 9, 2019, from https://en.wikipedia.org/wiki/Doxing

Dreyfus, S. (2019, March 12). Mad man Trump has PDS-Projection Derangement Syndrome. *The Daily Kos*. Retrieved from https://www.dailykos.com/stories/2019/3/12/1841456/-Mad-Man-Trump-has-PDS-Projection-Derangement-Syndrome

Dumenco, S. (2016, September 20). New NRA ad plays like a horror movie: 'Don't let Hillary Clinton leave you defenseless.' *AdAge*. Retrieved July 15, 2019, from https://adage.com/article/campaign-trail/nra-ad-hillary-clinton-leave-defenseless/305929

Ellis, M. (2019, September 30). The 8 best fact-checking sites for finding unbiased truth. *MUO*. Retrieved October 16, 2019, from https://www.makeuseof.com/tag/true-5-factchecking-websites

Fake news. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Fake_news

Fallis, D. (2014). The varieties of disinformation. In L. Floridi & P. Illari (Eds.), *The Philosophy of Information Quality. Synthese Library 358*. Springer International Publishing. doi:10.1007/978-3-319-07121-3_8

FCC fairness doctrine. (2019). In *Wikipedia*. Retrieved September 15, 2018, from https://en.wikipedia.org/wiki/FCC_fairness_doctrine

Fisher, M., & Taub, A. (2019, February 12). When facebook spread hate, one cop tried something unusual. *New York Times*. Retrieved October 22, 2019, from https://www.nytimes.com/2019/02/12/world/europe/facebook-germany-hate-speech.html

Fisher, M., & Taub, A. (2019, August 11). How YouTube radicalized Brazil. *New York Times*. Retrieved August 29, 2019, from https://www.nytimes.com/2019/08/11/world/americas/youtube-brazil.html

Forgas, J. P., & Baumeister, R. F. (2019). Homo credulous: On the social psychology of gullibility. In *The Social Psychology of Gullibility: Conspiracy Theories, Fake News and Irrational Beliefs*. Routledge. Retrieved from https://ebookcentral.proquest.com

Fox News. (n.d.). *Media Bias/Fact Check*. Retrieved April 14, 2019, from https://mediabiasfactcheck.com/fox-news/

Froehlich, T. J. (2017). A not-so-brief account of current information ethics: the ethics of ignorance, missing information, misinformation, disinformation and other forms of deception or incompetence. *BiD: Textos Universitaris de Biblioteconomia i Documentació*, 39. Retrieved March 4, 2019, from http://bid.ub.edu/en/39/froehlich.htm

Froehlich, T. J. (2019). The role of pseudo-cognitive authorities and self-deception in the dissemination of fake news. *Open Information Science*, *3*(1), 115–136. doi:10.1515/opis-2019-0009

Gigerenzer, G., & Garcia-Retamero, R. (2017). Cassandra's regret: The psychology of not wanting to know. *Psychological Review*, *124*(2), 179–196. doi:10.1037/rev0000055 PMID:28221086

Glaser, A. (2019, August 4). 8chan is a normal part of mass shootings now. *Slate*. Retrieved September 1, 2019, from https://slate.com/technology/2019/08/el-paso-8chan-4chan-mass-shootings-manifesto.html

Goldmacher, S. (2018, December 18). Trump foundation will dissolve, accused of 'shocking pattern of illegality.' *New York Times*. Retrieved from https://www.nytimes.com/2018/12/18/nyregion/ny-ag-underwood-trump-foundation.html

Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information avoidance. *Journal of Economic Literature*, *55*(1), 96–135. doi:10.1257/jel.20151245

Hassan, S. (2019). *The cult of Trump*. New York: Free Press.

Hathaway, J. (2014, October 10). What is gamergate, and why? An explainer for non-geeks. *Gawker*. Retrieved October 27, 2019, from https://gawker.com/what-is-gamergate-and-why-an-explainer-for-non-geeks-1642909080

Heitin, L. (2016, November 11). Digital literacy: an evolving definition. *Education Week*. Retrieved November 11, 2019) from https://www.edweek.org/ew/articles/2016/11/09/what-is-digital-literacy.html

Henshall, A. (2018, September 25). What is digital ethics?: 10 Key Issues Which Will Shape Our Future. *Process Street.* Retrieved November 20, 2019, from https://www.process.st/digital-ethics/

Hertwig, R., & Engle, C. (2016). Homo ignorans: Deliberately choosing not to know. *Perspectives on Psychological Science*, *11*(3), 359–372. doi:10.1177/1745691616635594 PMID:27217249

Holmes, J. (2018, July 25). Trump's war on the truth has officially gone full Orwell. *Esquire*. Retrieved September 3, 2018, from https://www.esquire.com/news-politics/a22547037/donald-trump-orwellian-truth-reality-eyes-ears/

How to spot fake news. (n.d.). *International Federation of Library Associations (IFLA)*. Retrieved October 27, 2019, from https://www.ifla.org/publications/node/11174

Information Literacy Glossary. (2006, September 1). *American Library Association.* Retrieved November 22, 2019, from http://www.ala.org/acrl/issues/infolit/overview/glossary

Ingraham, C. (2019, April 29). *Why conservatives might be more likely to fall for fake news*. Retrieved October 26, 2019, from https://www.washingtonpost.com/news/wonk/wp/2016/12/07/why-conservatives-might-be-more-likely-to-fall-for-fake-news/

Jacobs, T. (2018, June 21). A cult expert finds familiar patterns of behavior in Trump's GOP. *Pacific Standard*. Retrieved April 13, 2019, from https://psmag.com/news/a-sociologist-explains-the-similarities-between-cults-and-trumps-gop

Jowett, G. S., & O'Donnell, V. (2015). *What is propaganda, and how does it differ from persuasion? Propaganda & persuasion*. Thousand Oaks, CA: SAGE Publications, Inc.

Kessler, G., Rizzo, S., & Kelly, M. (2019, April 29). President Trump has made more than 10,000 false or misleading claims. *Washington Post.* Retrieved July 21, 2019, from https://www.washingtonpost.com/politics/2019/04/29/president-trump-has-made-more-than-false-or-misleading-claims/?utm_term=.61f1b93761d3

Knowledge. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Knowledge

Lafond, N. (2018, August 7). Ex-Trumpers confront supporters: lots of 'idiots' voted for trump, including me. *TPM*. Retrieved October 27, 2019, from https://talkingpointsmemo.com/livewire/ex-trumpers-confront-supporters-idiots-voted-trump-including-me

Lamba, S., & Notyananda, V. (2014, August). Self-deceived individuals are better at deceiving others. *PLoS One*, *9*(8), 8. doi:10.1371/journal.pone.0104562 PMID:25162579

Landers, J. (2018, July 31). Joan Chittister illustrates how mastering humility could save America. *The Chautauquan Daily.* Retrieved January 6, 2019, from http://chqdaily.com/2018/07/joan-chittister-illustrates-how-mastering-humility-could-save-america/

Lee, J. C., & Quealy, K. (2019, May 24). The 598 people, places and things Donald Trump has insulted on twitter: a complete list. *The New York Times*. Retrieved July 22, 2019, from https://www.nytimes.com/interactive/2016/01/28/upshot/donald-trump-twitter-insults.html?_r=0

Lessig, L. (2012, February 29). Code is law. *Harvard Magazine.* Retrieved November 20, 2019, from https://harvardmagazine.com/2000/01/code-is-law-html

Library Bill of Rights. (n.d.). *American Library Association*. Retrieved October 10, 2019, from http://www.ala.org/advocacy/intfreedom/librarybill

Lou, L. (2017, June 23). *Spot the flaw in a politician's argument with this guide to logical fallacies*. Retrieved from https://lifehacker.com/spot-the-flaw-in-a-politicians-argument-with-this-guide-1796333209

Lynch, K. (2016). Willful ignorance and self-deception. *Philosophical Studies*, *173*(2), 505–523. doi:10.100711098-015-0504-3

Matthews, D. (2018, July 9). We asked a cult deprogramming expert how to talk your friends out of voting for Donald Trump. *Splinter.* Retrieved April 14, 2019, from https://splinternews.com/we-asked-a-cult-deprogramming-expert-how-to-talkyour-f-1793857315

McGregor, J. (2016, December 29). When telling the truth is actually dishonest. *Washington Post*. Retrieved April 11, 2019, from https://www.washingtonpost.com/news/on-leadership/wp/2016/12/29/when-telling-the-truth-is-actually-dishonest/?utm_term=.5b7a76aa69c1

Media literacy @ your library. (2017, October 2). *American Library Association*. Retrieved November 22, 2019, from http://www.ala.org/tools/programming/media-literacy-your-library

Media literacy defined. (2010, April 6). *National Association for Media Literacy Education*. Retrieved November 22, 2019, from https://namle.net/publications/media-literacy-definitions/

Media literacy: five core concepts. (n.d.). *Young African Leaders Initiative.* Retrieved November 1, 2019, from https://yali.state.gov/media-literacy-five-core-concepts/

Mitchell, A., Barthel, M., Shearer, E., & Gottfried, J. (2016, July 7). News sources and audience loyalty. *Pew Research Center Journalism and Media.* Retrieved from https://www.journalism.org/2016/07/07/loyalty-and-source-attention/

Mitchell, A., Gottfried, J., & Barthel, M. (2017, January 18). Trump, Clinton voters divided in their main source for election news. *Pew Research Center Journalism and Media.* Retrieved April 14, 2019, from https://www.journalism.org/2017/01/18/trump-clinton-voters-divided-in-their-main-source-for-election-news/

Mitchell, A., Matsa, K. E., Gottfried, J., & Kiley, J. (2014, September 21). Political polarization & media habits. *Pew Research Center Journalism and Media.* Retrieved April 14, 2019, from https://www.journalism.org/2014/10/21/political-polarization-media-habits/

Moore, M. (2019, March 11). White House calls on Dems to condemn 'abhorrent' comments about Israel. *New York Post.* Retrieved June 30, 2019, from https://nypost.com/2019/03/11/white-house-calls-on-dems-to-condemn-abhorrent-comments-about-israel/

Morin, R., & Cohen, D. (2018, August 19). Giuliani: 'Truth isn't truth.' *Politico*. Retrieved September 4, 2018, from https://www.politico.com/story/2018/08/19/giuliani-truth-todd-trump-788161

Morrison, P. (2018, November 7). How the 'propaganda feedback loop' of right-wing media keeps more than a quarter of Americans siloed. *Los Angeles Times*. Retrieved October 26, 2019, from https://www.latimes.com/opinion/op-ed/la-ol-patt-morrison-yochai-benkler-20181107-htmlstory.html

MSNBC. (n.d.). *Media Bias/Fact Check*. Retrieved April 14, 2019, from https://mediabiasfactcheck.com/msnbc/

Mutz, D. C. (2018, May 8). Status threat, not economic hardship, explains the 2016 presidential vote. *Proceedings of the National Academy of Sciences (PNAS)*. Retrieved June 30, 2019, from https://www.pnas.org/content/115/19/E4330

Nakamura, D. (2017, May 17). Trump claims 'no politician in history' has been 'treated worse or more unfairly.' *Washington Post*. Retrieved March 3, 2019, from https://www.washingtonpost.com/politics/2017/live-updates/trump-white-house/trump-comey-and-russia-how-key-washington-players-are-reacting/trump-says-no-president-has-been-treated-more-unfairly/?utm_term=.b36a3819ddf9

National: 'fake news' threat to media; editorial decisions, outside actors at fault. (2018, April 2). *Monmouth University Poll.* Retrieved April 14, 2019, from https://www.monmouth.edu/polling-institute/documents/monmouthpoll_us_040218.pdf/

Olsen, H. (2019, August 16). Yes, undocumented immigrants take jobs from Americans. Here's the proof. *Washington Post.* Retrieved October 27, 2019, from https://www.washingtonpost.com/opinions/2019/08/16/yes-undocumented-immigrants-take-jobs-americans-heres-proof/

Pacepa, I. M., & Rychlak, R. J. (2013). *Disinformation: former spy chief reveals secret strategy for undermining freedom, attacking religion and promoting terrorism.* WND Books.

Pennycook, G., Cannon, T. D., & Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of Experimental Psychology: General, 147*(12), 1865-1880. http://dx.doi.org.proxy.library.kent.edu/10.1037/xge0000465

Pettigrew, T. F. (2017). Social psychological perspectives on Trump supporters. *Journal of Social and Political Psychology,* (5). Retrieved August 18, 2017, from https://jspp.psychopen.eu/index.php/jspp/article/view/750/html

Plato. (1989a). Meno. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Plato. (1989b). Republic. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Plato. (1989c). Theaetetus. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Presidential committee on information literacy: Final report. (2006, July 24). *American Library Association*. Retrieved November 11, 2019, from http://www.ala.org/acrl/publications/whitepapers/presidential

Richards, D. (n.d.). Digital ethics. *Writing commons.* Retrieved November 20, 2019, from https://writingcommons.org/digital-ethics

Romano, A. (2011, March 22). How ignorant are Americans? *Newsweek.* Retrieved October 28, 2019, from https://www.newsweek.com/how-ignorant-are-americans-66053

Romm, T. (2019, October 17). Zuckerberg: Standing for voice and free expression. *The Washington Post.* Retrieved October 25, 2019, from https://www.washingtonpost.com/technology/2019/10/17/zuckerberg-standing-voice-free-expression/

Santora, J. (2019, June 17). The 10 essential SEO ranking factors you need to rank #1 in 2019. *Optinmonster*. Retrieved July 10, 2019, from https://optinmonster.com/seo-ranking-factors/

Schenck v. United States, 249 U.S. 47 (1919).

Smith, T. (2019). *Foxocracy: inside the network's playbook of tribal warfare*. New York, NY: Diversion Books.

Social media. (2019). In *Wikipedia*. Retrieved June 30, 2019, from https://en.wikipedia.org/wiki/Social_Media

Swan, J., & Peattie, N. (1989). The freedom to lie: a debate about democracy. Jefferson, NC: McFarland & Co., Inc. Publishers.

Sweeny, K., Melnyk, D., Miller, W., & Shepperd, J. A. (2010). Information avoidance: Who, what, when, and why. *Review of General Psychology*, *14*(4), 340–353. doi:10.1037/a0021288

Taylor, A. (2019, April 18). Before 'fake news,' there was Soviet 'disinformation.' *The Washington Post.* Retrieved October 22, 2019, from https://www.washingtonpost.com/news/worldviews/wp/2016/11/26/before-fake-news-there-was-soviet-disinformation/

Terrasi, J. (2019, April 10). Ethics are the latest analog phenomenon getting an online reboot. *Lifewire*. Retrieved November 21, 2019, from https://www.lifewire.com/what-are-digital-ethics-4587289

The Washington Post's guide to manipulated video. (2019, June 25). *The Washington Post*. Retrieved July 23, 2019, from https://www.washingtonpost.com/graphics/2019/politics/fact-checker/manipulated-video-guide/

Törnberg, P. (2018). Echo chambers and viral misinformation: Modeling fake news as complex contagion. *PLoS One*, *13*(9), 1–21. doi:10.1371/journal.pone.0203958 PMID:30235239

Truthiness. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Truthiness

Tufekci, Z. (2018, March 10). YouTube, the great radicalizer. *New York Times.* Retrieved August 29, 2019, from https://www.nytimes.com/2018/03/10/opinion/sunday/youtube-politics-radical.html

Tushnet, R. (2008). Power without responsibility: intermediaries and the First Amendment. *Georgetown Law: Faculty working papers*. Retrieved August 12, 2019, from https://scholarship.law.georgetown.edu/fwps_papers/76/

Vaccine myths debunked. (2019, October 24). *Public Health*. Retrieved October 28, 2019, from https://www.publichealth.org/public-awareness/understanding-vaccines/vaccine-myths-debunked/

Vaidhyanathan, S. (2019, October 18). Mark Zuckerberg doesn't understand free speech in the 21st century. *The Guardian.* Retrieved October 25, 2019, from https://www.theguardian.com/commentisfree/2019/oct/18/mark-zuckerberg-free-speech-21st-century

Von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Sciences*, *34*(1), 1–16. doi:10.1017/S0140525X10001354 PMID:21288379

Vosoughi, S., Roy, D., & Aral, S. (2018, March 09). The spread of true and false news online. *Science*, *359*(6380), 1146–1151. doi:10.1126cience.aap9559 PMID:29590045

Waters, A., & Hargadon, S. (2017, Spring). Mind the misinformation. *Northwestern Campus Life*. Retrieved August 18, 2017, from http://www.northwestern.edu/magazine/spring2017/campuslife/mind-the-misinformation-david-rapp-explains-appeal-of-fake-news.html

Wemple, E. (2019, April 11). Yes, Fox News matters. A lot. *Washington Post*. Retrieved April 14, 2019, from https://www.washingtonpost.com/opinions/2019/04/11/yes-fox-news-matters-lot/?noredirect&utm_term=.8ad57d66b52f

Wilson, P. (1983). *Second-hand knowledge: an inquiry into cognitive authority*. Westport, CT: Greenwood Press.

Zur Institute. (n.d.). *What is digital ethics?* Retrieved November 20, 2019, from https://www.zurinstitute.com/clinical-updates/digital-ethics-101/

ADDITIONAL READING

Affelt, A. (2019). *All that's not fit to print*. Bingley, UK: Emerald Publishing Limited. doi:10.1108/9781789733617

Dice, M. (2017). *The true story of fake news*. Resistance Manifesto.

Ireton, C., & Posetti, J. (2018). *Journalism, 'fake news' & disinformation: handbook for journalism education and training*. Paris, France: United Nations Educational, Scientific and Cultural Organization (UNESCO). Available at https://en.unesco.org/sites/default/files/journalism_fake_news_disinformation_print_friendly_0.pdf

Jamieson, K. H. (2018). *Cyberwar*. Oxford, UK: Oxford University Press.

Levitin, D. (2016). *Weaponized lies: how to think critically in the post-truth era*. New York, NY: Dutton.

Nichols, T. (2018). *The death of expertise: the campaign against established knowledge and why it matters*. Oxford, UK: Oxford University Press.

Postman, N. (1993). *Technopoly: the surrender of culture to technology*. New York, NY: Vintage Books.

Rieh, S. Y. (2010). Credibility and Cognitive Authority of Information. In M. Bates & M. N. Maack (Eds.), *Encyclopedia of Library and Information Sciences* (3rd ed., pp. 1337–1344). New York: Taylor and Francis Group, LLC; Available at http://hdl.handle.net/2027.42/106416

Zimdars, M., & McLeod, K. (Eds.). (2019). *Fake news: understanding media and misinformation in the digital age*. Cambridge, MA: MIT Press.

KEY TERMS AND DEFINITIONS

Cognitive Authority: When one lacks experience, education, or knowledge, or does not have the time or inclination to acquire such, a cognitive authority is a person, organization, media source, group, or leader whose information one takes as second-hand knowledge based on that entity's credibility, trustworthiness, and reliability. One can be mistaken about whether the authority is sound or not.

Deception: In the context of fake news, the process of hiding the real intent of provided information, which is to mislead or misinform, frequently about political issues or political leaders.

Digital Ethics: The branch of ethics that applies to digital media, for example, in online contexts, how users interact with each other, both in representing themselves and controlling data about themselves in the platforms and technologies that they use and in their respect for other users and for other users' rights to self-determination and privacy. Professionally, it means to be circumspect in engaging with clients or patients online, both in seeking data about them or interacting with them. Apart from these local issues, there are also global issues, such as whether Americans, their government, or their representatives will allow, for example, computer programs to act as speech regulators or set norms to frame governmental policy or to regulate behavior.

Disinformation: Misinformation, lies, or false information supplied with the deliberate intention to mislead or misinform, most often in a political context.

Gullibility: A tendency to be easily persuaded or duped into a problematic choice or course of action or to believe assertions unsupported by facts or evidence.

Information Avoidance: A psychological, social or political behavior to ignore or avoid information for the tacit purpose of self-deception, for good (e.g., in protecting a patient from the knowledge of a mortal illness) or ill (e.g., in refusing to listen to any news sources that contradict one's biases).

Information Ethics: That branch of ethics that addresses ethical concerns about the sources, creation, organization, dissemination, transmission, packaging, use, and evaluation of information.

Information Literacy: The set of skills and competencies of information seekers to critically `find, retrieve, evaluate, and use information suitable to their information-seeking objectives.

Logical Fallacy: An instance of deceptive or specious reasoning that makes weak arguments appear superficially attractive.

Media Literacy: The set of critical skills and competencies for media users or creators to be able to retrieve, analyze, evaluate, generate, and interpret all forms of messages. It involves understanding how messages are constructed, how they are variously experienced, how they have embedded points of view, and what the intentions of what their creators were, whether profit, power, or some other purpose.

Second-Hand Knowledge: Information derived from one's cognitive authorities to help one's interaction with different domains in the world, whether assessments of the best books of the year or decisions about political issues. It is not really knowledge per se in the mind of the receivers, but opinions based on the credibility, trust or reliability of those authorities. Such information can be true or false or a preference based on the quality and nature of the "knowledge" that one receives from their cognitive authority.

Self-Deception: A psychological or social process whereby we hide, ignore or avoid information that runs contrary to what we want to believe about ourselves, our relationships, our environment, particularly our political environment, or the world.

Chapter 4
'Fake News' in the Context of Information Literacy:
A Canadian Case Study

Nicole S. Delellis
University of Western Ontario, Canada

Victoria L. Rubin
 https://orcid.org/0000-0003-3610-9967
University of Western Ontario, Canada

ABSTRACT

This chapter describes a study that interviewed 18 participants (8 professors, 6 librarians, and 4 department chairs) about their perceptions of 'fake news' in the context of their educational roles in information literacy (IL) within a large Canadian university. Qualitative analysis of the interviews reveals a substantial overlap in these educators' perceptions of skills associated with IL and 'fake news' detection. Librarians' IL role seems to be undervalued. Better communication among integral IL educator groups is recommended. Most study participants emphasized the need for incorporating segments dedicated to detecting 'fake news' in IL curricula. Pro-active IL campaigns to prevent, detect, and deter the spread of various 'fakes' in digital media and specialized mis-/disinformation awareness courses are among best practices that support critical thinking and information evaluation within the societal context. Two other interventions, complementary to IL as per Rubin's Disinformation and Misinformation Triangle, are suggested – detection automation technology and media regulation.

INTRODUCTION

Social media has transformed how we acquire news. The blending of traditional news outlets and user generated content procured through social media has influenced how individuals inform themselves (Chen, Conroy, & Rubin, 2015). News stories presented through social media are often decontextualized from their originating source. Decontextualization of news can result in information being "delivered to

and received by us in video clips and sound bites, often forward without filter or review through social networks from one screen to another in a matter of minutes" (Frederiksen, 2017, p. 104). Canadian internet users are aware of the 'fake news' problem. In a recent survey, most Canadian internet users (87%) agreed "the spread of fake news on social media is a problem"; "75% say they come across fake news at least sometimes, and 57% have been taken in by a fake news item" (CIRA, 2019)[1]. Under such conditions, decisions informed by online content require individuals to be capable of critical assessment.

The Canadian education system plays a role in developing students' critical thinking skills in assessing online content. If Canadian students are lacking critical skills, they are predisposed to believing "problematic information" that is "inaccurate, misleading, inappropriately attributed or altogether fabricated" (Jack, 2017, p. 1). Information literacy (IL) education has been utilized and proposed as a key foundation of teaching students how to assess information.

What does it mean to be critical of information? The answer to this question has changed over time. As conceptualizations of information shift and the technologies humans use to communicate change, so does IL education. To participate in society is to learn how to critically engage within societal discourse, that is, to be able to evaluate discourse despite the overwhelming abundance of information. The Association of College and Research Libraries (ACRL's) shift from standards to frameworks emphasizes the need for critical assessment of social, political, and economic dimensions of information. Researchers have been quick to promote the value of IL as a potential remedy for the 'fake news epidemic'. Few studies have assessed perceptions of how individuals directly involved in implementation of IL education perceive the value of incorporating segments on 'fake news' within IL curriculum.

The objective of this chapter is to provide a broader in-depth assessment of IL and to capture empirically what educators think about it as a potential inoculation against 'fake news'. The first section overviews key literature, emphasizing the criticism for the *Standards for Higher Education Information Literacy Competency,* and how the field of information science has adapted to a new perspective on information. The next section describes the one-on-one structured interviews and their analysis methods. The results delineating educators' perceptions follow. The final section of the chapter concludes with discussion of best IL practices, underscoring the importance of triangulating IL education efforts with automation (i.e., developing and introducing assistive technologies to automatically detect various 'fakes' in the news) and regulation (i.e., governmental restrictions and industry 'pollution controls' for news propagation media).

BACKGROUND

The problems associated with information overload and citizens' limited critical reasoning abilities have been raised since the invention of the printing press and remain to be a societal concern. To participate in society is to learn how to critically engage with societal discourse, to be able to evaluate discourse despite the overwhelming abundance of information. William Wordsworth's *Preface to Lyrical Ballads* (1802) wrote

a multitude of causes, unknown to former times, are now acting with a combined force to blunt the discriminating powers of the mind, and unfitting it for all voluntary exertion to reduce it to a state of almost savage torpor (p. 563).

In Wordsworth's view, information overload at the time not only dulled the senses and produced a lethargy of the mind but resulted in a mental inactivity devoid of critical reasoning capacity for the masses. Wordsworth's critique pointed to early perceived complications of the bombardment of advertisement and media. The critical ability to assess information is a skill that is lacking from innate human and thus needs active development.

The work of Andersen (2006) attempts to place information seeking skills within a broader societal context. For Andersen (2006), to be adept at "information seeking competence is a sociopolitical skill, like reading and writing skills, connected to human activity" (p. 213). It is essential for citizens to be able to not only locate required information but to be able to critically assess information as a production of society. No matter how obtuse a chosen presentation of information may be, citizens must be able to critically assess how and why said information was created to participate within society. The ability to critically assess information has been paramount since commodification of information became a driving force in most economies. Being information literate is "not a matter of following a standard" or to "be evaluated by one but to be able to discursively act upon a society configured and mediated by discourse" (Andersen, 2006 p. 215). This conceptualization of IL as a sociopolitical skill was not originally reflected in initial IL teaching standards.

Evolution of the Conceptualization of Information Literacy (IL)

In 1989, the American Library Association (ALA) defined IL as an essential set of life skills that enables individuals "to find, evaluate, and use information effectively to solve a particular problem or make a decision – whether the information they select comes from […] any number of possible resources". This definition regarded IL as a set of static skills that could be acquired; it led to the development of the Association of College and Research Libraries (ACRL) 2000 *Standards for Higher Education Information Literacy Competency (standards)*. The ACRL's publication included six standards or skills which any information literate individual should be able to perform:

1. "Determine the extent of information needed.
2. Access the needed information effectively and efficiently.
3. Evaluate the information and its sources critically.
4. Incorporate selected information into one's knowledge base.
5. Use information effectively to accomplish a specific purpose.
6. Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally" (p. 2-3).

The standards conceptualized IL as an entity that could be measured with specific goal outcomes, which had important implications for how IL was taught.

Resistance From Academia

The field of information and media studies responded to the *standards* with numerous critiques centered around the ACRL's conceptualization of what it meant to be information literate. Jacobs (2014) was concerned that these *standards* "position students as information consumers: they select, access, evaluate, incorporate, use and understand information" (p. 194). For Jacobs (2014), the *standards* place

information users as passive rather than active creators of information and this perceived passivity results in IL being taught in ineffective rote-style tutorials focused on guiding students through resources. The *standards* disregard the complex relationship individuals have with information, as both users and consumers. The *standards* present a vague outline on what analysis of information ought to be, without an explicit execution plan of how these skills can be successfully developed. Criticism raised within the library and information science field (Jacobs, 2014; Swanson, 2004; Kapitzke, 2003) exemplify the demand for an IL approach that reflects the complex dynamics of the use and creation of information in the modern age.

Inclusion of Critical Reasoning/Thinking

A major criticism of the *standards* was their neutral stance on teaching students to critically assess the production of information. "Almost without exception, information literacy is conceptualized as a neutral method with generic universal outcomes" (Kapitzke, 2003, p. 58). The goal of these *standards* should not be enabling information users to discover "unified truth" (Simmons, 2005, p.309), but to teach students that "information is constructed and contested, not monolithic and apolitical" (Simmons, 2005, p.297). Such critique contests the ACRL's (2000) *standards* perpetration of "an objective view of authority" (Bauder & Rod, 2016, p. 253) and demands the incorporation of critical literacy.

Critical literacy as defined by Warnick (2002) is "the ability to stand back from texts and view them critically as circulating within a larger social and textual context. […] [I]t includes the capacity to look beneath the surface of discourse to understand implicit ideologies and agendas" (p. 6). Information is embedded within economic prosperity, power and societal constructs. Therefore, individuals need to critically assess information's "ideologies and agendas" (Warnick, 2002, p. 6) to be able to actively participate within society. Applying critical literacy to IL would "extend information literacy by suggesting that in addition to looking at information in situ, information consumers should consider the underlying power structures that shape information and consider the acquisition of agency that comes with acquisition of quality information" (Cooke, 2017, p. 218). Such an approach views critical IL as "a frame of reference for consuming information or a type of critical thinking" (Cooke, 2017, p. 218).

Paulo Freire (1972) argued for a fluid and constant process of education involving both thought and action, placing the students at the center of education. This approach gives back agency and power to individual learners to understand the world in terms of societal ideologies of race, gender and class. Application of Freire's (1972) critical pedagogy to IL enables information to be viewed as "a social construct that is created by a human being for a particular use" (Swanson, 2004, p. 67). Critical IL has the following three underlying assumptions:

the teaching of literacy is never neutral but always embraces a particular ideology or perspective; critical literacy supports a strong democratic system grounded in equity and shared decision-making; critical literacy instruction can empower and lead to transformative action (Powell, Cantrell, & Adams, 2001, p. 773).

Freire's ideas "guide students to internalize the world, apply their own life experiences to their education, and finally, act to change the world in which they live" (Swanson, 2004, p. 67).

In a delayed response to raised criticism, the ACRL (2015) released a publication titled *Framework for Information Literacy for Higher Education (framework)*. The *framework* includes six frames for IL:

- *authority is constructed and contextual.*
- *Information creation as a process.*
- *Information has value.*
- *Research as inquiry.*
- *Scholarship as conversation.*
- *Searching as strategic exploration..(p.1)*

These six principles are not in a suggested order of sequence for learning but are instead intentionally phrased as 'frames'. These 'frames' should be viewed as

a cluster of interconnected core concepts, with flexible options for implementation, rather than on a set of standards or learning outcomes, or any prescriptive enumeration of skills (ACRL, 2015, p. 2).

This framework is meant to provide "conceptual understandings that organize many other concepts and ideas about information, research, and scholarship into a coherent whole" (p. 2). The 2015 *framework* demonstrates an approach to IL that attempts to examine information within a broader context. Generated based on the ideals of threshold concepts by Wiggins and McTighe, these frames were conceived as portals. Once a portal is learned, it transforms individual's perspectives and future interactions with sources of information. Once one of these frames is learned, it cannot be unlearned as the changes to the self are permanent and reflected in future actions. The *framework* attempts to address the subjective nature of authority and position information in terms of economic relation.

Currently, IL education remains in flux because of the adoption of the *framework*. As Burgess (2015) suggests the implementation of the *framework* into academia presents the unique "opportunity to ask if our current approach to instruction can meet the higher goals of information literacy education" (p. 2). The change in conceptualization of IL gives library and information science research the chance to assess both current IL teaching methodologies, and how IL is currently conceptualized by individuals integral to curriculum implementation. Research has yet to explore whether the re-conceptualization has been reflected within IL education.

TEASING OUT EDUCATORS' PERCEPTIONS

Actions by Google and Facebook demonstrate social media platforms' willingness to engage in stopping dissemination of 'fake news' through a censorship approach. Google has pledged to provide $300 million to aid publishers to fight 'fake news'[2]. Facebook has decided to cut news organization from its newsfeed[34]. Google's and Facebook's approach to the 'fake news' epidemic attempt to control mis- and disinformation by censoring or removing access to information. However, as past scholarship has pointed out, censorship by removal of information "is a less than effective solution for inaccurate information in general, and again it assumed censorship would work in controlling disinformation" (Walsh, 2010, p. 502). Chee (2019) has stated, "Google, Facebook, and Twitter have fallen short of their pledges to combat fake news, three months before key European elections". The burden of addressing the 'fake news' epidemic should not be solely placed on social media platforms, but is a combined effort between these social media platforms, educators, institutions, and governing bodies. Educational institutions should be responsible for teaching citizens to be skeptical of information. Teaching critical evaluation of

information needs to be a priority. Despite researchers' acknowledgement of the importance of educating citizens in being able to detect 'fake news' and the promotion of librarians as leaders in IL education, few studies have sought to examine academic perceptions of 'fake news' in relation to IL curriculum in higher education. The aim of this research is to examine IL education within the broader context of the 'fake news' epidemic. This research aimed to elicit perceptions about the value of IL instruction, reveal obstacles, and assess willingness to integrate segments on 'fake news' into IL curriculum.

Whose Responsibility Is It Anyway?

A barrier to the implementation of IL education is determining who is responsible to teach students to be critical of information within a higher educational institution. Professors and librarians naturally take on the role of teaching IL; however, it remains unanswered whether one set of educators is better positioned or equipped for teaching IL. Who is the ideal teacher of IL? To answer this question entails looking at the current state of effective teaching methodologies in IL education. A meta-analysis by Derakhshan and Singh (2011) found that "in-spite of the importance of information literacy instruction in higher education, it is still not an integral component of many higher education programs and the students who are going to be graduated from universities are 'ill-equipped' with information skills" (p. 218). Merely to "embed information literacy into curriculum" is not sufficient; "there is a lack of information literacy concepts among academics and many of them do not have enough knowledge to strengthen the structural practices of their students" (Derakhshan and Singh, 2011, p. 225). Little research to date has examined academic administrators' perspectives on the ideal educator of IL.

Burgess (2015) argues that librarians have a vital role to play in moving away from past educational methods of 'sage-on-the-stage' perpetrated by the *standards* and "have an opportunity to take [a] greater and more active role in shaping our (often questioned) identity as leaders in IL education" (p. 5). Librarians could provide a more engaging and contextual approach to IL education, but research exploring librarians' perspectives on IL remains underwhelming. Past IL teaching methods often included structured presentations, which led students through ways of finding a reliable source in that specific discipline of study. Although the ACRL's (2015) *framework* has made a shift from its original stiff conceptualization of IL, it remains unclear whether current librarians have adapted and adopted these changes. It has been more than a decade since Albitz's (2007) concluded that a significant barrier in IL implementation is the "subordinate role [of librarians] within the institution", and yet no recent research has assessed whether this still holds true.

Clearly many questions remain unanswered within current teaching methodologies of IL education, including whether sufficient time and resources should be allocated to understanding the best means of educating students to be literate in information.

Should 'Fake News' Be Incorporated Into IL?

It remains unanswered what the best means for incorporating education about misinformation and disinformation into citizens' education is. Theorists have suggested that "knowledge of information behavior and critical information evaluation skills can aid in combating the effects of fake news and promote more savvy information conception" (Cooke, 2017, p. 211). IL curriculum within universities has already begun, and it would seem ideal to incorporate segments on 'fake news' and other associated varieties

of 'fakes' within established IL instruction. However, it remains unassessed whether IL educators are willing to incorporate segments on 'fake news' and how nuanced their grasp of literacies is.

Digital and media literacies fall within the category of IL but present significant defining features. Digital literacy is about being "deeply literate in the digital world […] being skilled at deciphering complex images and sounds as well as the syntactical subtleties of words" (Lanham, 1995, p. 160). Media literacy is more narrowly construed "by focusing on mass media such as television and radio and what is found in popular culture" (Cooke, 2017, p.218). Although a "cursory understanding of political economy and the underlying business structures of the news media" (Cooke, 2017, p, 212-213) can aid in stopping the proliferation of 'fake news', it is imperative that IL educators' perceptions and knowledge of the phenomena surrounding 'fake news' be considered. This study is a cursory attempt at revealing IL educators' perceptions within a particular time and place.

Research Questions

This 2017-2018 case study investigates the following research questions:

1. What perceptions do Canadian librarians, professors, and academic administrators have about information literacy (IL)?
    a. What skills are currently perceived to be associated with an individual who is information literate?
2. Have segments on 'fake news' been introduced into IL education at Canadian universities by the end of 2018?
    a. If not, how can IL curriculum incorporate segments on 'fake news'?
    b. What skills are perceived as necessary to detect 'fake news'?

METHODS

This section provides a description of our case study procedures, participants, and data analysis. It concludes with a discussion of the limitations of the selected methodology.

Data Collection Using Structured Interviews

This case study was carried out at a large Canadian university with the goal of broadly examining perceptions about IL education and 'fake news'. To answer proposed research question, the researchers elicited and collected participants' perceptions of the skills associated with IL and 'fake news' detection, and their willingness to incorporate segments on 'fake news' into IL curricula. One-on-one interviews were conducted with librarians, academic administrators, and professors. Interviews explored how IL instruction is initiated, what the perceived value of IL is, and how individuals integral to the implementation of IL curriculum conceptualize IL and 'fake news'. Participants were asked predominantly structured questions with an open-ended prompt. Interview guides approved by the University Ethics Review Board are attached in Appendix 1 (Guide for Librarians) and Appendix 2 (Guide for Professors and Academic Administrators). Interviews were designed to last for approximately 30 minutes. In practice, their length ranged from 10 minutes to 50 minutes, with an average duration of 24 minutes. All interviews were

audio-recorded with participants' informed consent. Interview transcriptions were used for a detailed and accurate rendering during data analysis.

Participants

Eighteen (18) English speaking participants, employed by the University, were recruited through email requests. E-mail addresses were obtained through the institution's liaison library list or through its faculty homepages. Participation in this study was neither mandatory nor compensated. Participants within this study were limited to those who have a self-reported integral role in IL education. E-mails were originally sent out to 166 selected potential participants, 10.8% of which agreed to participate.

Participants were divided into groups based on their roles within the University. The three (3) participant groups were: Group A (6 Librarians), Group B (8 Professors), and Group C (4 Academic Administrators). *Table 1* depicts a breakdown of participants' academic unit affiliations, regardless of administrative function.

Group C was comprised of department chairs that retained teaching privileges, and who can administratively support and allocate funding to programs. Students were excluded from participation due to the study's primary focus on those who implement IL curriculum, but students' perceptions are planned to be assessed at a later stage. The intention of this study was to produce best practices in IL curriculum through initial assessment of educators' perceptions and opinions on incorporating 'fake news' segments into IL curriculum.

Data Analysis Using Grounded Theory

Transcriptions of interviews were analyzed using Glaser and Strauss' (1967) Grounded Theory approach which enables identification of key themes in texts. Grounded Theory allows for "systematic discovery of the theory from the data" (p. 3) to generate "conceptual categories or their properties from evidence" (Glaser & Strauss, 1967, p. 23). Few, if any, conceptual models exist for the assessment of educators' perceptions of IL curriculum and instruction. The method is optimal to generate emergent themes as a cursory exploration within a short eight month timeline. Coding, tabulation, and grouping of similar data were performed manually by the first author using standard word processing and graphing software. An online concept-mapping software package was used to create the concept map. The concept map aids visual comprehension by presenting a holistic picture of emergent themes using Grounded Theory; it displays an aggregation of identified themes that appeared in at least two of the participants' transcripts.

Table 1. Case Study Participants' Academic Unit Affiliations.

Academic Unit	Number of Participants
Libraries	6
Information and Media Studies	3
English and Writing Studies	3
Natural Sciences (Biology, Chemistry, Physics and Astronomy)	3
Humanities (History and Philosophy)	2

Limitations of Selected Methodology

Interviews enable researchers to rearticulate collocated narratives of participants. An inductive approach, such as Grounded Theory, allows the data to speak for themselves limiting the interjection of subjective assumptions of researchers. However, the nature of a case study is to "develop an in-depth understanding of a single case" (Creswell, 2013, p. 97). This in-depth exploration often comes at the cost of generalizability. Since this study was designed to draw on participants within just one institution, it primarily reflects IL perceptions of IL educators within the institution. Future research should pursue this line of inquiry across multiple institutions, with preferably a larger sample size to avoid a potential sampling bias.

RESULTS

Findings Pertaining to Perceptions about Information Literacy (IL)

Definition of IL

Participants from all Groups (A through C) emphasized that IL is the ability to not only find information, but also the ability to evaluate and synthesize information from a variety of sources. Each Group emphasized the importance of different components of IL. Group A (Librarians) focused on being able to navigate through the 'information landscape' and relied on the ACRL's *framework* definition (See Figure 1).

In contrast, Group B (Professors) stressed awareness of information as a societal production and the importance of being aware of internal and external biases of information. Figure 2 highlights Group B's emphasis on situating information with a larger societal context, and the connection made between IL and the capacity to read critically.

Two participants (both from Group B) contested 'information literacy' as a concept. Namely, participant B09 was reluctant to formulate a definition of IL, noting that

information is often put forward as this kind of object that's separate from all sorts of other systems and struggles, like it's just this pure thing that you can find … which makes no sense to me

This view reinforces the overall theme articulated by other participants, that is the need to be aware "*of what information is and can be, and how one comes to it*" (Participant B01) in broad societal context.

Group C (Academic Administrators) placed emphasis on IL being dependent on the ability to discern reliable information, and the ability to distinguish fact from opinion. IL was defined as a discernment, a judgement of the validity of a source (See Figure 3).

Abilities Associated with IL

Participants in all Groups (A through C) perceived that IL requires the capacity to find information and this requires critical thinking abilities. Figure 2 depicts that Group B associates IL with the ability to closely read a text to decode its meaning and an awareness of how language can manipulate readers through argumentation styles. Professors (Group B) tended to link IL to the capacity to read critically

Figure 1. Group A (Librarians') Perceptions about Information Literacy and 'Fake News'.
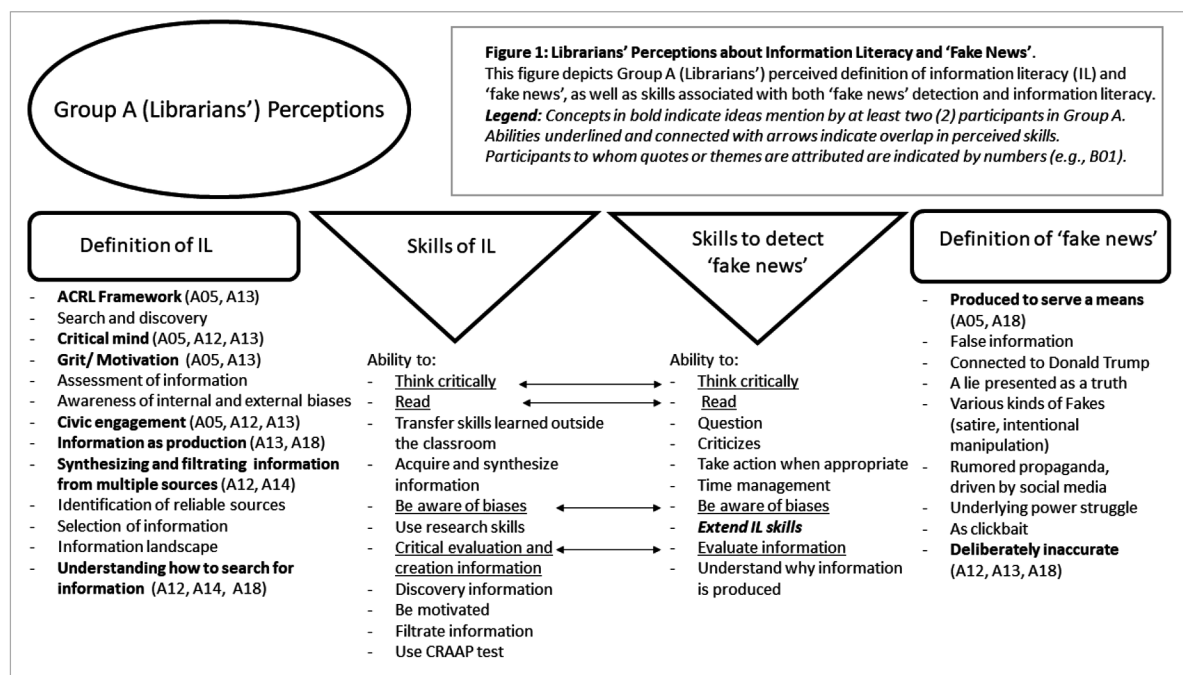
and understand language. For example, Participant B02 observed that "*we can't parse what language means unless we understand how it works*" and that evaluation of information would require "application of journalistic principles."

Critical thinking was a commonly mentioned skill associated with IL across all Groups (A through C). Various participants stated that being information literate requires skepticism or cynicism about information production, consumption, or use. The process of acquiring information requires individuals to

"be discerning, be critically minded, and not willing to accept things at face value without verifying on their own what the value of any given piece of information is" (Participant C17).

Participants articulated that IL requires individuals to 'have grit' and the motivation to do the work associated with making the discernment about the validity of information based on its content and source. All Groups (A through C) mentioned the ability to filter and synthesize vast amounts of information.

Value and Obstacles for IL Education

The majority of participants (17 out of 18), believed that it was important for students to be information literate upon graduation, e.g.,

"if the goal of the university is to produce well informed critical thinkers, not just people to get plugged into industries, then they need to be, more than ever, I think, they need to be literate about how to evaluate information" (Participant B08).

Figure 2. Professors' Perceptions about Information Literacy and 'Fake News'.

Figure 2: Professors' Perceptions about Information Literacy and 'Fake News'.
This figure depicts Group B (Professors') perceived definition of information literacy (IL) and 'fake news', as well as skills associated with both 'fake news' detection and information literacy.
Legend: Concepts in bold indicate ideas mention by at least two (2) participants in Group B. Abilities underlined and connected with arrows indicate overlap in perceived skills. Participants to whom quotes or themes are attributed are indicated by numbers (e.g., B01).

Figure 3. Academic Administrators' Perceptions about Information Literacy and 'Fake News'.

Figure 3: Academic Administrators' Perceptions about Information Literacy and 'Fake News'.
This figure depicts Group C (Academic Administrators') perceived definition of information literacy (IL) and 'fake news', as well as skills associated with both 'fake news' detection and information literacy.
Legend: Concepts in bold indicate ideas mention by at least two (2) participants in Group C. Abilities underlined and connected with arrows indicate overlap in perceived skills. Participants to whom quotes or themes are attributed are indicated by numbers (e.g., B01).

An emergent theme is the perception of IL as essential to citizen education, which enables individuals to function within a democratic society (see Figure 4). Notably, Professors and Department Chairs in Natural Sciences identified IL as an important soft skill that produces well-rounded students.

Time was the most frequently identified obstacle for implementation of IL education (Figure 5*).* Two thirds of the participants (12 out of 18) identified that their main concern, understandably, is to teach literacy within the specific discipline rather than teaching IL. Groups B and C expressed that instructors only have a limited time to teach students principles and abilities, so priority is given to teaching the subject content. The delivery of the disciplinary knowledge competes and often outweighs the teaching of IL. As one participant C lamented,

literate would be a good start; we can work towards information literate later (Participant C07).

While time constraints were often mentioned, other hindrances were also identified. There was disagreement among participants on three issues: 1) whose responsibility it was to teach IL, and 2) what the optimal student age for IL education is, and 3) what the best methods of incorporating IL education within curriculum are, namely, whether IL should be mandatory, elective, or integrated in various curricula.

Ten out of 12 participants in Groups B – C perceived that responsibility for teaching IL education falls on instructors and/or institutions. When Professors and Administrative Chairs (from Groups B – C) were asked to identify who should be responsible for IL education, no one mentioned Librarians. When Librarians (Group A) were asked about barriers to IL education, some of them pointed out the underappreciation of their role:

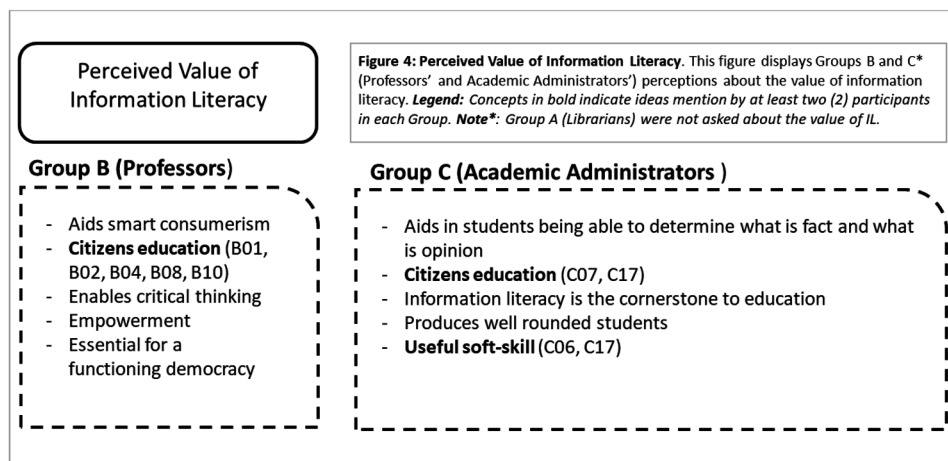*[…] it is just the lack of the value of what active librarians can teach students. I mean, there are definitely faculty who have come to realize that value, but there are also faculty that think they can do it themselves, or that it is not important, or the students are already equipped with those skills when they come here, which is obviously not the case (Participant A16).*

Figure 4. Perceived Value of Information Literacy.

Perceived Value of Information Literacy

Figure 4: Perceived Value of Information Literacy. This figure displays Groups B and C* (Professors' and Academic Administrators') perceptions about the value of information literacy. **Legend**: *Concepts in bold indicate ideas mention by at least two (2) participants in each Group.* **Note***: Group A (Librarians) were not asked about the value of IL.*

Group B (Professors)
- Aids smart consumerism
- **Citizens education** (B01, B02, B04, B08, B10)
- Enables critical thinking
- Empowerment
- Essential for a functioning democracy

Group C (Academic Administrators)
- Aids in students being able to determine what is fact and what is opinion
- **Citizens education** (C07, C17)
- Information literacy is the cornerstone to education
- Produces well rounded students
- **Useful soft-skill** (C06, C17)

Figure 5. Perceived Obstacles for Information Literacy Education.

Figure 5: Perceived Obstacles for Information Literacy Education. This figure displays Groups A-C perceptions of identified obstacles that hinder successful information literacy education implementation.
Legend: Concepts in bold indicate ideas mention by at least two (2) participants in each Group.

Group A (Librarians)
- Assumption that students are information literate coming in
- **Building librarians' skills and pedagogy** (A16, A18)
- **Integration of information literacy into curriculum (mandatory course or stand-alone)** (A05, A12)
- Finding the appropriate course
- Modularity of programs
- **Need for assessment** (A05, A16)
- Number of librarians
- Transferability of skills outside the classroom?
- Librarians not owning information literacy education
- Students' negative perceptions
- Time
- **Underappreciation of librarians** (A13, A16)

Group B (Professors)
- Assumption that students are information literate coming in
- Budget cuts
- **Finding the right educators** (B01, B10)
- Need for awareness of available resources (such as librarians)
- Needed policy mandates
- Over-specialization
- Relating information literacy to each discipline
- Required collaboration between instructors and faculties
- **Time** (B01, B02, B04, B08, B11)

Group C (Academic Administrators)
- Finding the right educators
- Need for information literacy to be overarching
- Tailoring information literacy into the right courses or determining the need for a stand alone course
- **Time** (C07, C15, C17)
- Transferability of skills outside the classroom?

Some participants within Group B stated that they were unaware of the availability of librarians as IL instructors. Participants in Group C were aware of faculty members' under-appreciation of librarians as instructors. Group A emphasized the need for building librarians' skills and pedagogy for IL instruction, raising concerns about the evaluation of the IL education effectiveness. Is IL being repeatedly taught to the same students? Two participants insisted that transferability of IL skills outside of classrooms needs to be assessed.

Findings Pertaining to Perceptions about 'Fake News'

Defining 'Fake News'

Participants perceived 'fake news' as deliberately false and connected to propaganda (see Figures 1, 2, and 3). As one participant stated,

I do not see a huge distinction between 'fake news' and propaganda except for the fact that the internet as the medium creates a new kind of message… If the medium is the message, then 'fake news' is propaganda 2.0 because of the speed with which it can be established as fact through sheer popular mass, and it is popular mass of belief (Participant B02).

Participants across Groups (A through C) perceived 'fake news' as a lie that is produced for a means (political, social and or economic) and that manipulates readers into thinking that it is true:

The current urgency around the problem is kind of the symptom rather than the cause, or the need for IL. That need has always been there, it has changed with the internet, and now 'fake news' is the latest manifestation of the need (Participant C15).

Participants demonstrate awareness that 'fake news' has been around for some time in the form of propaganda, but the catalyst of social media has presented novelty in decontextualizing and rapidly disseminating news sources. The same participant who was reluctant to define IL also resisted providing a definition of 'fake news':

I don't think a tight little […] empirically positivist social science definition is very useful. This is what it means, I am going to measure it, or something. I can identify it because I have this little tool… I think it is way more interesting to see it as this site of struggle (Participant B09).

The complexity of 'fake news' was brought up by other participants, who recognized that inherent biases and societal constructs influence how individuals perceive news sources' validity:

The issue that perhaps 'fake news' isn't just something that is out there, it is something in here as well, and you can't just kind of look out, but I think you might also need to look in at your own disposition, your willingness to believe. And I think that we all kind of have a willingness to believe some things, and a reluctance to believe others (Participant B04).

Skills Perceived as Important to Detect 'Fake News'

Overall, there was substantial overlap between perceived skills associated with being information literate and skills perceived as imperative to detecting 'fake news' (Figure 6). Participants identified the following skills as important for 'fake news' detection: awareness, close reading skills, being critical/questioning, ability to find and triangulate diverse news sources and understanding how news is produced (see Figure 1, 2, and *3*). Group A believed that the detection of 'fake news' would stem from general literacy skills, a point of view shared by a participant from Group C:

I think it should flow from general information literacy, essentially (Participant C07).

DISCUSSION OF OBSTACLES, BEST PRACTICES, AND RECOMMENDATIONS

This case study set out to understand how three integral IL education groups (Librarians, Professors, and Academic Administrators) conceptualize IL and its relation to the 'fake news' epidemic. Based on our admittedly small sample, findings indicate a substantial overlap exists between perceived skills imperative for 'fake news' detection, and skills associated with IL (Figure 6).

The following concept map depicts aggregated identified themes across participants' transcripts tabulated through Grounded Theory. Concepts which appear in at least two participant's transcripts (either within or across groups) are included in the image. Overlap between perceived skills associated with IL and skills identified as essential for 'fake news' detection appear in grey. Both skill sets contain: an understanding of how language works (close-reading skills), skepticism/critical disposition, an

understanding about how information is produced, an awareness of biases (both internal and external), and the ability to synthesize various sources/perspectives.

Overlap in skill sets is not particularly unexpected, especially considering the prevalent themes around what it means to be information literate. Professors (Group B) emphasized that information literate individuals understand how information is produced and what potential external/internal biases information may carry. For Group B, a person who is information literate is primed to be critical of how information is decontextualized. In contrast, Academic Administrators (Group C) tended to emphasize IL as the ability to discern the reliability/validity of information and the capability to distinguish between facts and opinions. Most participants reiterated that being information literate requires not just the ability to find information, but the ability to critically evaluate this information through language skills and the use of diverse perspectives. Such a critical, highly discerning and skeptical disposition demonstrates the inherent connection between IL and 'fake news' detection. Importantly, participants identified that detecting 'fake news' is an extension of general IL skills.

The majority of participants (17 out of 18) believed that it is important for students to be information literate upon graduation, and some participants agreed that segments about 'fake news' (i.e., misinformation and disinformation) should be included in IL curriculum. Librarians remain underappreciated as IL instructors within the studied institution, and few curricula include segments dedicated specifically to 'fake news'. Participants identified multiple reasons for why IL is not widely integrated within higher education classrooms. The most common perceived obstacle for IL instruction is time constraints. Time is dedicated to teaching literacy of a subject at the expense of teaching IL. Professors and Academic Administrators (Group B and C) echo concerns about having only limited time with students.

Figure 6. Concept Map of Identified Themes.
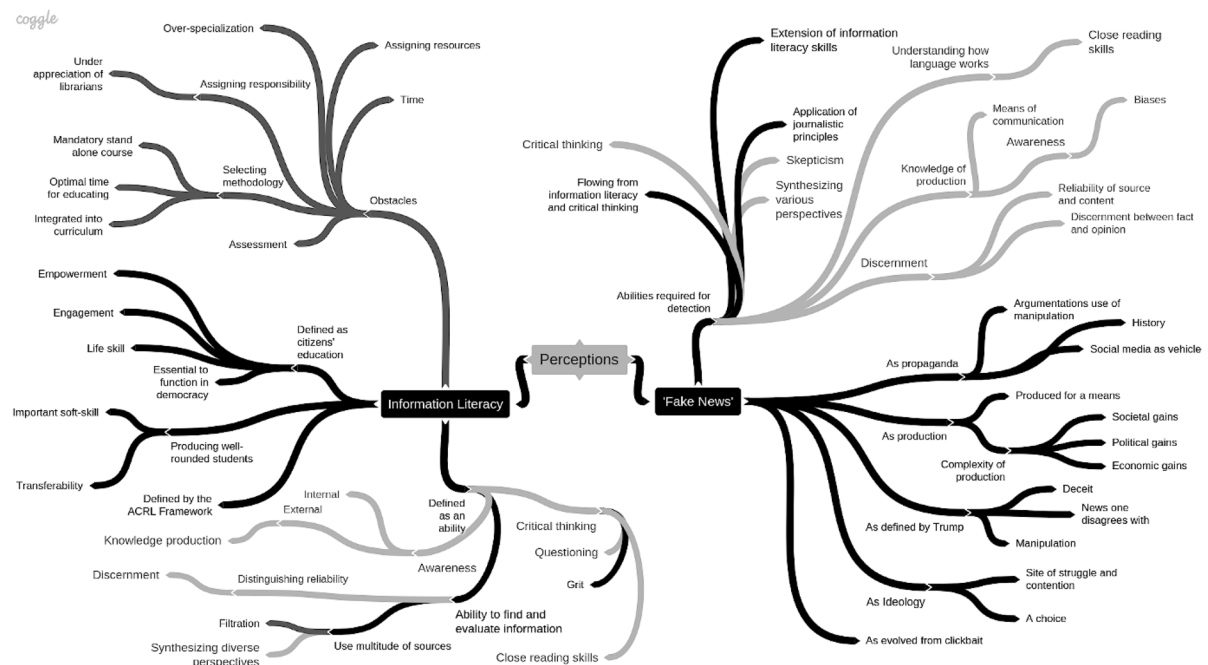
Librarians (Group A) revealed that the institution is moving away from approaching individual faculty members as a means for integrating IL curriculum ('bottom-up approach'). Instead, the institution is trying to implement policy and gain department staff participation for integrating IL curriculum in suitable courses ('top-down approach'). This is evidence of centralized coordination that aims to facilitate communication between academic administration and IL educators. Based on our glimpse at this institution, more effort to centralize coordination and facilitate communication about IL is much needed. An elective or mandatory course could alleviate the time constraints for instructors trying to implement IL curriculum into already full course loads. However, our participants did not agree about the optimal type of course for IL integration within each department. Nor was there a clear consensus among them on whether IL education should be a mandatory standalone course or embedded within course curriculum. Further discussion of these matters must precipitate further attempts at IL education implementation, in order for it to be successful. Perhaps, if there is no universal approach to IL curriculum integration, each academic unit's preference should guide the most suitable approach. Such flexibility would require more extensive open institution-wide dialogues between librarians and academics who oversee designing curricula to determine whose responsibility it is to teach IL within the faculties and the institution at large. Since the ACRL's shift from *standards* to *framework*, research has yet to assess the effectiveness of a multi-phase approach to IL education and to explore the feasibility of alternate means of incorporation.

The lack of consistent assessment of IL skills and their effectiveness is another shortcoming that came up in the interviews. We identified a clear need for further research to explore students' receptiveness to the inclusion of IL into the curriculum. How effective is IL instruction? Are IL skills applied within and/or outside their school settings, and with what success rates? Disagreements among instructors on whether time is better spent teaching IL per se or IL within subject material also warrant further interdisciplinary discussion.

The Need for a Champion

There is no consensus among our participants on whose responsibility it is to teach IL. Past scholarly research in library and information science has identified librarians as having a key role in IL instruction, and as potential aids in resolving the 'fake news' epidemic. The role of libraries as memory institutions that maintain high information quality standards is unquestionable. Researchers have proclaimed that "the role of librarians and information professionals is to develop well-educated information consumers" (El Rayess et al., 2018, p. 4). However, this case study's findings demonstrate that, recognition of librarians' responsibility in instructing students to be information literate is lacking among interviewed Professors and Department Chairs. If librarians are not willing to promote themselves as valuable educators of IL, other groups will continue to take on the responsibility of IL instruction and IL instruction will continue to be deprioritized because of time constraints and preferences of disciplinary content over IL. There is a need for greater communication among groups involved in higher education's IL integration. It is recommended that librarians position themselves proactively as valuable educators of IL. Based on years of experience in vetting information for credibility, academic libraries should have a greater role in the implementation of IL education in higher education. Universities will become more prominent in the societal conversation about potential remedies for the 'fake news' epidemic when critical skills to distinguish misinformation/disinformation are actively taught. Although librarians do not need to become sole owners of IL education, they should become *"champion[s] for information literacy"* (Participant A13).

Sullivan (2018), an academic librarian himself, also questioned librarians' leadership role in the fight against the 'fake news' epidemic: "library and LIS professionals do not appear to understand the real danger of misinformation – or at best only understand half of it" (p. 2). Such criticism is perhaps an accurate depiction of professionals who still rely on the ACRL's *standards* to dictate rote-style learning which guides students through specific databases for information acquisition. It took time for ACRL to change from the *standards* to the eventual understanding within the *framework*. Sullivan is right that "many IL approach[es] have been slow to adapt to evolving online information environments" (p. 3). However, our study findings indicate distinctly progressive librarian stances on teaching the critical assessment of information in broad societal terms. Most participants within this case study, especially Group A (Librarians), were aware of the complexity of misinformation and disinformation. Further research still needs to be conducted to assess how IL educators are making changes within IL curriculum to reflect political, socio-economic, and psychological components of misinformation/disinformation as suggested by Sullivan (2018). What also still remains unanswered is whether the inclusion of these proposed segments will impact students' ability to detect 'fake news' in educational settings and broader everyday information seeking settings.

Current Approaches for Information Literacy Education in Higher Education

A shift in perception of what it means to be critical of information has occurred; emphasis has been set on teaching critical literacy skills (Swanson, 2004; Andersen, 2006; Mulhern and Gunding, 2011; Jacobs, 2014; Cooke, 2017). This shift in conceptualization was echoed in our participants' perceptions of IL. To teach the disposition of a critic of information requires evolving IL curriculum from "a point-and-click database demo style" (Burgess, 2015) to an active dialogue. Students must be viewed as creators of information and active agent within the education process.

To both contextualize information in the 21st century society and address past criticisms, the ACRL (2015) drastically departed from *standards* to *frameworks*. The inclusion of the concept of *metaliteracy* underpins a new perspective of what it means to be information literate. 'Metaliteracy' in the digital environment places IL as "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (ACRL, 2015, p. 3). This shift aims to abolish the rigid structure of ACRL's (2000) *standards* by introducing "a cluster of interconnected core concepts, with flexible options for implementation" (ACRL, 2015, p. 2).

The ACRL's (2015) *framework* differs from its s*tandards* through emphasis on information within a larger societal context and removal of set learning outcomes. Each of the six frameworks has a list of knowledge practices, and a list of dispositions. Knowledge practices are behavior that individuals should be able to perform to indicate understanding of the frames, while dispositions are meant to "describe ways in which to address the affective, attitudinal, or valuing dimension of learning" (ACRL, 2015, p. 2). These dispositions are not exhaustive, nor are they "intended to prescribe what local institutions should do in using the Framework; each library and its partners on campus will need to deploy these frames to best fit their own situation, including designing learning outcomes" (ACRL, 2015, p. 2). The ACRL's (2015) *framework* is meant to facilitate "discussions about the nature of key concepts in information in general education and disciplinary studies" (p. 10). The ACRL's (2015) *framework* is intended to be taught in more than one session and through varying levels of students' education (from novice to expert).

The implementation of a multi-phase IL education would require significant resources and cooperation among various faculty, librarians and administrative academics.

Setting a multi-phase IL education program will require efforts of persuasion from IL instructors to implement curriculum. Those in charge of implementing curriculum and allocating funding must not only acknowledge the need for IL education but must also provide aid for its implementation. To help implementation of a multi-phase IL education curriculum the ACRL suggests the following steps for IL instructors:

- *"convene or join a group of librarians to discuss the implications of this approach to information literacy for your institution".*
- *"reach out to potential partners in your institution […] to discuss how to implement the framework in your institutional context".*
- *"using the framework, pilot the development of information literacy sessions within a particular academic program in your institution, and assess and share the results with your colleagues".*
- *"share instructional materials with other information literacy librarians in the online repository developed by ACRL(2015, p. 11).*

Efforts to Educate as a Solution to 'Fake News'

Some participants agreed that segments about 'fake news' should be included in IL curriculum. However, few recommendations exist specifically for higher educators on approaches to teach students how to be critical of 'fake news'. One method is the C.R.A.A.P. Test, "developed at the Meriam Library of CSU Chico (2010), [as] a checklist for evaluating sources based on series of criteria: currency, relevance, authority, accuracy, and purpose (C.R.A.A.P.)" (Batchelor, 2017, p. 145).

Some universities have created standalone courses for detection of various 'fakes'. Professors Bergstrom and West teach a well-publicized course, entitled "Calling Bullshit"[5], at the University of Washington. The course has online components such as recorded videos and well-selected readings. It stresses teaching students a certain frame of mind when encountering any information source which requires possessing basic levels of skepticism, criticism, and mathematic skills. The course stresses teaching students to ask the right kinds of questions when examining sources of information, such as: who is telling me this, how do they know it, and what is in it for them? To equip students to be better 'bullshit' detectors, Bergstrom and West caution:

1. be aware "if a claim seems too good (or too bad) to be true, it probably is."
2. be aware of what "confirmation bias" is and how this may affect responses to information.
3. try to create "multiple working hypotheses" to understand the plausibility of claims and possible contributing factors.
4. "think about the order of magnitude."
5. "be aware of unfair comparisons" that are being made in results (Bergstrom and West, 2017).

A similar graduate course entitled **'**Misinformation and Viral Deception**'**[6] is offered by Professor Rubin at the University of Western Ontario (London, Canada). Another pioneering North American course on 'Fake News, Lies, and Propaganda'[7] is taught at the University of Michigan, Ann Arbor, USA, and no doubt many more will follow suit and flourish.

Importance of Perceptions and Forward Thinking

Perceptions of IL instructors about what IL is influence the content of curriculum and how this content is being taught. Failure to implement a universal standard for IL education in academia (in terms of when the optimal time for IL education is, and who the ideal educator is) demonstrates the need for greater communication among individuals integral to IL implementation. Additionally, the lack of these universal standards highlights the need for a stronger link between theoretical frameworks and on-the-ground practice. The ACRL (2000) *standards* confined the students of IL to being passive 'information consumers' who "select, access, evaluate, incorporate, use, and understand information" (Jacobs, 2014, p. 194). Consequently, such views led to ineffective rote-style tutorials focusing on guiding students through the best resources of a discipline and aimed to achieve specific learning outcomes. The *standards* have failed; upon graduation many students from higher education are not information literate (Derakhshan & Singh, 2011). Education derived from the *standards* "demonstrate[ed] an ideal rather than demonstrating some of the key dispositions required of novice (and experienced) researchers: resilience, curiosity, creativity, and persistence" (Burgess, 2015, p. 4).

This study's preliminary exploration revealed that participants are not united in efforts to combat 'fake news'. Proactively coordinated IL campaigns to prevent, detect, and deter the spread of various 'fakes' in digital media are needed. IL should include explicit training for differentiation of varieties of 'fakes' and their propagation mechanisms to increase awareness and create preventative 'inoculation'. Additionally, there is a need for greater awareness of technological advances in automated identification tools (e.g., Pérez-Rosas (2017) or Rubin *et al.* (2019)). Library and information science professionals are encouraged to be more technologically aware of automated detection tools and cutting-edge methods (for an overview, see Rubin, 2017). IL educators need to be able to provide "technological solutions that can assist in identifying unverified or outright false information" (Sullivan, 2018, p. 9). Technological awareness (in step with the modern AI-enabled times of information dissemination) requires further reassessment of core library values and an inter-disciplinary understanding of the 'fake news' epidemic.

Education and automation efforts may be rendered ineffective if they are not combined with greater societal oversight regulating our "polluted news environments, by discouraging social media platforms from pursuing short-term profit at the expense of human rights, democracy, scientific fact, or public safety" (Rubin, 2019).

Rubin's Disinformation and Misinformation Triangle conceptual model (Figure 7) identifies three interacting causal factors in the digital news disinformation and misinformation epidemic, and proposes three interventions to interrupt factor interactions: automation, education and regulation (in 'stop signs').

The model "identifies the three minimal causal factors occurring simultaneously to facilitate the spread of the 'fake news' at the societal level: (1) the virulent pathogens are falsifications, clickbait, satirical 'fakes' and other deceptive or misleading news content; (2) the susceptible hosts are information-overloaded, time-pressed news readers lacking media literacy skills; and (3) the conducive environments are polluted poorly-regulated social media platforms that propagate and encourage the spread of various 'fakes'"(Rubin, *In Press*). Three types of interventions, working in concert– automation, education, and regulation – were put forward as

a set of holistic measures to reveal, and potentially control, predict and prevent further proliferation of the epidemic. Each of the interventions targets a different, specific part of the triangle, and the combined intended effect is synergistic, aiming at the deterrence, detection and prevention of the epidemic:

Figure 7. The Disinformation and Misinformation Triangle
(Redrawn from Rubin (Journal of Documentation, 2019).
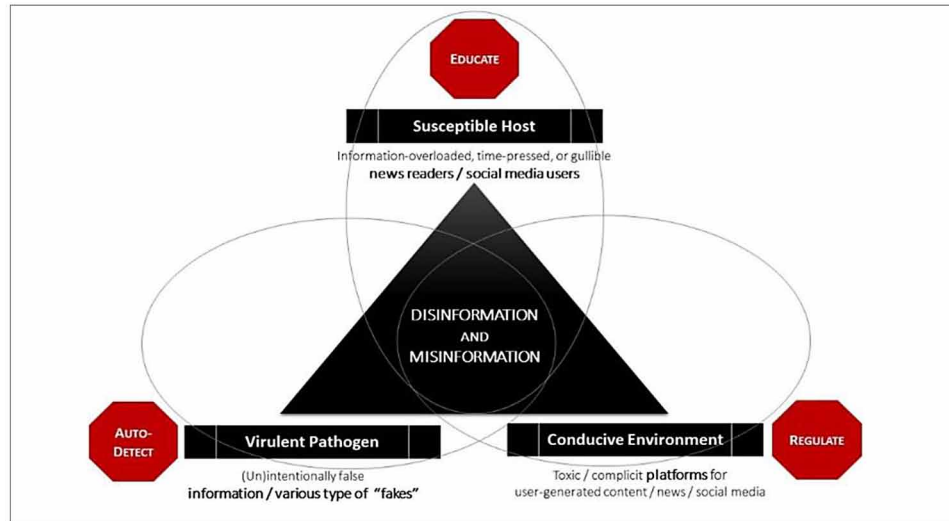
1) automated identification of various 'fakes' should assist humans in revealing, stopping and controlling the pathogens of the dis-/misinformation epidemic,

2) more unified efforts in proactive educational campaigns should 'inoculate' the general public and create more informed citizens and critical thinkers, and

3) legislative regulation of the conducive social media should 'purify' the polluted news environments, by discouraging social media platforms from pursuing short-term profit at the expense of human rights, democracy, scientific fact, or public safety.

Within this Model, IL education is an insufficient measure on its own. However, IL is an integral part of a holistic strategy to create a well-informed information literate Canadian society.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This study elicited Canadian educators' perceptions about information literacy (IL) and inclusion of segments on 'fake news' detection within higher educational IL curricula. The population of librarians, professors, and academic administrators was chosen because of their integral roles in shaping and implementing IL teaching methodologies and content. Findings reveal a substantial overlap between perceived skills associated with being information literate and those essential for 'fake news' detection. This overlap reinforces past scholars' recommendations that IL has a role to play in stopping the spread of 'fake news'. Further research needs to evaluate the degree to which political, socio-economic and psychological components of misinformation/disinformation are being introduced within IL curriculum.

Further assessments are needed to determine effectiveness of imparting critical information evaluation skills in current IL education, and if these skills are transferable to out-of-school tasks.

There appears to be a disconnect between the awareness of the value of IL education and its consistent institution-wide implementation. It is recommended that institutions facilitate open communication between librarians, professors, and academic administrators to enable the building of curriculum. Open communication is required to ensure that IL education is provided to every student, across every discipline. Past research in library and information science has identified librarians as having a key role in IL instruction, and as potential aids for the 'fake news' epidemic. Professors and academic administrators interviewed in this case study were unaware of the librarians' mandates, frameworks, and standards around IL. When asked who is responsible for teaching IL, professors and academic administrators failed to mention librarians. This lack of appreciation for valuable institutional assets may have resulted from poor awareness of library and information science practices or insufficient self-promotion by the practicing information workers. Academic librarians may be on the fringes of IL instruction in the Canadian higher educational context, but are encouraged to be more proactive in self-advocacy. It remains all three groups' joint responsibility (in consultation with their student body) to decide how to best integrate IL curriculum, improve intra-institutional communication, and determine how best to utilize information professionals' expertise. The current 'fake news' epidemic highlights the need for greater attention to cultivating young citizens' critical frame of mind when encountering information in and out of the university context. Educational efforts are recommended to be combined with the development and use of automated misinformation/disinformation detection methods and further legislative regulation of information environments and social platforms.

REFERENCES

Albitz, R. S. (2007). The what and who of information literacy and critical thinking in higher education. *Portal (Baltimore, Md.)*, *7*(1), 97–109.

American Library Association. (1989). *Presidential Committee on Information Literacy: Final Report.* Washington, DC: American Library Association. Retrieved from http://www.ala.org/acrl/publications/whitepapers/presidential

Andersen, J. (2006). The public sphere and discursive activities: Information literacy as sociopolitical skills. *The Journal of Documentation*, *62*(3), 213–228. doi:10.1108/00220410610653307

Association of College and Research Libraries (ACRL). (2000). *Information literacy competency standards for higher education*. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency

Association of College and Research Libraries (ACRL). (2015). *Framework for information literacy for higher education*. Retrieved from http://www.ala.org/acrl/standards/ilframework

Batchelor, O. (2017). Getting out the truth: The role of libraries in the fight against fake news. *RSR. Reference Services Review*, *45*(2), 143–148. doi:10.1108/RSR-03-2017-0006

Bauder, J., & Rod, C. (2016). Crossing thresholds: Critical information literacy pedagogy and the ACRL framework. *College & Undergraduate Libraries*, *23*(3), 252–264. doi:10.1080/10691316.2015.1025323

Bergstrom, C., & West, J. (2017). *Calling Bullshit: Data Reasoning for the Digital Age*. Retrieved from http://callingbullshit.org/index.html

Burgess, C. (2015). Teaching students, not standards: The new ACRL information literacy framework and threshold crossing for instructors. *Partnership: The Canadian Journal of Library and Information Practice and Research*, *10*(1), 1–6. doi:10.21083/partnership.v10i1.3440

Chee, F. Y. (2019, February). *Google, Facebook, Twitter fail to live up to fake news pledge*. Retrieved from https://www.reuters.com/article/us-eu-tech-fakenews/google-facebook-twitter-fail-to-live-up-to-fake-news-pledge-idUSKCN1QH1O5

Chen, Y., Conroy, N. J., & Rubin, V. L. (2015). News in an online world: the need for an automatic crap detector. *Proceedings of the 78th ASIS&T Annual Meeting: Information Science with Impact: Research in and for the Community. American Society for Information Science*, 81. 10.1002/pra2.2015.145052010081

Cooke, N. (2017). Posttruth, truthiness, and alternative facts: Information behaviour and critical information consumption for a new age. *The Library Quarterly*, *87*(3), 211–221. doi:10.1086/692298

Creswell, J. (2013). *Qualitative inquire & research design: choosing among five approaches* (3rd ed.). Los Angeles, CA: SAGE Publications.

Derakhshan, M., & Singh, D. (2011). Integration of information literacy into the curriculum: A meta-synthesis. *Library Review*, *60*(3), 218–229. doi:10.1108/00242531111117272

El Rayess, M., Chebl, C., Mhanna, J., & Hage, R. (2018). Fake news judgement. *RSR. Reference Services Review*, *46*(1), 146–149. doi:10.1108/RSR-07-2017-0027

Frederiksen, L. (2017). Best of the Literature: Fake News. *Public Services Quarterly*, *13*(2), 103–107. doi:10.1080/15228959.2017.1301231

Freire, P. (1972). *Pedagogy of the Oppressed*. New York: Herder and Herder.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, NY: Aldine.

Habermas, J. (1989). *The structural transformation of the public sphere.* Cambridge, MA: MIT Press.

Jack, C. (2017). Lexicon of lies: terms for problematic information. *Data & Society*. Retrieved from https://datasociety.net/pubs/oh/DataAndSociety_LexiconofLies.pdf

Jacobs, H. L. M. (2014). Pedagogies of possibility within the disciplines. *Communications in Information Literacy*, *8*(2), 192–297. doi:10.15760/comminfolit.2014.8.2.166

Kapitzke, C. (2003). Information literacy: A review and poststructural critique. *Australian Journal of Language and Literacy*, *26*(1), 53–66.

Lanham, A. R. (1995). Digital Literacy. *Scientific American*, *273*(3), 160–161.

Mulhern, M., & Gunding, B. (2011). What's critical about critical literacy? *English Quarterly Canada (Online)*, *42*(1), 6–23.

Pérez-Rosas, V., Kleinberg, B., Lefevre, A., & Mihalcea, R. (2017). *Automatic detection of fake news.* Retrieved from http://arxiv.org/pdf/1708.07104.pdf

Powell, R., Cantrell, S., & Adams, S. (2001). Saving Black Mountain: The promise of critical literacy in a multicultural democracy. *The Reading Teacher*, *54*(8), 772–781.

Simmons, M. H. (2005). Librarians as disciplinary discourse mediators: Using genre theory to move towards critical information literacy. *Libraries and the Academy*, *5*(3), 297–311. doi:10.1353/pla.2005.0041

Sullivan, M. C. (2018). Why librarians can't fight fake news. *Journal of Librarianship and Information Science*. doi:10.1177/0961000618764258

Swanson, T. A. (2004). Applying a critical pedagogical perspective to information literacy standards. *Community & Junior College Libraries*, *12*(4), 65–77. doi:10.1300/J107v12n04_08

The SCONUL Seven Pillars of Information literacy. (2011). *Core Model for Higher education*. Retrieved from https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf

Walsh, J. (2010). Librarians and controlling disinformation: Is multi-literacy instruction the answer? *Library Review*, *59*(7), 498–511. doi:10.1108/00242531011065091

Warnick, B. (2002). *Critical Literacy in a Digital Era: Technology, Rhetoric and the Public Interest*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Wiggins, G., & McTighe, J. (2004). *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development. Retrieved from https://www.ascd.org/ASCD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf

Wordsworth, W. (1802). Preface to Lyrical Ballads, with Pastoral and Other Poems. In (Eds.), Introduction to Theory and Criticism, (pp. 559-579). New York: Norton & Company.

ADDITIONAL READING

Association of College and Research Libraries (ACRL). (2015). Framework for information literacy for higher education. Retrieved from http://www.ala.org/acrl/standards/ilframework

Cooke, N. A. (2018). *Fake news and alternative facts: information literacy in a post-truth era. The ALA special report Fake News and Alternative Facts*. Chicago: ALA Editions.

Habermas, J. (1989). *The structural transformation of the public sphere. Trans. By Massachusetts Institute of Technology*. Cambridge: MIT Press.

Journalism, 'Fake News' & Disinformation: Handbook for Journalism Education and Training. (2018). UNESCO Series on Journalism Education. The United Nations Educational, Scientific and Cultural Organization, Paris, France. Retrieved from https://en.unesco.org/fightfakenews

Løkse, M., Låg, T., Solberg, M., Andreassen, H. N., & Stenersen, M. (2017). *Teaching information literacy in higher education: Effective teaching and active learning*. Cambridge, MA: Elsevier/Chandos Publishing.

Meel, P., & Vishwakarma, D. (2019). Fake news, rumor, information pollution in social media and web: A contemporary survey of state-of-the-arts, challenges and opportunities. *Expert Systems with Applications*, 112986. doi:10.1016/j.eswa.2019.112986

Rubin, V. L. (2019). Disinformation and misinformation triangle: A conceptual model for 'fake news' epidemic, causal factors and interventions. *The Journal of Documentation*, *75*(5), 1013–1034. doi:10.1108/JD-12-2018-0209

Rubin, V. L., Brogly, C., Conroy, N., Chen, Y., Cornwell, S. E., & Asubiaro, T. V. (2019). A News Verification Browser for the Detection of Clickbait, Satire, and Falsified News. *Journal of Open Source Software*, *4*(35), 1208. doi:10.21105/joss.01208

KEY TERMS AND DEFINITIONS

ACRL Framework: 2015 publication from the Association of College and Research Libraries, that is a teaching framework for information literacy. It consists of six (6) frames, with a less rigid structured list of outcomes than the earlier 2000 Standards. This framework is a method that encourages an open dialogue between IL instructor and students about critical discussion of information.

ACRL Standards: Outdated teaching outcomes published by the Association of College and Research Libraries. Contains six (6) prescribed skills of an information literate individual that IL educators should teach to students. Critiqued for producing rigid structure on how to find specific information for a specific outcome rather than how to critically assess information.

Critical Thinking: The ability to user higher cognitive ability and reasoning to rationally think, decide upon, or act. It requires the ability to gather facts from the environment (for example through observation), and the ability to analyze and evaluate perceived facts to decide upon an appropriate action.

Fake News: Misleading or fabricated information that has a societal, political and or monetary gain for the individual spreading it. Not a new phenomenon, and connected to the concept of propaganda.

Information Literacy: An attempt to teach individuals to be able to gather, synthesis, and critically assess information. Approaches to teaching methodology has transform information literacy conceptualization to view students as both consumers and active creators of information.

Media Literacy: Like information literacy, but narrower in scope. Focus resides on critical assessment of facts or opinions founded through consumption of media (such as television, radio, podcasts, etc.).

Rubin's Disinformation and Misinformation Triangle: A conceptual model that predicts that the three causal factors of the 'fake news' epidemic – virulent pathogenic 'fakes', conducive online environments, and susceptible readers lacking IL skills – can be disrupted with three types of interventions – education, automation, and regulation.

ENDNOTES

[1]   The Canadian Internet Registration Authority (CIRA) is a non-profit organization managing the .CA internet domain and it runs the Canada's Internet Factbook website (https://cira.ca/factbook/canada%E2%80%99s-internet-factbook-2018) The survey was conducted with a sample of 1,269 Canadian internet users (ages 18+), proportionate to population by gender, age and region (CIRA, 2019).

[2]   See https://www.nytimes.com/2018/03/20/business/media/google-false-news.html (Accessed: 14 July 2019)

[3]   See https://newsroom.fb.com/news/2018/01/news-feed-fyi-bringing-people-closer-together/ (Accessed: 14 July 2019)

[4]   See https://www.nytimes.com/2018/01/12/technology/facebook-news-feed-changes.html (Accessed: 14 July 2019)

[5]   See http://callingbullshit.org/index.html (Accessed: 13 May 2019).

[6]   See https://victoriarubin.fims.uwo.ca/teaching/misinformation-and-viral-deception/ (Accessed: 13 May 2019).

[7]   See https://umich.instructure.com/courses/257337 (Accessed: 13 May 2019).

[8]   This question was eliminated from interviews after interviewing the first two participants. This question is very specific to LIS, and it seemed unreasonable to expect scholars outside of LIS would know about the use of critical pedagogy within IL curriculum.

APPENDIX 1: INTERVIEW QUESTION GUIDE FOR PROFESSORS/DEPARTMENT CHAIRS

1. Can you tell me about your role at the University?
   a. Can you specify the courses that you teach and the department you belong to?
2. How would you define information literacy?
3. How would you define a person who is information literate?
   a. What skills would he or she possess?
   b. Do you believe that it is important for students to be information literate upon graduation?
4. Do you believe education on 'fake news' should be included in IL curriculum? Why or why not?
   a. How would you define 'fake news'?
   b. What value do you see to incorporating segments on 'fake news' in IL education?
5. What skills do you perceive as imperative for an individual to determine 'fake news'?
6. Are you aware of any attempts to standardize education about 'fake news'?

Probe: Have you heard about the C.R.A.A.P test? Do you think it is an effective checklist for evaluating 'fake news'?

7. Where you aware that in-class IL sessions can be incorporated into lectures?
   a. If you were to incorporate IL sessions into curriculum do you know how to initiate the process?
   b. Have you been approached by Western Librarians to initiate information literacy into the curriculum or have you approached them?
8. Have you attempted to incorporate or teach information literacy in any of your lectures? If so how?
9. How important do you feel it is to incorporate IL education into classes?
   a. Whose responsibility do you think it is to teach information literacy?
   b. Do you believe that IL education should be placed into curriculum or do you think that it should be an elective course that is mandatory for students to take?
10. Are you aware of introduction of critical pedagogy into IL? Do you believe a contextualized critical IL education has merit? Why or Why not?[8]
11. What obstacles do you feel prevent IL education from being incorporated into the classroom?
12. What benefits do you think IL education has on students?
13. How informed about information literacy do you believe you are?
    a. Are you aware of any attempts to standardize information literacy?
14. Finally, do you have any questions for me or if there are any questions that you think I should have asked you?

APPENDIX 2: INTERVIEW QUESTION GUIDE FOR LIBRARIANS

1. Can you tell me about your role at the University?

       a. Do you teach any information literacy (IL) classes?
       b. Do you implement or make IL curriculum?
       c. How are in-class information literacy sessions initiated?

2. Can you tell me about your role at Western?
       a. Do you teach any information literacy (IL) classes?
       b. Do you implement or make IL curriculum?
       c. How are in-class information literacy sessions initiated?

3. How would you define information literacy?

4. How would you define a person who is information literate?
       a. What skills would he or she possess?
       b. Do you believe that it is important for students to be information literate upon graduation?

5. Do you have any background education about IL?
       a. Have you attended any workshops on say what IL is or how to teach it?
       b. Do you feel that librarians are adequately trained to teach IL? If not, what would you do to change this?

6. What approach do you take to Information literacy?
       a. Probe: Do you view information literacy in terms of a metaliteracy that is interconnected to other types of literacy? I.e., digital literacy, media literacy, etc.
       b. How do you feel about the introduction of critical pedagogy into IL? Do you believe a con-textualized critical IL education has merit? Why or Why not?

7. Do you believe education on 'fake news' should be included in IL curriculum? Why or why not?
       a. Have you attempted to include segments on 'fake news' in IL curriculum?
       b. How would you define 'fake news'?
       c. Would you feel confident in incorporating segments on 'fake news'?

8. What skills do you perceive as imperative for an individual to determine 'fake news'?

9. Are you aware of any attempts to standardize education about 'fake news'?

Probe: Have you heard about the C.R.A.A.P test? Do you think it is an effective checklist for evaluating 'fake news'?

10. Do you believe that IL education should be placed into curriculum or do you think that it should be an elective course that is mandatory for students to take? Why or Why not?
       a. What obstacles do you feel prevent IL education from being incorporated into the classroom?

11. If you make IL curriculum or teach IL are there any standards you follow?
       a. Probe: Perhaps you adhere to the ACRL's framework for information literacy for higher edu-cation or the Big6 Skills developed by Eisenberg and Berkowitz?

12. Do you feel there is merit in trying to standardize how IL is taught?

13. Finally, do you have any questions for me or if there are any questions that you think I should have asked you?

Section 2

The Information Literacy Toolkit: How to Acquire the Necessary Skills to Detect Fake News, Alternate Facts, and Misinformation

Chapter 5
An Empirically Supported Taxonomy of Misinformation

Mark Chong
Singapore Management University, Singapore

Murphy Choy
MC EduTech, Singapore

ABSTRACT

Fake news, which includes both disinformation and misinformation, has been a challenge for many countries in the last few years. Disinformation has been present in modern history as part of the tool kit of PSYOPS for the military. Likewise, misinformation has been part of human history for a long time. Hoaxes, rumors, and urban legends—all of which can be classified as differing types of misinformation, although they are not commonly addressed as such—have been exploited by adversarial organizations for their own benefit. This study will propose a comprehensive taxonomy to tackle fake news, disinformation, and misinformation and assess the level of threat they pose to society. A comprehensive comparison with existing typologies will also be included.

INTRODUCTION

The term "fake news," especially in media and journalistic studies, is often defined in contemporary contexts as new reports based on fictitious accounts made to look like real and factual incidents. Due to the proliferation of fake news, the various possible definitions for "fake news" have, themselves, proliferated in tandem with the proliferation of fake news itself. A review of definitions of "fake news" across journalism, media studies, computer science, and philosophy has yielded some commonalities across the concept of fake news (Allcott & Gentzkow 2017; Svärd & Rumman, 2017; Gelfert, 2018; Bounegru et al., 2018). The various studies collectively agree that fake news is fictitious information presented to the public under the guise of it being factual information, with the intention to mislead or misinform the reader. The studies also agree that the term "fake news" has been applied indiscriminately across a broad spectrum of distinct types of information which could be classified under other terminology. This leads

to the labeling of parodies, political satires, urban legends, hoaxes, and propaganda, amongst others, as "fake news"—creating misalignment with a common definition. That said, to better understand the term "fake news," writers and collaborators on Wikipedia have created the following long-form definition (Wikipedia, 2019):

Fake news, also known as junk news or pseudo-news, is a type of yellow journalism or propaganda that consists of deliberate disinformation or hoaxes spread via traditional news media (print and broadcast) or online social media. The false information is often caused by reporters paying sources for stories, an unethical practice called check book journalism. Digital news has brought back and increased the usage of fake news, or yellow journalism. The news is then often reverberated as misinformation in social media but occasionally finds its way to the mainstream media as well.

Fake news is written and published usually with the intent to mislead in order to damage an agency, entity, or person, and/or gain financially or politically, often using sensationalist, dishonest, or outright fabricated headlines to increase readership. Similarly, clickbait stories and headlines earn advertising revenue from this activity.

The definition, however, is poorly framed as it provides no clear meaning of the term with no distinct boundaries. Further, it is loaded with additional references which require separate detailed analyses of the definitions linked to them. Misinformation and disinformation are also two concepts in the long definition that are used interchangeably, adding to the confusion. One definition of misinformation alludes to the "inadvertent sharing of false information," while disinformation alludes to "the deliberate creation and sharing of information known to be false" (Wardle, 2017). The definitions of misinformation and disinformation are also problematic, as the definition of misinformation requires the existence of disinformation at a certain level. At the same time, the definition is peppered with specific cases where "fake news" has been weaponized to cause harm and damages to entities, adding a legal dimension to the concept. The difficulty in formulating a robust definition of "fake news" therefore acts as an obstacle to the development of a taxonomy of "fake news," as well as any practices involving capturing or regulating "fake news." Inappropriate definitions could potentially result in scenarios where researchers develop models and frameworks capturing only specific types of "fake news," or scenarios where authorities' formulations of legislative definitions become overly prescriptive and are subsequently viewed as biased. In fact, some researchers have voiced their opinions that legislative approaches to "fake news" might even have paradoxical elements (Judge, 2019).

As a result of the abovementioned problems, defining "real news" (or what is more commonly known simply as "news") may be a helpful prerequisite to properly defining fake news. News - elucidated by the field of journalism - is taken to mean an independent, reliable power of journalistic channels to determine perceived facts, the profession adheres strictly to moral and ethical standards. The journalistic standard of News in general ensures that the information presented is neutral, has been verified with the right sources, and is accurate and factual based on the information available at that point in time. These higher standards of journalism, however, do not always exclude journalistic News from potentially propagating fake news. Ultimately, journalists are also humans who tend to follow the constructs of their society. As a result, the news produced by journalists is also vulnerable to the influences of society (political and financial interests) and to journalists' own personal biases (Shoemaker & Reese, 2013). Nonetheless—despite the potential for conflicts of interest and subjectivity involved— the news

is viewed as being mostly impartial and factual. This perception is one key driver for "fake news" sites' behavior of attacking and criticizing journalistic news channels (Wardle, 2017), especially so in the area of political news. "Fake news" sites use this as a way to degrade the standings of these channels. Therefore, for the purpose of this paper, the authors will define "news" as being information with the following characteristics:

- Presented in a neutral, balanced, and non-inciting manner.
- Verifiable by an independent source or party within reasonable limits.
- Accurate and factual, based on the information available or as provided by the source.
- Comprehensive—with no malicious censorship, modification, or manipulation.

Given the above definition, "fake news" can be defined as any news that does not meet all of the above-mentioned characteristics. With this definition, it is possible that some news from the journalistic channels might not meet the characteristics and be labeled as being "fake news." That said, even though they are labeled "fake news," there are varying degrees of transgression and types of transgression. A taxonomy of "fake news" will be crucial in determining the types of "fake news" and the level of transgression. In this paper, misinformation and "fake news" are considered as being indistinguishable, as both these terms imply information from channels that violate at least one of the characteristics of news. In the literature review section, the authors will review the literature on taxonomies of "fake news." In the model data section, various sources of misinformation and "fake news" will be discussed. The approach to base modeling data preparation will be described. With the model data prepared, the authors will move into a taxonomy development section where the authors will describe the use of an empirically driven methodology to develop the taxonomy. Once this taxonomy is developed, the analysis section will focus on presenting insights about the taxonomy and how the various types of "fake news" are related to military PSYOPS, political narratives, and various forms of malpractice. At the same time, the authors will also examine the types of "fake news" that are often propagated in various political environments.

LITERATURE REVIEW

The proliferation of "fake news" has prompted the development of various guides to combating this phenomenon in recent years (Wardle, 2016; Svärd & Rumman, 2017; Wardle, 2017; Bounegru et al., 2018). To ease the identification of "fake news," the guides provide a myriad of taxonomies that assist in facilitating the process.

The simplest taxonomy presented is by Wardle (2016) in the context of an election season. The taxonomy identifies six types of "fake news" as detailed below:

1. Authentic material used in the wrong context.
2. Imposter news sites designed to look like brands the authors already know.
3. Fake news sites.
4. Fake information or images.
5. Manipulated content.
6. Parody content.

The guidelines represent one of the earliest attempts to create a taxonomy and guide to "fake news." Many of the same types of "fake news" can also be found in other taxonomies (Svärd & Rumman, 2017; Bounegru et al., 2018). However, with the exception of parody, each type of "fake news" in Wardle's (2016) taxonomy contains some form of modification that is inherently malicious. In effect, the taxonomy merely describes various types of malicious "fake news"; non-malicious "fake news" is only accounted for by a single category (i.e. parody content). Consequently, Wardle (2017) superseded his 2016 taxonomy with an updated one that contains seven types of "fake news," as shown in Table 1.

The taxonomy is further elaborated through the inclusion of Eliot Higgin's (2016) idea of "fake news" motivation, as shown in Table 2.

The taxonomy presented is very useful as an *initial* guide for lay people in helping them to develop their own understanding of "fake news." The taxonomies presented so far are primarily definition driven and were created based on pre-defined characteristics of "fake news". For example, in Table 2, the dif-

Table 1. Taxonomy of Misinformation and Disinformation

7 Types of Mis- and Disinformation	
Type	**Description**
Satire or Parody	No intention to cause harm but has potential to fool
Misleading Content	Misleading use of information to frame an issue or individual
Imposter Content	When genuine sources are impersonated
Fabricated Content	New content is 100% fake, designed to deceive and do harm.
False Connection	When headlines, visuals or captions don't support the content
False Content	When genuine content is shared with false contextual information
Manipulated Content	When genuine information or imagery is manipulated to deceive

(Wardle, 2017)

Table 2. Misinformation Matrix

Misinformation Matrix							
	Satire or Parody	**False Connection**	**Mis-leading Content**	**False Context**	**Imposter Content**	**Manipulated Content**	**Fabricated Content**
Poor Journalism		X	X	X			
To Parody	X				X		X
To Provoke or to 'Punk'					X	X	X
Passion				X			
Partisanship			X	X			
Profit		X			X		
Political Influence			X	X		X	X
Propaganda			X	X	X	X	X

(Wardle, 2017)

ferent types of "fake news" contain elements that are shared across other categories. The only exception is "manipulated content," which is a subset of fabricated content.

However, this taxonomy has several serious shortcomings. First, the taxonomy seems to have been developed based on the experiences of and specific examples which the author has encountered. The paper that features this taxonomy does not describe the origin of the matrix in relation to the broader discourse on "fake news." Nor does it offer information on the defining cases that contribute to the attributes of each type. Second, the "fake news" types identified are not mutually exclusive and could replace or overlap one another. For example, "Imposter Content," "Manipulated Content," and "Fabricated Content" could all be grouped under "Malicious Modification of Content." Thus, the taxonomy can be collapsed further to make its categories more distinctive from one another.

The first attempt to codify and develop a taxonomy to combat misinformation that can be used empirically comes from the work of Svärd and Rumman (2017). This guide defines "fake news" as "intentionally false information or propaganda published under the guise of being authentic." This is also the same definition used in Stroud (2017). The authors recognize the diversity of fake news and further break it down into three groups—Serious Fabrication, Hoaxes, and Humorous Parody. This new taxonomy is interesting, as it recognizes the importance of a distinctive definition to enable the empirical testing of various definitions, categories, and groupings. However, this taxonomy has not been either developed or tested using empirical data.

Even though "fake news" is a new phenomenon, researchers in the area of information warfare have long studied PSYOPS (i.e. psychological operations or military operations in the area of information that seek to disrupt enemy psychology) and applied their findings in cyberspace. The first major taxonomy presented by a specialist (Rowe, 2006) in this area is unique and military driven. The taxonomy presents six forms of deceptions that can be deployed. These six forms are

- Spatial case.
- Time cases.
- Participant cases.
- Causality cases.
- Quality cases.
- Essence cases.
- Speech-act cases.

Even though this research is not specifically tailored to "fake news," the framework enables the detection of deception, which can be adapted to "fake news."

The largest and most comprehensive discussion of "fake news" to date, however, is by Anthony Judge (2019). In Judge's article discussing different types of "fake news," he articulates a taxonomy that comprises three distinct layers.

1. **The first layer** refers to the area or industry involved—commonly, areas such as media or marketing.
2. **The second layer** refers to the type of manipulation that creates the "fake news," such as Statistical Deception and Information Laundering. Finally,
3. **The third layer** of the taxonomy involves the actual technique used to affect the victims, such as Hoaxing and Fearmongering.

The approach is very comprehensive and covers a broad spectrum of "fake news." Table 3 shows the various types of "fake news" listed under the area of Media.

The taxonomy presents possible techniques that can be used to create "fake news." What it presents is interesting and helps in the framing of an empirically supported framework. However, the existing form of the taxonomy is excessively detailed, and there is significant overlap between the various areas and types of manipulation. As such, the taxonomy can be improved upon to better represent the "fake news" space with some modifications and generalizations. Across the techniques discussed (Judge, 2019), one can generalize them into four major groups—

1. Misrepresentation.
2. Distraction.
3. Equivocation.
4. Asymmetry.

Table 3. Fake News Taxonomy

Area	Type of Manipulations	Manipulation Techniques
	Misrepresentation	**Misrepresentation**
Media	Media Bias	Distraction by nationalism Straw man fallacy Distraction by scapegoat Distraction by phenomenon Distraction by semantics Distraction by regression Distraction by misleading Distraction by horror Appeal to consensus Censorship Demonization of the opposition Fearmongering
	Information Laundering	Pinkwashing Greenwashing Whitewashing Bluewashing
	Statistical Deception	Discarding unfavorable data Loaded questions Overgeneralization Biased samples False causality Proof of the null hypothesis Confusing statistical significance with practical significance Data dredging Data manipulation Misreporting or misunderstanding of estimated error
	Misrepresentation of electoral results	"Cordon sanitaire"

(Judge, 2019)

These generalized techniques are also four distinct types of manipulation, which can be evaluated empirically due to the semantic nature of each technique (Gelfert, 2018). This presents a very useful baseline framework to refer to, despite the lack of empirical support for it in the article.

Based on the literature, it is noteworthy that there have been no attempts to construct a taxonomy of "fake news" using empirical data. The development of an empirically supported taxonomy is very important in the public discourse on "fake news," as such a taxonomy would be based on characteristics that are actually found in "fake news" data. First, an empirically supported taxonomy would provide a robust reference that can be used for legislation as well as law enforcement. Second, it would give organizations the ability to develop monitoring systems that can detect new types of "fake news" that are not included in the current framework.

The main purpose of the different taxonomies is to educate the public and make it easier for them to recognize 'fake news'. But there are two major challenges to the development of an empirically supported taxonomy. The first immediate challenge is the lack of an empirically testable framework. Current taxonomies are very specific about the types of cases that are considered "fake news", and the typecasting of each case is not directly testable—nor are their features available for testing. With Wardle's taxonomy (2017), "fabricated content" is listed. However, applying the definition to real data in order to identify cases of "fabricated content" is almost impossible without human intervention.

The second challenge is the lack of a suitable empirical data source that can be used to develop the empirical taxonomy of "fake news." While there are many "fake news" datasets available for the purpose of identifying "fake news," the datasets do not distinguish between the types of "fake news" or the approach used in the labeling of said "fake news." This leads to there being a limited scope for exploring the breadth of types of "fake news"—a reality that is acknowledged in some studies (Svärd & Rumman, 2017). Another issue with the current, pre-defined "fake news" data set is the potentially political nature of the definitions, which may be more reflective of the authors' political inclinations than of the empirical evidence.

To overcome this challenge, the authors will detail their methodology in developing a reference data set for the buildout of "fake news" taxonomy in the next section. The reference data set will be considered as being suitable for investigating the unique features of "fake news," as well as for building Machine Learning or AI models for the purpose of identifying "fake news."

MODEL DATA COLLECTION AND PREPARATION

To develop the model reference data set, it is crucial to understand several important requirements of a robust reference data set for the purpose of this paper. The first requirement is the appropriate collection of news from journalistic channels. While this is a study of "fake news" and misinformation, it is nevertheless important to collect data from appropriate journalistic channels to serve as references. Given the characteristics of "news" defined earlier in the introduction, the requirements for any type of information to be considered "news" will be very stringent. It is likely that most journalistic channels will not be able to meet the set standard. Perhaps one example of this would be where a major news outlet changed its tagline to read "democracy dies in darkness" following a presidential election, thus eviscerating even its vestigial pretence of unbiased reporting. As noted earlier, it is also possible that some of the journalistic channels themselves may be considered guilty of propagating "fake news" on a smaller scale, which would be interesting to explore and discover in a follow-up study.

The second requirement is the need to have good "fake news" sources. While it is possible to identify "fake news" from Twitter, it is ultimately not a good exercise, for the data collected there might be contaminated by cross references within the channel. To avoid this, the "fake news" sources have to be gathered from information channels similar to journalistic channels. This requires that careful curation of the "fake news" sources take place, ensuring that they cover a wide range of possible "fake news" types. Thus, the sources will have to cover multiple areas such as politics, science, and even entertainment as well as the various kinds of "fake news" that were identified above.

The third requirement is the selection of textual information used to identify the "fake news." Across the literature (Wardle, 2016; Svärd & Rumman, 2017; Wardle, 2017; Bounegru et al., 2018; Judge, 2019; Gelfert, 2018), the most common approach used is to tackle the textual information within an article in order to identify "fake news." While the mantra of "more data is better" still holds true in most studies, in this particular case, access to more textual information will actually be problematic for the following two reasons.

The first problem is how to represent the textual data in a suitable format. There are two major approaches to textual data representation—the first of which is a direct approach where the words in the article are directly used to model the data. There are three formats of the direct approach currently used for textual analysis.

The first format is the N-gram, which is popular among natural language processing specialists. An N-gram is basically a sequence of N words mapped from the textual data. When you apply 1-gram to the textual information, it will essentially tokenize the textual data into single words. 2-gram or bigrams will break down the textual data into sequences of two words like "Good morning." N-grams are often used to develop the probabilities of posterior words given prior words, as well as to calculate the probabilities of the occurrence of specific sequences or entire sequences. Using this information, one can then calculate the probability of content being "fake news." This approach is, however, ill-conditioned to handle the problem of developing a taxonomy. This is because the probabilities of the words indicating "fake news" are never static and require a huge amount of data in order to ensure a high level of stability. Minor fluctuations to the probabilities can wreak havoc on the stability of taxonomical models developed based on this data. Thus, N-grams are not suitable for the authors' purpose.

The Bag-of-words approach is the second format and is one of the simplest representations of text. This approach considers every word as being a single unit of information with the same significance. Very often, this approach is considered as being a variant of the 1-gram approach, as it uses frequency as opposed to probabilities. The approach has been useful in some studies involving deception. That said, its simplicity is also the biggest weakness of this approach. The oversimplification of textual data representation ignores the importance of the words' nature and the relationships between the words, despite the fact that these factors can often provide useful context. This approach is also highly sensitive to the type of numerical representation of frequency. Moreover, various measures of word frequency such as TF-IDF do not provide useful relations to the underlying word nature or the deceptive semantic structure.

The final approach is the use of Deep Syntax. Under most circumstances, the simple use and analysis of words is insufficient for doing modeling work. To achieve better results, syntactical structures need to be applied to complement the word studies. Most studies are conducted using Probability Context Free Grammars (PCFG), where sentences are transformed to describe the structure using syntactic constituent parts. The final result is a parse tree with assigned probabilities that presents difficulties for usage in a modeling context. This approach is therefore unsuitable for the taxonomic study of "fake news."

The second major approach to textual data representation is the indirect approach—where the characteristics of textual information in an article are used to model the data. There are several characteristics that can be used under this circumstance. Part-of-speech tagging is one of the more common characteristics used, while others include the measurement of polarity in the text and the readability of the text using measures such as the Coleman-Liau index. The drawback to the indirect approach, however, is the loss of additional information that could be gained from direct representation.

Another problem is the imbalance between the amount of "fake news" and "news." The long history of journalistic reporting means that there are larger numbers of "news" sources available, compared to "fake news" sources. Hence, adjustments need to be made to ensure that the taxonomy is not biased toward either "news" or "fake news."

Given the potential political affiliations of news channels, it is imperative that "news" sources be as balanced as possible across the political spectrum. Thus, for every left-leaning source, the authors attempted to include a right-leaning source whenever possible. The selected sources also need to be reputable news sources with good standing in journalistic circles. Last, they should be capable of correcting erroneous reporting and committing to investigate journalistic misconduct.

The authors selected one source for each category of "fake news," as defined by other frameworks (Judge, 2019; Rowe, 2006; Wardle, 2017). Each source should contain a sizable number of articles that are known in journalistic circles to be "fake news." In addition, the source must be recognized as a consistent source of "fake news," as opposed to one that occasionally and unintentionally 'allows' "fake news" to slip through its vetting processes.

Given these requirements, the following steps are taken to develop the required reference data set for the development of the taxonomical model of "fake news."

Collection of "news" from the following channels

- BBC
- CNN
- Bloomberg
- CBS
- Huffington Post
- The Guardian
- Washington Post
- Fox News

Collection of "fake news" from the following sources (covering a variety of "fake news" and related areas)

- Buzzfeed (Tabloids)
- Global Research News (Propaganda)
- Huzler News (Fabrications)
- Natural News (Hoaxes)
- Newspunch (Propaganda)
- Onion News (Satire)
- Singapore World Times News (Misleading Content)
- Temasek Times News (Propaganda)

Careful sampling of the News from the abovementioned channels to create a 4:5 ratio of "fake news" to "news."

Even though direct representation of textual information is desired, certain studies have shown that this approach is vulnerable to adversarial model attacks (Zhou et al., 2019). At the same time, other studies have shown that indirect representations have been useful in detecting "fake news" (Choy and Chong, 2018; Olivieri et al., 2019). Thus, for the purpose of developing a taxonomy, the authors will be establishing the relevant characteristics using the LeSiE dimensions (Choy & Chong, 2018). These are, namely,

- Lexical Structure,
- Simplicity, and
- Emotion.

Using the various sources, the authors created the reference data set with 182,267 "news" data points from both "news" and "fake news" sources. To ensure that the "news" characteristics are not driven by the nature of the authors, the reference data set only uses the title as the textual data input. Using the title, the authors generated the automated readability index, Dale-Chall readability index; Part-of-Speech tags percentages, and emotion and sentiment values. In the next section, the authors will describe their taxonomy-development approach using the data.

TAXONOMY DEVELOPMENT METHODOLOGY

There are multiple approaches to the development of a taxonomy. Most commonly, though, a taxonomy is represented as being a hierarchical classification system. Linnaeus's taxonomy is a system that arranged living organisms into a tree-structured hierarchy, facilitating a better and more accurate understanding of the relationship between members of the plant and animal kingdoms. The "fake news" taxonomy thus provides a common framework to describe and identify "fake news" by their characteristics. Given that the characteristics do not necessarily link the types of "fake news," a tree-structured taxonomy would be ill-suited for this purpose. Nonetheless, there exist other types of taxonomies which may be used. An example of one of these is the single-dimension continuum taxonomy, where the subject of study can be distinguished using a single dimension, exemplified by Bloom's taxonomy (Best, Floyd & McNamara, 2008). However, the complexities of "fake news" render this approach invalid. Other taxonomies use a combination of quantitative and qualitative factors in order to establish a classification structure (Krathwohl & Anderson, 2009; Biggs & Collis, 2014). As detailed in other studies, derived characteristics are useful in understanding "fake news." As such, the authors will use these dimensions to develop the taxonomy.

The "fake news" taxonomy describes and categorizes "fake news" using dimensions such as lexical structure, simplicity and emotion. This is important to note, as it helps us to identify the characteristics that define a category of "fake news" and provides us with a reference framework. Beyond this characterization, the taxonomy also enables us to assess the impact of "fake news" with respect to the spread of information and the possible provocation of the masses. Due to the quantitative nature of the information gathered, traditional ways of manual construction are difficult. Hence, to solve this issue, the authors will be using an unsupervised Machine Learning approach to create the taxonomy.

To properly illustrate this, it must be understood that unsupervised learning approaches do not require the presence of a verified training set data with the appropriate input variables and targets. The purpose of an unsupervised learning approach is to model the data structure and develop an understanding of the underlying patterns and features. This is an extremely useful approach for cases in which there is little to no knowledge of the underlying features and patterns beyond the initial characterization. In this case, the authors will therefore be using cluster analysis to develop the taxonomy.

Cluster analysis is a means used to identify the natural grouping of objects by taking observations that are similar according to their traits and characteristics and sorting them into sets. Through this process, the smaller subsets are identified and grouped to make them as homogenous as possible. By grouping them naturally, the process reveals hidden patterns in the observations under study. In most cluster analyses, the measure of similarities and/or differences is usually in the form of some kind of distance functions, although there is definitely a good selection of clustering algorithms available that use other types of measures.

The process of cluster analysis starts by computing the similarity or dissimilarity measures between observations and between assigned clusters once observations are assigned. The most popular metrics are Euclidean distance, correlation, or probability. Due to the measures and merging strategies, clustering results can be subjective, depending on the selections. In this paper, the K-Means algorithm will be used to cluster the observations.

The K-means algorithm is an iterative algorithm which begins with k-cluster centers that are initiated randomly. Observations are assigned to the closest cluster by minimizing the distance of the observations to the cluster centers. Once the assignment has been completed, new cluster centers are calculated as the mean of the observations of a given cluster. The observations are then reassigned by minimizing the distance to the new cluster centers in an iterative manner until minimal differences between the current set of cluster centers and the new cluster centers exist. In the next section, the results of the cluster analysis of the "fake news" data reference is reviewed.

ANALYSIS OF RESULTS

The cluster analysis on the reference "fake news" dataset yielded eight clusters. Among the eight clusters identified, there is an equal split between clusters with a good percentage of "fake news" and clusters devoid of them. This initial observation is a reassurance of the fundamental differences between "fake news" and journalistic channels. Table 4 shows the breakdown of individual sources and the percentage found in each cluster.

From Table 4, it can be seen that the bulk of "fake news" is found in clusters 2, 3, 5, and 6. Of the four clusters, clusters 3 and 6 collectively form more than 50% of each source, with the exception of the "Natural News" channel. This concentration is different from the journalistic channels, which are predominantly found in clusters 1, 4, 7, and 8. However, there are around 10% to 24% of "news" titles from journalistic sources which are classified under clusters 2, 3, 5, and 6. This is an alarming proportion that requires further study.

The separation of the two groups of sources highlights the credibility of the derived dimensions in identifying and distinguishing "fake news" from "news." Juxtaposed with the weaknesses in using direct representations, indirect representations cause the information derived from the data set to be grouped at a higher level, making it more difficult to manipulate than words. Any attempt to manipulate informa-

Table 4. Cluster Analysis Results

News Channels		Cluster							
		1	2	3	4	5	6	7	8
Fake news	Buzzfeed News	0%	18%	38%	2%	4%	28%	0%	9%
	Global Research News	1%	15%	29%	2%	17%	31%	1%	5%
	Huzler News	0%	17%	43%	2%	9%	29%	0%	1%
	Natural News	0%	14%	26%	7%	12%	18%	1%	22%
	Newspunch	0%	14%	34%	2%	13%	36%	0%	1%
	Onion News	0%	10%	29%	2%	19%	33%	0%	7%
	Singapore World Times News	0%	23%	36%	6%	7%	20%	0%	7%
	Temasek Times News	0%	23%	42%	5%	4%	19%	0%	7%
Journalistic Channels	BBC	7%	9%	9%	26%	5%	3%	18%	23%
	Bloomberg	14%	2%	3%	21%	4%	2%	38%	15%
	CBS	10%	5%	7%	19%	6%	3%	24%	26%
	CNN	12%	2%	3%	17%	5%	1%	34%	26%
	Fox News	13%	3%	4%	22%	6%	2%	27%	23%
	HuffPost	16%	3%	3%	20%	3%	1%	42%	12%
	The Guardian	3%	6%	6%	37%	8%	3%	14%	22%
	Washington Post	3%	8%	7%	34%	6%	3%	14%	24%

tion to fit them into desired brackets will likely run afoul of lexical structure limitations. This limitation also implies that "fake news" or misinformation could possibly have limited lexical or semantic forms that can be detected and controlled.

Since it is now understood that the two groups are distinct in the clusters found, one can examine the nature of the clusters in terms of lexical structure, simplicity and emotion. Table 5 shows the lexical structure results.

From Table 5, one can discern that the lexical structure between "fake news" and "news" are quite different. The findings complement prior research that identifies "fake news" as "news" aimed at deceiving audiences and which typically has unusual lexical structure when compared with true "news." The differences in lexical structure may also explain the virality of "fake news," as these stories tend to couple "news" with emotion an in attempt to provoke readers. This amplifies the spread of "fake news" to wider swathes of the population and can exploit miscommunication in order to stir up confusion and chaos.

While it is impossible to highlight to readers the fundamental differences between "news" and "fake news," it is important for the government and relevant agencies to recognize lexical structures as one way to educate the population against "fake news." Through careful education, it is possible to train audiences to question "fake news" and to be critical of the "fake news" they may encounter by enhancing their "fake news" identification abilities.

From Figure 1, it can be seen that the bulk of the "fake news" found in clusters 2, 3, 5, and 6 are lower in their readability measure when compared to other clusters. Cluster 5 has a slightly higher score, but this cluster contains only a small portion of the "fake news" channels. These findings therefore match those in prior research which suggests that "fake news" is simpler and easier to read compared to "news"

Table 5. Lexical Structure Results

Part of Speech	Cluster							
	1	2	3	4	5	6	7	8
Foreign word	0.07%	0.04%	0.03%	0.06%	0.03%	0.03%	0.06%	0.05%
Adjective	9.41%	3.71%	3.77%	6.38%	5.14%	3.77%	8.24%	5.86%
Adjective, superlative	0.13%	0.11%	0.08%	0.18%	0.07%	0.06%	0.16%	0.17%
List item marker	0.03%	0.00%	0.00%	0.01%	0.00%	0.00%	0.02%	0.01%
Noun, plural	15.50%	21.63%	25.44%	13.09%	27.16%	30.04%	13.76%	15.30%
Proper noun, plural	0.21%	0.28%	0.35%	0.17%	0.33%	0.40%	0.19%	0.20%
Possessive ending	1.63%	0.14%	0.11%	0.70%	0.35%	0.08%	1.26%	0.61%
Verb, 3rd person singular present	2.09%	1.80%	1.48%	2.28%	1.26%	1.09%	2.36%	2.19%

stories from journalistic channels. This enables "fake news" to reach a broader proportion of the of population and to be more easily understood by the less educated. Based on the simplicity measures, most "fake news" stories are written at a level no greater than 10th grade difficulty.

"Fake news'" simplicity and low readability measure also put the younger population at risk of being influenced by "fake news" outlets. The repercussions of this could be deadly, for "fake news" has the capacity and capability to impact and influence younger people in areas of importance, such as political, social, and racial issues. Therefore, tackling the targeting of the young and vulnerable requires proper education and communication regarding "fake news".

While raising the level of language used in some of the sources is unlikely to work, it can serve as a quick and easy tool to label and highlight sources that consistently put out information that is low in complexity and that is often "fake news." Legislation can also be implemented by legally requiring

Figure 1. Simplicity measure by cluster

SIMPLICITY MEASURE BY CLUSTER

—O—Automated Readability Index   – –Dale Chall Readability Index
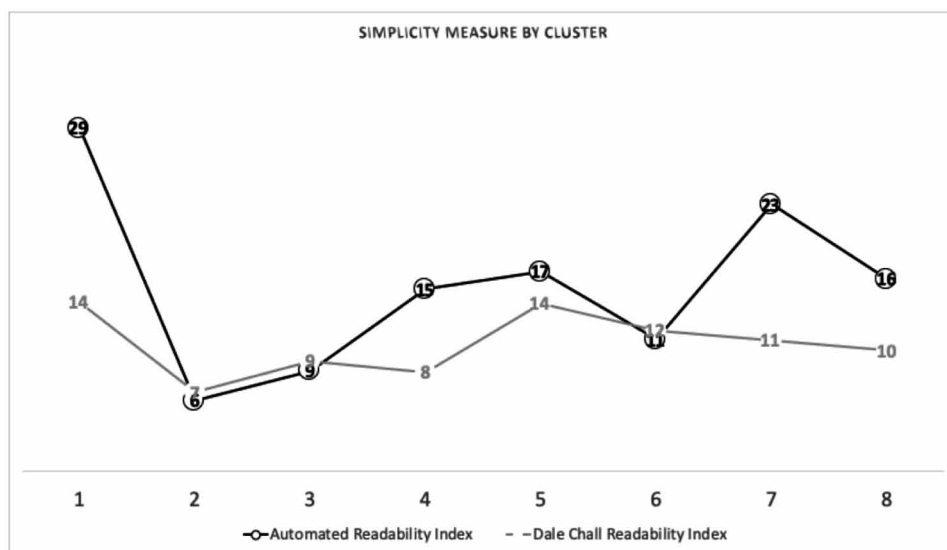
the sources to improve their level of journalistic quality, failing which they would be faced with either punishment or restrictions placed upon them.

From Figures 2 and 3, one can see that "fake news" generally contains more negative emotions and sentiments compared to "news." The findings in this area also match prior research, in which "fake news" stories were found to be characterized by negative emotions. As with provocation, more negative emotion will bring about a greater level of virality, and—in some circumstances, coupled with lexical structure—exploit the psychological weakness of the masses. Negative emotions also amplify the spread of "fake news" to a wider proportion of the population by provoking individual audience members to redistribute its message.

Figure 2. Emotion measure (polarity) by cluster
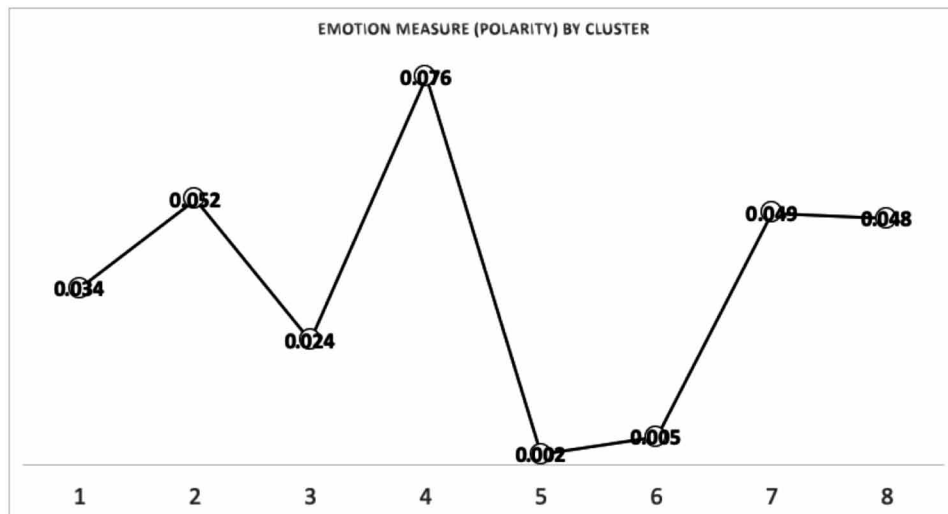
Figure 3. Emotion measure (sentiment) by cluster
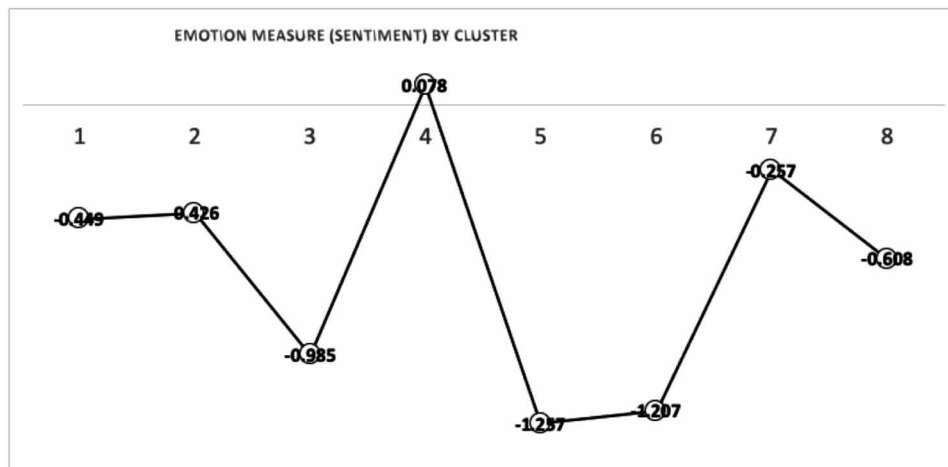
Through the careful use of provocation, "fake news" can be designed to bypass one's thinking process. This is especially dangerous if the messaging platform creates a massive feedback loop that self-perpetuates within the group. Incidents in India ("How WhatsApp helped turn an Indian village into a lynch mob," July 19, 2018) provide case studies in which mobs were stirred into a frenzy through the spread of provocative "fake news" which can attack the beliefs of a people—to the extent that a mob mentality can sometimes take over and lead to great chaos.

Beyond the specific dimensions of the clusters discussed above, it is also important to understand the actual content within the news clusters in order to better describe and explain each cluster. After reviewing the sample contents in each cluster (see the Appendix), the authors identified eight major types of "news" found in each cluster, as shown in Table 6.

Subsequently, four of these eight clusters were identified to be "fake news" clusters. The four groups of "fake news" are henceforth taken to be:

1. Click Baits (Misrepresentation).
2. Shockers (Equivocation).
3. Events (Distraction).
4. Fear Inducers (Asymmetry).

While it is arguable as to whether or not the various clusters are sufficiently distinct from one another, or if the underlying mechanics of manipulation in each of them is appropriate, the interpretation of the sample from each cluster and the sources suggest the taxonomy.

Click baits are commonly understood as being a form of false advertising in which specific sensational thumbnails or words are used in the title of the article being spread. Click baits are designed to attract attention; the objective of click baiting is to lure the reader into clicking on the news or article link. It should be noted that click baits typically use misleading information in order to achieve this objective of attaining "clicks." Hence, "misrepresentation" has been identified as being the technique of manipulation characteristic of click baits.

Shockers are news stories that attempt to bring an element of shock to the reader. They often exaggerate the impact of the news and achieve this by equivocating on the impact of the event through comparison with another similar event. Even though the two events discussed may be similar, the underlying

Table 6. Cluster and "Fake News" Taxonomy

Cluster	Label
1	Special subjects
2	Click baits (Misrepresentation)
3	Shocker (Equivocation)
4	Statements
5	Events (Distraction)
6	Fear Inducer (Asymmetry)
7	Issues
8	Tabloids

mechanics and fundamentals are different and have distinct consequences. Due to "fake news" authors' tendency to use emotive words with a simple structure, these types of "fake news" have been labeled as "shockers" to reflect the direct and simple way they convey information and trigger shock.

Events, as the name suggests, are such events that happened and are manipulated and discussed to reflect something and suggest that they require immediate audience attention. However, the event description is peppered with other information that distracts the reader and provides more information than is otherwise required. Essentially, this acts as a form of information overload, which in turn acts as a kind of 'red herring.'

Fear inducers are different from the other three categories. Fear inducers are more complex forms of "fake news" as compared to the other groups. They use more sophisticated language (less so than in the coverage of events, since that category also requires some level of factual reporting). The category operates by presenting a matter of importance which is generally sophisticated and negative in nature. The title will induce a sense of urgency to review the news—an inducement which is achieved by an asymmetric, emotional, and misleading presentation of information.

CONCLUSION

The taxonomy created using empirical evidence turns out to be more insightful than expected. The separation of "fake news" and "news" is clear and unambiguous. The insights from the cluster analysis also seem to be fairly consistent with prior research in this area. Characteristics derived from the textual information have once again proven to be useful in identifying "fake news", and they are robust against manipulation.

The types of "fake news" identified using the taxonomy also provide some suggestions and guidelines for combatting them. Across the various categories, one common feature is the simplicity of "fake news." This simplicity is designed to bring misinformation to the wider population by making it easier to understand. This simplicity is also ultimately a fatal problem for "fake news." Simplicity is something that can be measured readily using a wide variety of measures. Agencies can quickly measure the simplicity of the "news" title from a questionable source and determine its level of simplicity relative to recognized journalistic sources. If a site consistently shows a lower reading level than might be otherwise expected of such a site, then that will be a warning sign. This ease of application can also assist technology companies in detecting information sites and portals which display such characteristics. Technology companies can then take this information into account in their implementation of search rankings. Regulators and legislators can also require information portals to meet a certain level of minimal journalistic standards in order to limit the ranking of such "fake news" portals through negative search engine feedback.

Lexical structure also provides a possible tool in efforts to defend ourselves against "fake news." Regulators could definitely use this measure to identify "fake news" and to impose publication requirements on platforms or publishers. Unusual lexical patterns could also serve as early warning signs that merit intervention by regulators. Moreover, lexical structure can be taught in language classes so that the population may 'inoculate' itself against "fake news." Education about "fake news" should also cover the importance of the emotional disruption brought about by the use of strong emotional words and content in "fake news."

Across all the three dimensions, one of the core features of "fake news"—beyond the point of manipulating views—is its need to spread in a viral manner. Without the viral spread and subsequent herd

behavior, "fake news" disappears rapidly. Regulators can apply the concept of "caveat lector," which means "reader beware." Similar to how prostitution is regulated in Sweden, Ireland and other countries that have adopted the "Nordic Model," the transmitter of the information – not necessarily the source of the information – is held accountable. Thus, the onus is on the transmitters to do the necessary fact checking before spreading the information. This pause could help to delay the spread of information and ultimately stop "fake news." Therefore, even if there is still consumption of such "fake news," the ability to spread it could be limited—and regulators can easily hold portals accountable in this case.

There is much work that remains to be done within the field, and more validation and fundamental research will continue to combat "fake news." Future studies will need to cover a more extensive selection of sources and address the use of AI in detecting "fake news." Additional studies need to be conducted on assessing the possibilities of other taxonomies. Other research could involve alternative languages, videos, and even pictures. The horizon for future work in this area remains bright.

ACKNOWLEDGMENT

REFERENCES

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *The Journal of Economic Perspectives*, *31*(2), 211–236. doi:10.1257/jep.31.2.211

Best, R. M., Floyd, R. G., & McNamara, D. S. (2008). Taxonomy of educational objectives. Handbook 1: Cognitive domain. *Reading Psychology*, *29*(2), 137–164. doi:10.1080/02702710801963951

Biggs, J. B., & Collis, K. F. (2014). *Evaluating the quality of learning: The SOLO taxonomy (Structure of the Observed Learning Outcome)*. New York, NY: Academic Press.

Bounegru, L., Gray, J., Venturini, T., & Mauri, M. (2018). *A field guide to "fake news" and other information disorders: A collection of recipes for those who love to cook with digital methods*. Amsterdam: Public Data Lab. doi:10.2139srn.3097666

Choy, M., & Chong, M. (2018, March 31). *Seeing through misinformation: A framework for identifying fake online news.* arXiv:1804.03508

Fake news. (2019). In *Wikipedia*. Retrieved July 3, 2019, from https://en.wikipedia.org/wiki/Fake_news

Gelfert, A. (2018). Fake news: A definition. *Informal Logic*, *38*(1), 84–117. doi:10.22329/il.v38i1.5068

Higgins, E. (2016, November 30). There's no such thing as a good fake – when publicity stunts go wrong. *Bellingcat*. Retrieved from https://www.bellingcat.com/resources/articles/2016/11/30/theres-no-thing-good-fake-publicity-stunts-go-wrong/

How WhatsApp helped turn an Indian village into a lynch mob. (2018). *BBC*. Retrieved from https://www.bbc.com/news/world-asia-india-44856910

Judge, A. (2019). *Varieties of fake news and misrepresentation*. Retrieved from https://www.laetusin-praesens.org/docs10s/fakenews.php

Kovach, B., & Rosenstiel, T. (2014). *The elements of journalism: What newspeople should know and the public should expect*. New York, NY: Three Rivers Press.

Krathwohl, D. R., & Anderson, L. W. (2009). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Olivieri, A., Shabani, S., Sokhn, M., & Cudré-Mauroux, P. (2019, January). Creating task-generic features for fake news detection. In *Proceedings of the 52nd Hawaii International Conference on System Sciences* (pp. 1-10). Maui, HI: HICSS. 10.24251/HICSS.2019.624

Ponzetto, S. P., & Strube, M. (2007, July). Deriving a large scale taxonomy from Wikipedia. In *Proceedings of the 22nd national conference on artificial intelligence* (pp. 1440–1445). Vancouver, British Columbia, Canada: AAAI.

Rowe, N. (2006, March). A taxonomy of deception in cyberspace. In *International Conference on Information Warfare and Security* (pp. 173–181). Princess Anne, MD: Naval Postgraduate School.

Shoemaker, P. J., & Reese, S. D. (2013). *Mediating the message in the 21st century: A media sociology perspective*. New York, NY: Routledge. doi:10.4324/9780203930434

Stroud, F. (2017). *Fake news*. Retrieved July 3, 2019, from http://www.webopedia.com/TERM/F/fakenews.html

Svärd, M., & Rumman, P. (2017). *Combating disinformation: Detecting fake news with linguistic models and classification algorithms* (Unpublished bachelor's thesis). KTH Royal Institute of Technology, Stockholm, Sweden.

Wardle, C. (2016, November 18). 6 types of misinformation circulated this election season. *Columbia Journalism Review*. Retrieved from https://www.cjr.org/tow_center/6_types_election_fake_news.php

Wardle, C. (2017, February 12). Fake news: It's complicated. *First Draft News*. Retrieved from https://medium.com/1st-draft/fake-news-its-complicated-d0f773766c79

Zhou, Z., Guan, H., Bhat, M. M., & Hsu, J. (2019, January 5). *Fake news detection via NLP is vulnerable to adversarial attacks*. arXiv:1901.09657

ADDITIONAL READING

Chiluwa, I. E., & Samoilenko, S. A. (2019). *Handbook of research on deception, fake news, and misinformation online*. Hershey, PA: IGI Global. doi:10.4018/978-1-5225-8535-0

Klintman, M. (2019). *Knowledge resistance: How we avoid insights from others*. Manchester, UK: Manchester University Press.

McIntyre, L. (2019). *Post-Truth*. Cambridge, MA: MIT Press.

O'Connor, C., & Weatherall, J. W. (2018). *The misinformation age: How false beliefs spread*. New Haven, CT: Yale University Press.

Sellnow, T. L., Parrish, A., & Semenas, L. (2019). From hoax as crisis to crisis as hoax: Fake news and information disorder as disruptions to the discourse of renewal. *Journal of International Crisis and Risk Communication Research*, *2*(1), 121–142. doi:10.30658/jicrcr.2.1.6

Silverman, S. (2015). Lies, damn lies, and viral content. *Tow Center for Digital Journalism, Columbia University*. Retrieved from: https://academiccommons.columbia.edu/doi/10.7916/D8Q81RHH

Southwell, B. G., Thorsen, E. A., & Sheble, L. (2018). *Misinformation and mass audiences*. Austin, TX: University of Texas Press.

KEY TERMS AND DEFINITIONS

Caveat Lector: A Latin phrase that means "let the reader beware."
Disinformation: False information that is crafted with the intention to mislead.
Fake News: News that is false and contains a mixture of misinformation and disinformation.
Misinformation: Information that is shared without the knowledge of it being false.
PSYOPs: Military operations that are aimed at influencing the enemy's state of mind through psychological approaches.
Social Media: The network of websites and mobile applications that connects individuals within a particular social circle with one another.
Taxonomy: A scheme of classification.

APPENDIX

Table 7.

Title	Origin	Cluster
Popular traditional Chinese root demonstrates powerful antidiabetic activity	Natural News	1
Regular electroacupuncture treatments can lower hypertension	Natural News	1
Logitech Introduces High-Resistance Keyboard For Fitness-Minded Typists	Onion News	1
Bitcoin: JPMorgan Begins Propaganda Campaign Against Cryptocurrency	Newspunch	1
Anti-Vaccine Parents Face Unprecedented Crackdown Worldwide	Newspunch	1
Challenging Singapore Defamation Laws	Temasek Times News	1
Convenient Demonologies: Stopping Migrant Caravans	Global Research News	1
Syrian Military Facilities Terror-Bombed Overnight	Global Research News	1
Silicon Valley awaits Donald Trump's presidency	BBC Technology	1
UK researchers tap into China's scientific powerhouse	BBC Science News	1
Female shop mannequins are 'medically unhealthy' and 'unrealistic'	BBC Health News	1
Unlawful immigration curfews under government review	BBC News (Uk)	1
WikiLeaks celebrates Chelsea Manning's commutation	CNN Politics	1
Obama commutes the sentence for Chelsea Manning	CNN Politics	1
The State Department is delaying more ambassador nominations and training sessions	CNN Politics	1
A former Northwestern professor has been charged in "grisly" Chicago stabbing death	CNN International	1
Police: Barcelona attack was 'more rudimentary than planned,' suspects' explosives detonated accidentally Wednesday	CNN International	1
Choosing alternative cancer therapy doubles risk of death, study says	CNN International	1
Get better quicker: Avoid these foods when you are sick	Natural News	2
Hot cocoa can stave off the flu	Natural News	2
Russia Warns Coup-Cheering Washington Not To Meddle In Venezuela	Newspunch	2
Ron Paul Slams Neocons Bolton & Pompeo For Undermining President Trump	Newspunch	2
Man Figured Drug Addiction Would Take Up A Lot More Free Time	Onion News	2
Breaking: Adam Got A PS4 For Christmas	Onion News	2
The dirty truth about household items: How often should you replace them?	Singapore World Times News	2
Woman risks her life by sitting in the middle of the road to take a selfie	Singapore World Times News	2
Can I use my CPF or secure a bank loan to buy a 70 year old HDB flat	Temasek Times News	2
More Singaporean women chose to remain single	Temasek Times News	2
This Lie Called Democracy	Global Research News	2
The West Is in Disarray, and It Will Only Get Worse. Crisis of Political Leadership in US and EU	Global Research News	2
CES 2017: A cure for snoring and other new smart tech	BBC Technology	2
West Belfast: Man, 56, shot several times in the leg	BBC News (Uk)	2
Fruit and veg: For a longer life eat 10 a day	BBC Health News	2
Should you keep your cat on a lead?	BBC Science News	2
JUST IN: Sen. Mitch McConnell is inviting Deputy AG Rod Rosenstein to a briefing next week, Sen. Chuck Schumer says	CNN Politics	2
Clinton and Trump have been name-dropped in hip-hop lyrics for decades. What new lyrics tell us about 2016	CNN Entertainment	2
Tomb of King Tut's wife discovered? Experts excited by find in Egypt	Fox News	2
NATO Secretary General: "We don't want a new Cold War. We don't want a new arms race."	Fox News	2
Is God really dead? How Britain lost faith in the church	Huffpost Religion	2
Bill Kristol briefly blew up the 2016 presidential race with one tweet. But you know what they say about Twitter…	Huffpost Politics	2
You ask a question as vague as "America's role in the world," you get a response about the deficit.	Huffpost Hill	2
Should you give your credit card info to apps like Venmo? We're LIVE with some tips	Bloomberg Technology	2
There's a brilliant trick to fend off hackers. @jordanr1000 is LIVE to show you how	Bloomberg Technology	2
With 130 million records sold, the Backstreet Boys are the best selling boy band of all time. Now, Backstreet's back	CBS News	2
"Call it whatever you want, but please, do not call this bill a health care bill," Sen. Bernie Sanders says follow	CBS News	2
A field of poppy plants that could be used to make opium found in N.C. has an estimated value of $500M, sheriff say	CBS News	2
Natural detox: How to quickly release stress in less than five minutes	Natural News	3
Scientists: Kissing can be beneficial to your health	Natural News	3
Should eggs be prescribed for diabetes and dementia?	Natural News	3
YouTube Ban Alex Jones, InfoWars As Crackdown On Alt. Media Goes Nuclear	Newspunch	3
U.S. Court Seeks EPA Ban On Water Fluoridation Nationwide	Newspunch	3
Marine Le Pen Faces Prison For Criticising ISIS Online	Newspunch	3
Area Man Disappointed In Self For Already Being Full	Onion News	3
Lost Jack London Manuscript, ,The Doggy, Found	Onion News	3
Charles Koch Orders Sniper To Fire Warning Shot Next To Marco Rubio On Debate Stage	Onion News	3
Trump Team Has Ties to Atlantic Coast Pipeline Now Being Pushed by White House	Global Research News	3

continued on following page

Table 7. Continued

Title	Origin	Cluster
U.N. Nuclear Weapon Ban May Be Last Exit Before Extreme Tolls for Humanity	Global Research News	3
Executive Orders and Airport Protests: Trump Clashes With The CIA	Global Research News	3
Scientists have created 'negative mass' but what is it and how was it made?	BBC Newshour	3
Michael Parkinson on the legendary Muhammad Ali: "He was a rock star he really was."	BBC Newshour	3
Breaking one of the last taboos? Kiran Gandhi ran a marathon without sanitary protection while on her period	BBC Newshour	3
Has Greece caved? Hear Syriza spokeswoman Marina @prentoulis live on Newshour in a few minutes	BBC Newshour	3
Haley tells CNN's Jake Tapper that Russia is an ally "when they want to be"	CNN Politics	3
The US has imposed an electronics ban on flights from major Middle Eastern and African airports. What it means:	CNN Politics	3
BREAKING: Iran threatened to shoot down US Navy spy planes near the Persian Gulf	Fox News	3
Sheriff Troy Nehls: "We support the 2nd Amendment... I would caution those that want to come & prey on our people"	Fox News	3
Senators fight for a vote on campus rape bill	Huffpost College	3
A rape reporting website says it partnered with the CDC, HHS, the VA, and NSF. Those agencies have never heard of it	Huffpost College	3
Taro leaves, also known as elephant ears, can be used as prebiotics for animals when pre-treated with enzymes	Natural News	4
New study finds that toxic chemicals found in nail polish enter women's bodies just hours after application	Natural News	4
Acorns shown to have neuroprotective properties	Natural News	4
Powerful natural medicine in broccoli sprouts found to prevent cancer and protect the brain from stroke damage	Natural News	4
Trump Slams Social Media Says He Won't Let Them Discriminate Against Conservatives	Newspunch	4
Gallup Poll: Democrats Want Socialism To Replace Capitalism	Newspunch	4
Facebook Takes Down Telesur English Without Explanation	Newspunch	4
Housing Prices Spike As Tech Employee Takes Stroll Through Neighborhood	Onion News	4
Chevron Touts Green Initiative With Hybrid-Powered Oil Drilling Platforms	Onion News	4
Edible kangkong straws served at eco-friendly Thai restaurant	Singapore World Times News	4
Six-year-old girl dies after near-drowning in pool with lifeguards, swimming instructor distracted	Singapore World Times News	4
Palestinian Refugees in Lebanon: Righting a Perpetual Wrong	Global Research News	4
Militarization of the Caucasus: Tehran Says it will Oppose Deployment of American Forces in Karabakh close to Iran Border	Global Research News	4
Scientists set eyes on ice moon Europa	BBC Science News	4
England's only golden eagle feared dead	BBC Science News	4
Steel jobs 'can be saved by tech'	BBC Science News	4
Moose on the loose as Alaska warms	BBC Science News	4
Over 100 women get a Mitch McConnell quote tattooed on their bodies	Fox News	4
Judge in Casey Anthony trial says she may have killed daughter by accident	Fox News	4
Hunt for body of teacher, beauty queen leads to Georgia pecan farm	Fox News	4
This girl and her service dog could win big for children with disabilities	Huffpost Politics	4
Paul Ryan votes for Trump after months of rejecting everything about him	Huffpost Politics	4
A vote for third party is a vote for Trump, Obama says	HuffPost Politics	4
Chlorinated chicken may be all the U.K. gets out of a Trump trade deal	Bloomberg View	4
Adobe plans to stop updating and distributing Flash at the end of 2020	Bloomberg Markets	4
Blue Apron is changing its executive team less than a month after its IPO	Bloomberg Technology	4
Assessing the effects of spirulina extract on lipid and carbohydrate digestion processes	Natural News	5
Meditation, acupuncture and massage now offered in prestigious hospitals across the U.S. as patients embrace wellness therapies	Natural News	5
Millions Protest Worldwide Over Tommy Robinson, Political Imprisonment	Newspunch	5
Chiropractor Under Gov Investigation For Speaking Out Against Vaccines	Newspunch	5
Veteran Congressman Can Still Remember When Inaction On Gun Violence Actually Presented A Moral Dilemma	Onion News	5
Thousands Of Dismembered Crash Test Dummies Line Newly Discovered Catacombs Beneath Ford Motor Plant	Onion News	5
16-year-old arrested for criminal intimidation, drug-related offence at Havelock Road	Singapore World Times News	5
Dispenser meter continues running after customer stops pumping petrol at Upper Serangoon station: Caltex investigating	Singapore World Times News	5
National Serviceman in critical condition after losing control of scout jeep during training	Temasek Times News	5
Political observers predict, an easy victory, for Workers Party in Hougang	Temasek Times News	5
Lawmakers Demand Tech Companies Censor Journalists and Conduct Mass Surveillance	Global Research News	5
Former Trump Campaign Manager Paul Manafort Indicted	Global Research News	5
Somalia piracy: India ship hijacked in new attack	BBC News (World)	5
Hungary CEU: Protesters rally to save university	BBC News (World)	5
Tammy Duckworth cautions Donald Trump: "We're not a military junta"	CNN Politics	5
Latest CNN Politics app edition: Clinton wins debate, but Trump exceeds expectations, according to new CNN/ORC poll	CNN Politics	5
Hurricane watches issued for Antigua, Barbuda, Anguilla, Montserrat, St. Kitts, Nevis as Hurricane Irma strengthens	CNN Breaking News	5
South Korea's military conducts a live-fire exercise in response to North Korea's sixth nuclear test.	CNN Breaking News	5
Denver Sheriff's Department fined $10K for hiring only US citizens	Fox News	5
North Korean official vows frequent missile tests as tensions escalate	Fox News	5
New research documents four important benefits of blueberries	Natural News	6
Purple phototrophic bacteria being studied as a potential means to convert sewage to clean energy	Natural News	6
US Government Admits Lyme Disease Is A Bioweapon	Newspunch	6

Table 7. Continued

Title	Origin	Cluster
London Becomes Murder Capital Of The World	Newspunch	6
France, India, Brazil Among Dozens Of Governments To Fall As Riots In Support Of Onion Social Increase Globally	Onion News	6
Thousands Of Onion Social Users Burn Effigies Of CEO In Massive Show Of Support For Company	Onion News	6
Responsible Actions Needed to Ensure Peace on the Korean Peninsula	Global Research News	6
Bayer-Monsanto: A Match Made in Hell. Six Reasons why Bayer-Monsanto Merger Threatens People and Planet	Global Research News	6
How to create a digital copy of dinosaur fossils	BBC News (World)	6
These original sketches of Winnie the Pooh reveal the inspiration behind the bear's appearance.	BBC	6
Police investigate "sudden death" of N. Korean leader's half-brother after he fell ill at an airport in Malaysia	CNN Breaking News	6
A rare rebuke: Sen. Warren cut off in a clash with Majority Leader McConnell in Sen. Sessions' confirmation debate	CNN Breaking News	6
Senate confirms Nikki Haley as next ambassador to the U.N., giving President Trump his 4th official Cabinet member	CBS News	6
Angelina Jolie is opening up about her latest health struggles: She revealed she was diagnosed with Bells palsy	CBS News	6
Herbs vs. pharmaceuticals: Understanding the effectiveness of natural medicine	Natural News	7
Pomegranates are a powerful nutritional preventive for inflammation-related diseases	Natural News	7
Stanford University: Frozen Lemons More Powerful Than Chemotherapy	Newspunch	7
Department Of Transportation Introduces Padded Bumper Lane For Intoxicated Drivers	Onion News	7
Violence in Nicaragua: US-Orchestrated Coup Attempt?	Global Research News	7
The Kim-Trump Summit. Geopolitical Implications	Global Research News	7
UK nurse Pauline Cafferkey, who contracted Ebola in Sierra Leone, cleared of misconduct by disciplinary panel	BBC Breaking News	7
US swimmer Ryan Lochte says sorry for his behaviour after Rio robbery dispute	BBC Breaking News	7
22-year-old man arrested after climbing over security fence at Buckingham Palace, say police	BBC Breaking News	7
Nigel Farage expects invitation to Donald Trump inauguration	The Guardian	7
Harriet Harman says sexist habits still rife in parliament	The Guardian	7
How the conservative media has reported Trump's immigration ban	The Guardian	7
Gotta look busy: Doctors order many unnecessary scans, therapies, surgeries, only adding to patient stress	Natural News	8
Chiropractic care can be used for a variety of health needs, including relief, maintenance and corrective applications	Natural News	8
Teacher Handcuffed & Forcibly Removed From School Meeting For Criticizing Pay Rise	Newspunch	8
Mossad Chief: Zionist Spies Were Instrumental In Balfour Declaration	Newspunch	8
Nancy Pelosi Planning To Reenergize House By Injecting Self With Blood Of Young Representatives	Onion News	8
Study Finds Effectiveness Of Medical Treatment Skyrockets When Doctor Acts Like Condescending Dick	Onion News	8
Melania Wishes Just Once She Could Look In Mirror Without Own Reflection Turning Away, Gust Of Wind Blowing Through Room, Doors Slamming Shut	Onion News	8
US/Canada Failed Coup in Venezuela, In Defense of Democracy and Self-Determination of the People of Venezuela	Global Research News	8
The Battle for 5G, Escalating Trade War With China: Trump Administration to Request Extradition of Huawei CFO	Global Research News	8
On 9-11 anniversary, Homeland's Johnson says advanced plots unknown to public foiled 'all the time'	Fox News	8
Curiosity rover sends back striking images of rock formations on Mars	Fox News	8
Economists are working to quantify the harm caused by centuries of racist policy and discrimination	Bloomberg View	8
Inside the grueling race for the yellow jersey in the Tour de France	Bloomberg Pursuits	8
Sky commuters: how the super-rich beat Jakarta's traffic hell in a helicopter	The Guardian	8
Black Friday alternatives in fashion as retailers give profits to charity	The Guardian	8

Chapter 6
Behind the Post–Truth World:
A Philosophical Perspective on Information and Media Literacy

Daniel Martínez-Ávila
 https://orcid.org/0000-0001-6330-3904
Universidad Carlos III de Madrid, Spain

Mariana Rodrigues Gomes de Mello
Sao Paulo State University, Brazil

Ellen Valotta Dias Borges
Sao Paulo State University, Brazil

Selma Leticia Capinzaiki Ottonicar
Sao Paulo State University, Brazil

ABSTRACT

The purpose of this chapter is to discuss information and media literacy from a philosophical perspective. This kind of discussion is important because it brings together scientific knowledge and philosophy. The authors base their arguments on some discussions about the Theory of Knowledge, such as the problem of truth, as well as philosophers such as Nietzsche and Foucault. This chapter is interdisciplinary, and it results in the evolution of information and media literacy theory. This chapter also aims to consider the power games that encourage fake news. These games are influenced by ideological aspects of the post-truth world.

INTRODUCTION

Information and media literacy are central topics in discussions of fake news in the Post-Truth world. People live in a society in which facts do not have relevance and information is focused on emotions (Cooke, 2018). Those who understand the culture of a group can manipulate information strategically.

Manipulated information is dangerous to society because it affects people's decision-making, reflecting both the power relations and the imposition of standard behaviors. In order to conform to normality, people accept these standards and modify their ability to be critical and make choices. This manipulation is based both on individuals' feelings and on the behavior of a group (Flick, 2016).

Fake news has complex consequences for society. Some politicians have used it in order to polarize the electorates in countries such as Canada (Jackson, 2019) and in the United States (Bovet & Makse, 2019). These examples suggest that fake news and misinformation can influence political contexts. Information and media literacy may be able to change that, since literate people learn to identify the interests and manipulations of content producers (Hobbs et al., 2013; Ashley, Maksl, & Craft, 2013; Kahne & Bowyer, 2016; Mihailidis, 2014).

Furthermore, this literacy can help people become more critical in interpreting information (Doyle, 2018). Individuals can become more investigative and analytical with respect to information sources (Yafushi, 2015; Zattar, 2018; Belluzzo, 2018). Information sources also reflect a certain group's ideology, which may involve religious, political, and economic values. As a result, thus individuals must learn to critically evaluate these sources, too.

The research questions that guide this chapter are: how can information and media literacy be understood from a philosophical perspective? What is post-truth in our society? What are the interests behind fake news? How can philosophical thinking contribute to the development and refinement of information and media literacy concepts? Are information and media literacy torchbearers that have continued the philosophical tradition of training citizens to be critical and reflective about truth?

Thus, discussing information and media literacy from a philosophical perspective is important because it connects scientific knowledge and social issues, making the link between Information Science and Philosophy. In this way, this chapter is interdisciplinary in nature because it draws on discussions about the Theory of Knowledge, such as the problem of truth, as well as philosophers such as Nietzsche and Foucault.

This chapter also aims to consider and raise awareness of the power games that promote fake news, which is influenced by ideological aspects of the post-truth world. Thus, investigating and combatting fake news should be considered part of the role of human rights organizations that are trying to overcome violence, discrimination, intolerance and hostility against the most vulnerable social groups. It is unacceptable that fake news and disinformation attacks should affect ethnic minorities because these attacks and the violence or discrimination they may inspire degrade human dignity, a core concern of human rights. Thus, combatting and minimizing the effects of fake news should be included in discussions of the Universal Declaration of Human Rights.

The concept of truth is also an essential topic which is fundamental to understand ideology in a post-truth world that has been corrupted by the interests behind fake news. Furthermore, the concept of truth relates to the historical and conceptual aspects of information and media literacy. The goal of this chapter is to demonstrate the evolution of concepts and other terms related to this kind of literacy, such as digital literacy, information literacy, information competence, media literacy, computer literacy, data literacy, financial literacy, and absorptive capacity, relevant topics to any discussion of critical learning (Sundar, 2016).

Standards and indicators of information and media literacy (ACRL, 2015; Bundy, 2004; Belluzzo, 2007; Lau, 2007) have been developed and are used in many organizations around the world. This chapter introduces some of these standards and assesses whether they are valid enough to measure the level of

information and media literacy of an individual. Additionally, the authors also acknowledge philosophy as a type of learning useful to developing critical thinking skills.

This research is qualitative and exploratory, conducted using a bibliographic review of the concepts information literacy, media literacy, post-truth, and fake news. The bibliographic review is a useful method to describe new topics and to connect them with arguments. The literature review was conducted using the following databases: Scientific Electronic Library Online (SCIELO), Reference Database of Information Science Journals (BRAPCI), SCOPUS, and Library and Information Science Abstracts (LISA). The literature review contributes to understanding the theory and practice of the topics addressed. In addition, it was conducted using discourse analysis to understand the ideological discourses of post-truth and its meanings.

INFORMATION AND MEDIA LITERACY (IML)

Information and media literacy are types of socio-cultural interaction that can influence people's behavior in sharing information, mainly by new relations emerging for new media. Information literacy was first discussed by Paul Zurkowski in a 1974 document (Dudziak, 2003; Belluzzo, 2007). After that, researchers started to study information literacy and have since presented many papers about the subject in conferences. This allowed the dissemination of the topic to many fields, and allowed information literacy to emerge as a multidisciplinary topic.

The concept of fake news is complex, especially when people need to deal with ideological aspects of information sources. Some politicians have used fake news as a tool to win elections or discredit media. Voters may believe in these lies and choose a candidate to represent them. Beyond fake news, individuals also have to deal with disinformation, defined as manipulated information. All these issues have inspired significant research and introduced a new conceptual framework for examining information disorders, identifying the three different types: mis-, dis-, and mal-information (Wardle & Derakhshan, 2017). Authors Wardle and Derakshan, using the dimensions of harm and falseness, describe the differences between these three types of information:

- Mis-information is when false information is shared, but no harm is meant.
- Dis-information is when false information is knowingly shared to cause harm.
- Mal-information is when genuine information is shared to cause harm, often by moving information designed to stay private into the public sphere (Wardle & Derakhshan, 2017).

The authors noted above examine information disorders based on three factors: the agent, messages and interpreters. They also consider the three different phases of information disorders: creation, production and distribution. They state that the 'agent' who creates a fabricated message might be different to the agent who produces that message—who might also be different from the 'agent' who distributes the message. Similarly, they argue that we need a thorough understanding of who these agents are and what motivates them (Wardle & Derakhshan, 2017). Based on these considerations, it is necessary to reflect on the behavior of individuals in the business context and to ask how they feel about the process of creation, production and distribution of information. In addition, it is also essential to understand how they establish the relationship between information and knowledge in order to interact among them during the decision-making process.

Sharing information is important to society, as individuals construct knowledge from information. In the business context, those who have valuable information may want to keep this information secret to hold onto perceived power. Some employees do not share their knowledge in order to keep their jobs. They fear that their companies could fire them if they shared their expertise. As a result, most people do not share important information because of competitiveness. On the other hand, shared information can also be manipulated to influence audiences' opinions. Some groups disseminate a lot of misinformation to reaffirm biases and to hurt others.

People disseminate information in a social way based on their individual cultural experiences. Information depends on environment and people's interpretation. Because of that, humans need essential skills to learn from information and to identify the intentions of an information source. In other words, the absence of information literacy could negatively affect the overall progress of the construction and understanding of information. It can therefore contribute to creating unequal conditions of information access.

The authors consider that people live in a diverse society, so they can never be outside of power relations. According to Olivier (2012): "ineluctably, one is always enmeshed in multilayered, overlapping grids of discourses that function in an ambivalent manner to enable, and simultaneously control, direct, disseminate and domesticate human action and behavior". The form of organization within a neoliberalist society contributes to the creation of social exclusions and favors those who have access to information literacy. However, neoliberalism does not favor those who are not able to develop a competent discourse. Understanding neoliberalism helps us to analyze the difficulties excluded individuals face. Stocker (2018, p.192) states that: "The word Neoliberalism became largely a term of abuse, to indicate capitalism in some way out of control, a state or a culture captured by acquisitive values above anything else, rather later, in reaction to economic policies and assumptions of the 1980s".

Most people are not familiar with the impact of new technologies and media. The media allows for dynamic forms of learning and communication, which can contribute to social progress. The development of information literacy is essential to social progress because it encourage individuals to interpret texts in critically. According to Foucault (1981, p.52):

In a society like ours, the procedures of exclusion are well known. The most obvious and familiar is the prohibition. We know quite well that we do not have the right to say everything, that we cannot speak of just anything in any circumstances whatever, and that not everyone has the right to speak of anything whatever.

Information sharing is a social practice linked to economy in the context of business. Some employees do not like to share their knowledge with co-workers because they use this knowledge as a source of power. They want to be valuable to the company, so that they can ask for a raise and avoid getting fired. Foucault mentions this problem of information sharing in discussing forms of diffusion and circulation of information:

There are hardly any such 'societies of discourse' now, with their ambiguous play of the secret and its divulgation. But this should not deceive us: even in the order of 'true' discourse, even in the order of discourse that is published and free from all ritual, there are still forms of appropriation of secrets, and non-interchangeable roles […] But there are many others still, functioning according to entirely different schemas of exclusivity and disclosure: e.g., technical or scientific secrets, or the forms of diffusion and

circulation of medical discourse, or those who have appropriated the discourse of politics or economics (Foucault, 1981, p.63).

Important changes have emerged since the Information Technology Revolution. Drawing on Castells, we can say that:

In the second half of the 1990s a new electronic communication system started to be formed out of the merger of globalized, customized mass media and computer-mediated communication. […], the new system is characterized by the integration of different media and by its interactive potential. Multimedia, as the new system was hastily labeled, extend the realm of electronic communication into the whole domain of life, from home to work, from schools to hospitals, from entertainment to travel. By the mid-1990s governments and companies around the world were in a frantic race to position themselves in setting up the new system, considered to be a tool of power, a potential source of huge profits, and a symbol of hypermodernity (Castells, 2010, p.394).

The huge expansion of personal computers has been responsible for several social changes, particularly new modes of human relationships and the emergence of virtual communities. Are these communities real? Can they be considered another mode of human relationship? According to Castells, the answer to this question is yes and no. The author states that:

They are communities, but not physical ones, and they do not follow the same patterns of communication and interaction as physical communities do. But they are not "unreal", they work in a different plane of reality. They are interpersonal social networks, most of them based on weak ties, highly diversified and specialized, still able to generate reciprocity and support by the dynamics of sustained interaction (Castells, 2010, p.389)

This new mode of human interaction, which is often carried out in cyberspace, directly affects access to information. Since cyberspace is inherently linked to information sharing, it is important to consider a wider vision of the impact of new media in social and professional interactions. Moreover, the fundamental importance of the process of appropriation must also be understood. Individuals should be capable of appropriating suitable information in different contexts of their lives. Developing information literacy is therefore an essential factor in determining success in both virtual and physical relations. Jenkins (2006, pp. 3-4) states that:

Convergence does not occur through media appliances, however sophisticated they may become. Convergence occurs within the brains of individual consumers and through their social interactions with others. Each of us constructs our own personal mythology from bits and fragments of information extracted from the media flow and transformed into resources through which we make sense of our everyday lives.

The relations within convergence culture ask fundamental questions that are relevant not only to social life but also to professional life. The network society affects both social and virtual relations. It also affects people's way of understanding the world. In addressing the concept of Network Society, Castells (2003, p.14) points out that

[It] is a social structure that consists of information networks powered by the information technologies that characterize the informational paradigm.

Understanding this paradigm is essential to articulating a new vision of the role of information and knowledge in today's society. According to Castells:

Throughout history, knowledge and information, together with their technological underpinning, have been closely associated with political/military domination, economic prosperity, and cultural hegemony (Castells, 2003, p.11).

In a sense, therefore, all economies are knowledge-based economies and all societies are essentially information societies. What is distinctive about our historical period is a new technological paradigm ushered in by the Information Technology Revolution and centered around a cluster of information technologies. The thing that is truly new is the information processing technology and the impact of this technology on the generation and application of knowledge. This is the reason why the concept of informationalism is used here, instead of the notions of knowledge-economy or information society (Castells, 2003).

The quoted passage shows that knowledge and information have always been present in the socio-economic relations between individuals. Thus, the key point of this study is not the vast amount of information. Instead, we must pay attention to the process of information sharing in order to understand how information is constructed. In this sense, it is essential to define the skills we must develop with the aim of better applying technologies. That is the justification for developing information literacy. Our society is still a society composed by physical interactions; however, there are other types of relations, such as virtual relations, that also have the power to influence physical relations. We are living in a network society, but this does not mean that ours is an isolating society. On the contrary, we live in a dynamic and interactive society: "A network is a series of interconnected nodes and a node is the point where the curve crosses itself" (Castells, 2003, p.14).

Since individuals take part in these relations, they should be considered nodes and, therefore, as important as technological media. Castells highlights that "a network has no centre, just nodes. When nodes became redundant, networks tend to reconfigure themselves, deleting nodes and adding new, productive ones". One of the problems of this society is that "networks work on a binary logic: inclusion/exclusion" (Castells, 2003, p.15). On this view, it is worth highlighting that a network economy is dominant everywhere and that "people that do not perform well in this economy or offer any potential interest to these dominant networks are discarded" (Castells, 2003, p.15). That is why information literacy must be linked to the process of appropriation of information. Those who want to be part of this society actively and successfully must be able to create appropriate information and transform it where required. According to Borges (2018, p.172, in translation)

Appropriation of information is a continuous and uncertain process. The final result is not known whether it is the most desirable one; the only thing certain is that it will happen.

The concept of information literacy draws on the fields of Management, Education, and Information Science (Yafushi, 2015). These three fields of research contribute to understanding how individuals learn throughout their lives. Lifelong learning is present in various organizations and contexts (Ottonicar; Val-

entim & Feres, 2016), so information literacy can be studied from different perspectives. For example, information literacy helps to identify how employees use information to make decisions (Bruce, 1999; Lloyd, 2017; Zuccari & Belluzzo, 2017). Furthermore, information literacy contributes to developing student curricula in schools (Eisenberg, Lowe & Spitzer, 2004); to understanding communities (Demasson, Partridge & Bruce, 2017); to improving decision-making in hospitals, and other areas.

Information literacy enables a person to access and use information effectively to make a decision or solve a problem. During this process, the information literate person evaluates information sources to verify the ideologies and intentions that are hidden in the messages. Therefore, individuals must develop critical thinking skills to analyze an author's ideas (Ottonicar et. Al, 2019). In short, media literacy facilitates the use of technology, allowing people to use media consciously. Therefore, people learn more and more to identify fake news by using Media literacy, a kind of information literacy focused on social media.

Technology has brought about many societal and cultural changes. In this way, Information Science and Philosophy can both investigate current information phenomena such as social media and artificial intelligence. It is essential to understand connections between the real and virtual worlds. In addition, considering ethical issues related to the use of media can help us make sense of the advent of human-like robots and the impact of these technologies on people's lives.

The Association of College and Research Libraries (ACRL) has created standards and indicators that are essential for higher education students. These standards have informed researchers and organizations around the world, including Bundy (2004), Lau (2007), Belluzzo (2007) and the International Federation of Library Association (IFLA, 2008). These standards are quite flexible and can be adapted to many other contexts.

Accordingly, information is a product which is produced by human interaction and which is not accessible to all in an equal way. Chauí explains that: "It is not allowed to all people to say anything, anywhere, anytime" (Chauí, 2014, p.57). On this basis, Elinor Ochs (1992, pp.358-359) states that:

Discourse knowledge relates language to psychological as well as social contexts. Competent language users vary language according to their perception of cognitive states of interlocutors. Every language has linguistic structures which elicit others' attention (or heighten attention to something expressed) and which distinguish old from new information (information interlocutors presume their addresses do / do not know).

Discourse has no borders and transcends meanings within a social context because it may be seen not only as a social act, but also one that represents historical, social and cultural facts. Thus, since information is materialized within social contexts, which is formed by several discourses, information is closely related to all forms of discursive practices. The idea of discourse constitutes a key element in Michel Foucault's works, denoting "a historically contingent social system that produces knowledge and meaning" (Adams, 2017). Discourse is a way of organizing knowledge; it is a social fact. Adams (2017) states that: "discourses are produced by effects of power within a social order, and this power prescribes particular rules and categories which define the criteria for legitimating knowledge and truth within the discursive order". Barry Stockers (2019) points out an important theme within Foucault's theories: "Foucault gives fundamental importance to what we now typically call free speech in Ancient Greece, what was known to the Greeks as parrhĕsia […] Foucault clusters discussion of philosophical dialogue, political freedom, and freedom in general around parrhĕsia at various points. We can translate parrhĕsia as free speaking to distinguish it as something specific in the history of free speech […]

Foucault's builds on the way that parrhĕsia appears in Greek antiquity as liberty in speech and excess of speech […] Excess and liberty are linked in Foucault's understanding."

On this view, it can be stated that discourse determines how social relations have an impact on all spheres of society. In other words, the way language is used is responsible for producing different forms of power: "In the discussion of parrhĕsia, there is a particular reference to the right of the lower classes to speak truth in a vulgar manner in Athenian democracy […] For Foucault, political speech belongs to changing structures of discourse, of language and thought" (Stocker, 2019). The author also highlights that: "As Foucault suggests from his earliest work onwards, discourse is always contextual, always form a point of view, always existing within orders, within archeologies themselves open to variable interpretations, and which are changeable over time […] Discourse is anonymous, because discourse rests on earlier discourses and has no complete autonomy, and originality, in relation to already existing discourses. It is contextual because who speaks, or writes, matters to the meaning as does the general context of that communication."

The Truth in a Post-Truth World

Since the beginnings of civilization, humankind has sought for truth. This desire preceded Science and was one of the driving values responsible for the origins of Philosophy. As Reale & Antiseri (1990) point out, the aim or end of Philosophy is the desire to know and contemplate the truth. In other words, denying the search for the truth means denying Philosophy. For a long time, the word truth was used as a synonym for knowledge.

In ancient Greece, Parmenides of Elea articulated the principle of identity: "being is and it is impossible for it to not be; not-being is not and it is impossible that not-being is" (Reale & Antiseri, 1990, p. 50, in translation). In summary: whatever is, is, and what is not, cannot be. Parmenides argued that existence and thought coalesce into one; thus, nothing can come from nothing. Based on this, "Parmenides claimed that identity involved the idea of non-contradiction" (Danaher, 2004).

Parmenides of Elea was a Presocratic Greek philosopher. He is known as the Father of Metaphysics and the founder of the Eleatic School of thought, whose adherents held a radical doctrine of monism. In light of this theory, DeLong (n.d.) notes that "reality is in some sense a unified and unchanging singular entity. This has often been understood to mean there is just one thing in all of existence." In this sense, Starkey and Calogero (2011) explain Eleaticism as follows: "Eleaticism, one of the principal schools of ancient pre-Socratic philosophy, so called from its seat in the Greek colony of Elea (or Velia) in southern Italy. This school, which flourished in the 5th century, was distinguished by its radical monism—i.e., its doctrine of the One, according to which all that exists (or is really true) is a static plenum of Being as such, and nothing exists that stands either in contrast or in contradiction to Being. Thus, all differentiation, motion, and change must be illusory. This monism is also reflected in its view that existence, thought, and expression coalesce into one."

In direct opposition to Parmenides, Heraclitus argued that opposites are necessary for life: "Heraclitus argued that contradictions not only existed but were essential and the basis of a thing's identity […] Heraclitus argued that since things changed, they had to contain what they were not. Only such contradictions could account for change. As Heraclitus says: cold things grow warm; warm grows cold; wet grows dry; parched grows moist'" (Danaher, 2004). In other words, everything is constantly changing. This is why Heraclitus is known as the philosopher of flux. For Heraclitus, flux and opposition are necessary for life. Both Parmenides and Heraclitus are Pre-Socratic Greek philosophers.

Both Parmenides and Heraclitus made invaluable contributions to developing a theory of knowledge. However, it is important to highlight some of the significant differences between them: What made for the difference between Heraclitus and Parmenides was what they respectively believed were the proper objects of thought. For Parmenides, the things we encounter in our experience make for poor objects upon which to fix our thoughts. Indeed, the things we experience are not suited to provide the kind of knowledge that Parmenides, and so many others who were to follow him, wanted. The kind of knowledge they desired was a knowledge that was fixed and certain. Such knowledge would require objects of thought that were equally fixed and certain. Thus, Parmenides settled on the idea of being itself into which all change would collapse (Danaher, 2004).

On the basis of the quote above, it would seem that the concept of truth cannot be considered from a single viewpoint. According to Heraclitus, the concept of truth cannot and should not be seen as a static truth, thus, there is no absolute truth: "Everything is in motion, everything flows" (Japiassú & Marcondes, 2006, p. 131).

This concept of truth is precisely in line with Derrida's thought: "The 'rationality' – but perhaps that word should be abandoned for reasons that will appear at the end of this sentence – which governs a writing thus enlarged and radicalized, no longer issues from a logos. Further, it inaugurates the destruction, not the demolition but the de-sedimentation, the de-construction, of all the significations that have their source in that of the logos. Particularly the signification of truth" (Derrida, 1944, p.10). The author also points out that: "Between being and mind, things and feelings, there would be a relationship of translation or natural signification; between mind and logos, a relationship of conventional symbolization and the first convention, which would relate immediately to the order of natural and universal signification, would be produced as spoken language. Written language would establish the conventions, interlinking other conventions with them". In short: "The written signifier is always technical and representative. It has no constitutive meaning. This derivation is the very origin of the notion of the 'signifier'" (Derrida, 1944, p.11).

Plato was an influential ancient Greek philosopher who dedicated more time to the issue of truth. According to Plato, there are two worlds: the perfect world and the imperfect world. As far as the first world is concerned, it is known as the World of Being. The second world is known as the World of Becoming. The two worlds are separated from each other; however, there is a connection between them. According to Karl (2008), "The intelligible world, which is invisible, non-physical, and consisting of the Forms, can only be apprehended by the soul, for the soul shares in qualities of that likeness. The sensible world, which is visible, physical, and constructed of imitations of the Forms, is apprehended via the body through the same principle."

The seeming, illusionary state of the sensible world – the world over which humankind presides – is a consequence of physical objects imitating the Forms. A physical thing only exists to the extent that it participates in the Forms. This is so because of the nature of the Forms themselves. Forms, by definition, are those things that are, possessing wholly the notion of being. The Forms, such as the Form of Beauty or Justice, exist by themselves, within themselves, and only of themselves. They are universal, eternal, and singular, existing externally, in a pure state, in the other world. What exists in this world is due entirely to the Forms, for they are the causes of the physical. Thus, the physical world is a mere replication of the pure Forms, never achieving perfect imitation and therefore remaining less real and pure.

Based on Plato's Two Worlds Theory, many studies have been carried out seeking what reality is composed of, what is the real world, and what is merely an illusion or just a part of a fake reality. Plato assumes that the mind merely copies the world. Thus, all knowledge would be teleological, as Plato

believed. In this way, there is a true knowledge, which makes reference to the notion of good, reason and Philosophy. Plato assumes that Knowledge is beyond the empirical and material world.

And finally the idea of the salvific force of reason and of philosophy constantly shows, that is, of the search and vision of truth that saves forever" (Reale and Antiseri, 1990, p. 161, in translation).

These authors also state that

No objects may be perfectly and absolutely considered as square or round, even having the same notion of what is a perfect square and round. It, therefore, has to be concluded that there are certain discrepancies between data from experience and notions we have: notions are much more beyond of data from experience" (Reale and Antiseri, 1990, p. 147, in translation).

The good is above non-physical essences of all things; it is an unconditional and absolute principle, transcending the being of everything in the world. Plato believed that the form of good is related to knowledge, justice, beauty and rationality. Thus, all knowledge would be reminiscence, as Plato believed. There is the world of sense experience (the "empirical" world), where everything is undergoing a process of change. There is another world, which is not perceived through the senses, and in which everything is permanent and perfect, the realm of the Forms. There are no perfect Forms in the empirical world; this world shows only poor copies of these Forms. That is why the empirical world is less real than the world of the Forms: the Forms are immutable (unchanging), the perfect objects of knowledge. In short, knowledge does not depend on experience from Plato's perspective. The true knowledge is possible only in the context of the world of the Forms.

Building on Plato's Worlds and the theory of knowledge, it is important to briefly recall the 20th century philosopher Karl Popper (1979). In discussing the construction of knowledge, Popper presents the idea of worlds. For him, there is a world of physical things and a world of the mind, the latter being the most important one as the products of the mind manifest in the physical world. In order to establish his theory of the worlds, Popper drew on Plato's dichotomy of worlds, but Popper believed that there is no dichotomy of worlds, but rather a pluralism. Therefore, Popper made possible a new interpretation of Plato's theory, adding some pluralistic characteristics. David Bawden and Lyn Robinson (2016, p.35) summarize these Worlds in the context of Library and Information Science as follows:

World I is the physical world, of people, books, computers, buildings, etc.; World 2 is the internal, subjective mental state of an individual, including their personal knowledge; World 3 is the world of objective knowledge, which may be communicated between people by means of information stored in documents.

As Moreira and Martínez-Ávila (2018, p.22) point out, these three worlds interact with each other and the relation between subjective and objective knowledge is complex. As these authors also explain, although this model has its critics in LIS (see e.g. Capurro, 2003), it is commonly accepted in the cognitive paradigm that knowledge produced in "World 2" is organized in "World 3", while "World 3" feeds the production of knowledge in "World 1". According to Brookes (1980), it would be Popper's "World 3" that offers a rationale for the professional activities of librarians.

In the Middle Ages, Saint Augustine returned to the question of truth raised by Plato. Augustine (354-430) was Bishop of Hippo Regius in North Africa and is viewed as one of the most important Fathers

of the Latin Church for his writings in the Patristic Period. Based on Paul's Epistle to The Romans and Saint John's Gospel, he introduced Christianity, writing about Christian revelation and faith (Rezende, 2018). For Augustine, there is a closed relationship between Christian truth and revelation. Thus, the role of the preacher is essential in order to receive wisdom from God; in other words, access to knowledge is only possible when people are clarified and illuminated by the word of God.

On the other hand, modern science is based on the idea that all phenomena can be solved by general laws, which were based on the Cartesian cogito ergo sum (I think, therefore I am) principle and on a process of applying deductive reasoning to develop and produce science. Deductive reasoning draws specific conclusions from general principles or premises. The conclusions from a deductive inference are certain if the premises are true. Scientists use deductive reasoning when applying them to specific situations. Therefore, the simplification paradigm was established, which implied reduction and separation.

This Cartesian, mechanistic, and reductionist paradigm clearly constituted an essential element to promote the development of science. The time was ripe for breaking with a theocentric vision, a practice grounded in explanations based on faith. René Descartes (1596-1650) was the leading exponent of Cartesian reasoning. According to Watson (2016): "Descartes argues that one has certain knowledge of one's own existence because one cannot think without knowing that one exists; this insight is expressed as "Cogito, ergo sum" (Latin: "I think, therefore I am") in his Discourse on Method (1637) and as "I think, I am" in his Meditations (1641).

Descartes argued that it is only through reason that one can create trust. Based on this, he proposed a rational method that has been called the Cartesian method. He aimed at creating a deductive logic that would serve as a foundation to achieve other absolute truths. In this way, he was mainly concerned with natural sciences and provided them with an appropriate method to bring clarity and distinction (criteria of truth) and universal knowledge based on mathematics. Descartes states that

[…] all those who have hitherto sought for the truth in the Science, it has been the mathematicians alone who have been able to succeed in making any demonstrations, that is to say producing reasons which are evident and certain" (Descartes, 2003, pp.14-15).

The two major problems of Descartes' legacy are related to the concepts of absolute truth and the fragmentation of knowledge. His search for the truth expressed his wish to find universally valid answers to science. Starting from the XVIII century, the concept of absolute truth was questioned with great emphasis by David Hume (2011), who explored the problem of cause and effect. He argued that no matter how good a cause is, it might have different effects.

Based on skeptical empiricism, David Hume critiqued the relationship between cause and effect as neither rational nor epistemological. Instead, he argued that this relationship is merely the product psychological association, a succession determined by habit. The existence of regularities is not indicative of certainties. In this vein, Nietzsche was a German philosopher who has exerted an enormous influence on Western philosophy and intellectual history. His writings focused on truth, morality, language, aesthetics, cultural theory, history, nihilism, power, consciousness, and the meaning of existence. Possessed of a strongly questioning profile, Nietzsche's works are concerned with the criticism of moral, Western culture and its notion of reason. Based on this, it might be said that he is timeless and that is why he is a point of reference for subsequent philosophers, such as Foucault, Adorno, Horkheimer, Morin, among others.

In discussing the concept of truths, Nietzsche did not aim to respond to where truths come from. Instead he aimed to raise questions about the criteria on which truths are measured. As a result, Nietzsche

criticizes rationality as something that is not natural, but rather the result of choices and interpretations. Truth is known as interpretation; it is therefore a point of view and is based on the interpreter's perspective.

There will always be an interpretation that overlaps other interpretations. However, truth is considered relational and not relative because it is analyzed based on its relationship to the world and people. Thus, there is a great interest in knowing how others think. In short, the truth is forced upon everybody based on the influence and power one interpretation has on other interpretations.

In this sense, according to Nietzsche, there is no absolute truth. Otherwise, there would be no conflicts among interpretations. People have different opinions and take quite different views on certain points. Thus, objectivity is not free of interests, it is not neutral, and it is not impersonal. What is called objectivity is just something that overrides all other interpretations. Nietzsche (2019) also understands that the world is ruled by interpretations and that life is movement and struggle, in which the stronger is the winner. From this perspective Nietzsche (1918) created the genealogical method. According to Crowley (2009): "Genealogy works on the limits of what people think is possible, not only exposing those limits and confines but also revealing the spaces of freedom people can yet experience and the changes that can still be made" (Foucault 1988). Genealogy as method derives from German philosophy, particularly the works of Friedrich Nietzsche (1844-1900), but is most closely associated with French academic Michel Foucault (1926-24). Michel Foucault's genealogical analyses challenge traditional practices of history, philosophical assumptions and established conceptions of knowledge, truth and power."

Foucault stated that archeology, his most famous method, "owes more to Nietzschean genealogy than to structuralism properly so called" (Foucault 1967, p. 294; for a further discussion of the differences and characteristics of Foucauldian archaeological and genealogical methods see Martínez-Ávila, 2012). In "Nietzsche, genealogy, history," Foucault states that his genealogy ("effective history")

differs from the history of historians in being without constants. Nothing in man – not even his body – is sufficiently stable to serve as a basis for self-recognition or for understanding other men. The traditional devices for constructing a comprehensive view of history and for retracing the past as a patient and continuous development must be systematically dismantled" (Foucault 1971, p. 380).

The genealogical method is used for assessing the origin of a value, seeking to understand its dynamics construction. In order to understand this, it must be well understood that the value suffers several changes over time. Thus, the value conceived in the context of its origin is not the same in another context, even if people are still ratifying its original meaning. Therefore, the genealogical method consists of two inseparable moments: in the first one, it relates the value to its original context, and in the second one, it establishes a relationship between the assessment perspectives and the values established in the first moment.

From this perspective, it might be noted that knowledge can also be justified on the bases of Nietzsche's conception as a necessary condition for the survival of humanity. The tension between values of truth and life grows stronger when some knowledge is conceived in order to provide more convenience, safety, and happiness, which raises the following question: What is really necessary to consider knowledge as true?

On the one hand, taking into account the context of Science, knowledge is first understood based on its intrinsic value. Then, it has an instrumental value, in a second moment. On the other hand, within the context of Philosophy, value is addressed in greater detail, considering all the possible meanings even if it means sacrificing the truth (Nietzsche, 1917). Based on Nietzsche's conception, researchers have spent a great deal of time examining knowledge. All their efforts are directed to know, understand,

conceptualize, and organize chaos. Their mission is to continue the process of knowledge. In short, knowledge does not exist by itself. Instead, there are only interpretations.

Everyone is, in some way, ideologically influenced by the economic, moral, cultural, and intellectual contexts around them. Thus, knowledge is only considered as a part of understanding, which is built within a complex process with contradictory elements, multiple perspectives, and a wide range of interpretations that could be complemented. Nietzsche argued that opposites cannot be separated; everything is in a permanent state of change and of constant movement.

Foucault had a specific understanding of knowledge that drew on Nietzsche's conceptions. According to his understanding, there is no neutral knowledge. In other words, knowledge is linked to impulses, instincts, and powers. Thus, there is no conformity between thought and reality. Behind all knowledge is a game of power. Knowledge cannot neutralize this power struggle. Instead, knowledge expresses it. From this perspective, Michel Foucault, influenced by Nietzsche, raised the following question:

considering the discourse is no longer true, since the Ancient Greek and it does not respond the desire, does not share power in the desire of truth, in the desire of saying the true discourse, what is at stake beyond the desire and the power?" (Foucault, 1981, p. 20).

In this way, Nietzsche and Foucault considered truth as an illusion vital in human relationships, which is important in order to establish trust. From this point of view, truth also serves institutions which aim to maintain their power.

The theme of truth is closely related to information and knowledge throughout human history. Nevertheless, in our days, the relationship among these concepts has been strengthened by innovations in technology which allow everyone to easily access a large amount of information in a fraction of a second. Taking all this into account, a fundamental question emerges: What to do with this amount of information? This is the point where we need a new understanding of the role of information and its impact on social life. In this way, we must understand that everything may be true depending either on the person speaking or on the social context in which information is constructed. In other words, the key point about the relationships between information, knowledge and truth may not be focused on the methods and resources utilized. Castells (2010) raises some issues in his chapter entitled 'From the Gutenberg Galaxy to the McLuhan Galaxy: the rise of mass media culture'. The author states:

media watching/listening is by no means an exclusive activity. It is generally mixed with the performance of home tasks, with shared meals, with social interactions. It is the almost constant background presence, the fabric of our lives. We live with the media and by the media. McLuhan used the expression of technological media as staples or natural resources. Rather the media, particularly radio and television, have become the audiovisual environment with which we interact endlessly and automatically (Castells, 2010, p.362).

Castells' perspective leads to further reflection about the present technological environment: the only difference is that we need to consider new media and technological advances instead of radio and television. McLuhan declared that the "medium is the message". On the basis of McLuhan's declaration, it is important to point out that information is a process composed of social and cultural elements (people, places, knowledge, education, ideology, etc.). Thus, understanding information in order to know what is true or not, depending on the context of the message, is fundamental. Castells states that

[…] while mass media are a one-way communication system, the actual process of communication is not, but depends on the interaction between the sender and the receiver in the interpretation of the message" (Castells, 2010, p.363).

From that perspective, it can be observed that the theme of truth is always connected with cultural elements, which shape and are shaped by the ways individuals use their knowledge and develop their media literacy.

Contemporary philosophy has also addressed the question of truth in relation to the post-truth condition and fake news. For instance, Steve Fuller in his recent book "Post truth: Knowledge as a power game" (2018) includes a whole chapter dedicated to the concept of truth/post-truth and philosophy. Fuller reads Hans Vaihinger's (1852–1933) studies on Kant and his use of "as if" (fictionalism) as not only the epitome of post-truth sensibility, but also as a notorious schism between the "analytic" and "continental" schools of philosophy: "The analytics accuse the continentals of having picked up all of Friedrich Nietzsche's worst habits. The result is a trail of spurious reasoning, fake philologies, eccentric histories, obscurantism and hyperbole. This is quite a list of offences to the truth, yet it is striking that analytic philosophy's most lasting contributions have been a series of thought experiments, which are no more than figments of the imagination – such as Hilary Putnam's 'brains in a vat' or John Searle's 'Chinese room' – that are passed off as heroic abstractions from some hypothetical reality. The rest of analytic philosophy is basically just scholastic wrangling about the wording of these thought experiments and the conclusions one is licensed to draw from them, leavened by occasional moments of high dudgeon, as well as displays of ignorance, narrow- mindedness and bias vis-à-vis other, typically more 'continental' or 'postmodern', modes of reasoning" (Fuller 2018, pp. 27-28).

The concept of post-truth emerged within the context of contemporary discussions of the meaning of truth. It gained significant momentum in 2016 when The Oxford English Dictionary named it the word of the year in an attempt to explain world events. Many recent political upheavals can be linked to social theory and Western policy. Post-Truth is a condition in which the opinion of the people is not based on objective facts, critical analysis or reflections, but is based on personal beliefs (Dinali et al., 2018). In the 21st century, personal beliefs are summarized in order to define the meaning of truth. There are no solid criteria (Bauman, 2001). When our personalities are not marked by the reflexive ability, we are prone to believe that our position is always true, which inhibits us from generating questions.

Today, given the vast amounts of information that are produced and consumed, there is a tendency not to filter information. People are reluctant to accept things that differ from their beliefs. It seems much easier to maintain beliefs than to change one's own values, something that demands intellectual maturity. On the other hand, a dogmatic position can lead people to justify cruel and inhumane actions. The concept of post-truth has often been confused with lies. Thus, everything that is available online is considered by uncritical readers to be true. When people access information using social networks, they believe in things that fit their pre-conceptions (what Eli Pariser, 2011, calls "the filter bubble"). In other words, people select information according to their beliefs, likes, and dislikes, and social media algorithms in turn reflect and reinforce this situation. All these practices are based on individual criteria. This is one of the main characteristics of Postmodernity.[1]

Strong opinions and ideologies may lead to conflicts because of dogmatic actions. When dealing with ethics, human rights and dignity, it is essential to link historical and social evolution in order to understand the present day. Thus, it must be considered the great mobilizations and social advances that accompanied the needs of society in the search for social justice (Silva, 2000).

Over time, society has faced the need to protect rights that are fundamental and inherent to human beings, understanding that, without protecting these rights, there will never be a just society. The developers of modern human rights frameworks understood that life and dignity must be above any property as the basis for just legal systems. Thus, the dignity of the human person gained prominence, based on the transformations and social demands of a society that claimed such protection (Comparto, 2003).

In an attempt to overcome the antagonism between individual and social rights, as a response to the terrible human rights violations that occurred during World War II, on the evening of the 10th of December, 1948, at the third ordinary session of the UN Assembly held in Paris, the Universal Declaration of Human Rights was born. It included thirty articles preceded by a preface with seven statements that protect the dignity of the person as an ethical principle that should guide all legal activities.

This Declaration balances the spheres of the individual and society. As Silva (2000) highlights, Articles 1 to 21 cover the proclamation of individual rights and guarantees, including several innovations in relation to previous Declarations, such as: equality, dignity, promotion of the right to life, freedom of movement, thought, conscience, religion, opinion, expression, association, personal security, nationality, asylum, property; rejection of slavery, servitude, torture, cruel punishment, among countless others. Articles 22 and 28 cover human social rights, such as the right to social security, the satisfaction of social and cultural economic rights indispensable to the dignity of the human person and the free development of his or her personality; the right to work, acceptable working hours, paid rest, vacation, social security, freedom of association to all classes of workers, among other rights. The dignity of the human person is included in both spheres (Silva, 2000). However, despite great advances in both the private and the collective spheres, the problem of effectiveness remains. In many respects, the Declaration still seems to be an ideal that has yet to be achieved. Regarding this, it could be said that

the ideal to be achieved by all people and nations, for all individuals and organs of society, bearing in mind this Declaration, is to strive, through teaching and education, to develop respect for these rights and freedoms, and to ensure by progressive international measures an effective universal recognition and enforcement" (Philiphe Chapelle cited in Silva, 2000, p. 41, in translation).

The dignity of the human person was created as a philosophical value of personalistic nature. Subsequently, it was coupled with social values interpreted according to the historical-cultural conceptions of each society and revealing its axiological potential. This view has influenced many legal systems. In philosophy, we can find antecedents to this value of dignity in the work of philosophers such as Immanuel Kant, who was the first to consider dignity as a principle, stating that in the realm of the ends, everything has a price or a dignity. He believed that when something has a price, anybody can place anything that is equivalent instead, but when something is priceless and therefore does not allow for an equivalent, then it has dignity (Kant, 1991).

Kantian philosophy conceives of the dignity of the human being as something that distinguishes them from other creatures. Dignity is an imperative that conceives humans as the only created right that has an end in itself, an absolute value, superior to all prices and, thus, does not allow for an equivalence (Kant 1991). However, with this personalist conception, dignity becomes more complete provided the unfolding of the human being as an individual and a person.

Given this, the principle of human dignity is philosophical in nature, intrinsic to every human being, and it is the foundation of most fundamental rights and declarations of rights in democratic countries, as it is understood that everyone has dignity and constitutes a value in himself or herself, a value that

cannot be sacrificed for any collective interest. Human dignity and the Universal Declaration of Human Rights seem to be, in a Kantian-philosophical way, one of the most solid initiatives to determine a universal consensus for the protection against fake news in a post-truth environment.

SOLUTIONS, RECOMMENDATIONS AND CONCLUSION

Science is the investigation of an object based on methodological steps and ethical procedures. However, some theories can be influenced by economic interests, for example, the cigarette industry. For many years, smoking was associated with success in advertisements. The tobacco lobby tried to manipulate scientists as well (see, for instance, in the case of social sciences, the unfortunate work "Smoking and Society," Tollison, 1985). The fast food industry or the sugar industry do the same thing today. Furthermore, these post-truth issues also influence political, religious, and social environments. Fake news is a phenomenon that contributes to the spread of lies and can reinforce entrenched economic interests.

On the other hand, some people offend others in social media. These offenses can be racist, homophobic or sexist in nature, many times disguised under the excuse of free speech, and more and more often supported by fake news. Education is one of the solutions to this issue because it helps individuals to behave in an ethical way. Education guides ethics and citizenship, so individuals can learn how to respect others and their rights. Because of that, we highly encourage schools, universities, and organizations to use critical literacy in their processes.

Since the beginning, social networks and traditional media have aimed at the general public. Since the origins of the commercial world wide web, the information that was published online has not always been filtered, as many of its contents (such as parodies, entertainment, advertisements, etc.) have not been subjected to the rigorous reflections and scrutiny of science. As the production process of traditional media was not available to everybody (similarly to the traditional press in which only a privileged group of professionals were able to publish information), there was a certain level of control and surveillance that minimized the dangers of unfiltered information.

It was not until the development of the technologies of Web 2.0 that everybody has been able to publish information easily, though not always with the same level of expertise, rigor, and good intentions. At the same time, all this new information has also become easily available through Google and other web search engines. While in the past the main gateway to information (that also happened to be rigorous, curated, and filtered information) was often the library catalog, in the era of the world wide web, people can now access all kinds of information using the same tool (mainly web search engines after the natural defeat of directories). When Google realized their potential to become the "new library," they created a service in which information was filtered and validated - Google Scholar. However, public preferences for web searches had become so entrenched that many young people and students do not even know of Google Scholar's existence.

The relationship between Philosophy and Information Science has been historically fruitful, although not always obvious or explicit (Martínez-Ávila & Zandonade, 2017). While there have been some serious attempts to connect Philosophy and Information in the philosophical realm, Luciano Floridi's Philosophy of Information being a notable example, the truth is that Floridi's proposal was not well-received among the Library & Information Science community (Herold 2004; Buckland 2005). In our opinion, one of the areas of Information Science in which the philosophical tradition of critical thinking has more possibilities is information and media literacy.

Information literacy is capable of transforming the student into a more ethical, autonomous and critical consumer of information, including fake news. Critical thinkers understand the importance of fighting fake news and assessing information. Furthermore, they value knowledge and understand the impacts of information sharing. The recognition of human rights is an important part of critical literacy, since individuals learn to respect the differences between people and communities and the rights of minorities.

In a post-truth world, fake news and the manipulation of information are continuous threats to society. Critical literacy can be a solution to these issues, since individuals adopt a critical stance towards information in a neoliberalist society. This scenario is also a good opportunity to claim the importance and relevance of Information Science today. We acknowledge that in the past, critical thinking and questions of truth have been traditionally addressed by Philosophy. Because of that, information and media literacy concepts can be constructed by Information Science and Philosophy in a multidisciplinary effort.

REFERENCES

Adams, R. (2017, November 17). *Michel Foucault: Discourse*. Retrieved from http://criticallegalthinking.com/2017/11/17/michel-foucault-discourse/

Agger, B. (1991). Critical Theory, Poststructuralism, Postmodernism: Their Sociological Relevance. *Annual Review of Sociology*, *17*(1), 105–131. doi:10.1146/annurev.so.17.080191.000541

Ashley, S., Maksl, A., & Craft, S. (2013). Developing a news media literacy scale. *Journalism & Mass Communication Educator*, *68*(1), 7–21. doi:10.1177/1077695812469802

Association College for research Libraries - ACRL. (2000). *Information literacy competency standards for higher education*. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency

Bauman, Z. (2018). *Liquid modernity*. Cambridge, MA: Polity Press.

Bawden, D., & Robinson, L. (2016). Super-Science, Fundamental Dimension, Way of Being: Library and Information Science in an Age of Messages. In *Information Cultures in the Digital Age: A Festschrift in Honor of Rafael Capurro*. Wiesbaden: Springer Fachmedien Wiesbaden. doi:10.1007/978-3-658-14681-8_2

Belluzzo, R. C. B. (2007). *Construção de mapas: desenvolvendo competências em informação e comunicação (Construction of Maps: developing information and communication literacy)*. Bauru: Cá Entre Nós.

Belluzzo, R. C. B. (2018). Competência em informação (CoInfo) e midiática: inter-relação com a Agenda 2030 e os Objetivos de Desenvolvimento Sustentável (ODS) sob a ótica da educação contemporânea (Information and media literacy (IML): connection with Agenda 2030 and the goals of sustainable growth focused on current education). *Folha de Rosto*, *4*(1), 15–24.

Borges, E. V. E. (2018). *Apropriação da informação: os elementos, o processo e a materialização da informação (Information Appropriation: elements, processes and materialization of information)* (Doctoral Thesis). Retrieved from https://repositorio.unesp.br/handle/11449/180438

Bovet, A., & Makse, H. A. (2019). Influence of fake news in Twitter during the 2016 US presidential election. *Nature Communications*, *10*(7). Retrieved from https://www.nature.com/articles/s41467-018-07761-2 PMID:30602729

Brookes, B. C. (1980). The foundations of information science: part I: philosophical aspects. *Journal of Information Science*, *2*(3–4), 125–133. doi:10.1177/016555158000200302

Bruce, C. S. (1999). Workplace experiences of Information literacy. *International Journal of Information Management*, *19*(1), 33–47. doi:10.1016/S0268-4012(98)00045-0

Buckland, M. K. (2005). The Philosophy of Information. *The Journal of Documentation*, *61*(5), 684–686. doi:10.1108/00220410510625921

Capurro, R. (2003). Epistemologia e ciência da informação. In *Anais do Encontro Nacional de Pesquisa em Ciência da Informação, 2003 Belo Horizonte*. Belo Horizonte: UFMG. Retrieved from http://www.capurro.de/enancib_p.htm

Castells, M. (2010). *The information age Economy, society and culture*. Oxford, UK: Wiley-Blackwell.

Chauí, M. (2014). *A ideologia da competência [The ideology of competence]*. São Paulo: Fundação Perseu Abramo/Autêntica.

Comparato, F. K. (2003). *A afirmação histórica dos direitos humanos [Historical discussion about human rights]*. São Paulo: Saraiva.

Cooke, N. (2018). *Fake News and Alternative Facts: Information literacy in a post-truth era*. Chicago: American Library Association.

Crowley, U. (2009). Genealogy, method. In International Encyclopedia of Human Geography (pp. 341-344). Amterdam: Elsevier. doi:10.1016/B978-008044910-4.00443-0

Danaher, J. (2004). The Laws of Thought. *The Philosopher, 92*(1). Retrieved from http://www.the-philosopher.co.uk/2004/05/the-laws-of-thought-2004.html

DeLong, J. C. (n.d.). Parmenides of Elea (Late 6th cn.—Mid 5th cn. B.C.E.). In *Internet Encyclopedia of Philosophy*. Retrieved from https://www.iep.utm.edu/parmenid/

Demasson, A., Partridge, H., & Bruce, C. (2016). Information literacy and the serious leisure participant: variation in the experience of using information to learn. *Information Research, 21*(2).

Derrida, J. (1944). *Of Grammatology* (G. C. Spivak, Trans.). Motilal Banarsidass Publishers.

Descartes, R. (2003). *Discourse on method and meditations* (E. S. Haldane & G. R. T. Ross, Trans.). Mineola, NY: Dover Publications.

Dinali, D. J., Quadros, M. C. S. D., & França, M. G. L. (2018). *O direito na sociedade da pós-verdade [The law in the Post-Truth Society]*. Rio de Janeiro: Lumen Juris.

Doyle, A. (2018). Ideologia e Competência Crítica em Informação: um olhar para movimentos de biblioteconomia crítica [Ideology and Critical Literacy: an approach of library movements]. *Folha de Rosto*, *4*(1), 25–33.

Dudziak, E. A. (2003). Information literacy: Princípios, filosofias e práticas. *Ciência da Informação, Brasília*, *32*(1), 23–35.

Eisenberg, M. B., Lowe, C. A., & Spitzer, K. L. (2005). Information literacy: Essential skills for the information age. *The Library Quarterly*, *75*(3), 381–383.

Flick, C. (2016). Informed consent and the Facebook emotional manipulation study. *Research Ethics Review*, *12*(1), 14–28. doi:10.1177/1747016115599568

Foucault, M. (1967). *On the ways of writing history* (R. Hurley, Trans.). In FaubionJ. D. (Ed.), *Aesthetics, Method and Epistemology. The Essential Works of Michel Foucault 1954–1984* (vol. 2, pp. 279–295). Harmondsworth, UK: Allen Lane, Penguin.

Foucault, M. (1971). *Nietzsche, genealogy, history* (R. Hurley, Trans.). In FaubionJ. D. (Ed.), *Aesthetics, Method and Epistemology. The Essential Works of Michel Foucault 1954–1984* (vol. 2, pp. 369–391). Harmondsworth, UK: Allen Lane, Penguin.

Foucault, M. (1981). The order of discourse. In R. Young (Ed.), *Untying the Next: A Poststructuralist Reader* (pp. 51–78). Boston: Routledge & Kegan Paul.

Fuller, S. (2018). *Post truth: knowledge as a power game*. New York: Anthem Press. doi:10.2307/j.ctvgd30v

Gil, A. C. (2012). *Métodos e técnicas de pesquisa social* [Methods and Techniques of Social Research]. 6th ed.). São Paulo: Atlas.

Graham, D. W. (n.d.). Heraclitus (fl. c. 500 B.C.E.). *Internet Encyclopedia of Philosophy*. Retrieved from https://www.iep.utm.edu/heraclit/

Herold, K. (Ed.). (2004). Philosophy of information. *Library Trends*, *52*(3).

Hobbs, R., Donnelly, K., Friesem, J., & Moen, M. (2013). Learning to engage: How positive attitudes about the news, media literacy, and video production contribute to adolescent civic engagement. *Educational Media International*, *50*(4), 231–246. doi:10.1080/09523987.2013.862364

Hume, D. (2011). *A Treatise of human nature*. Oxford, UK: Clarendon Press.

Jackson, H. (n.d.). *Experts warn of disinformation during election but say political attack ads within legal limit*. Retrieved from: https://globalnews.ca/news/5907430/canada-election-combating-disinformation/

Japiassú, H., & Marcondes, D. (2005). Pós Modernidade [Post-Modernity]. In Dicionário básico de filosofia (p.190). Rio de Janeiro: Jorge Zahar Editor.

Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York: New York University Press.

Kahne, J., & Bowyer, B. (2016). Educating for democracy in a partisan age: Confronting the challenges of motivated reasoning and misinformation. *American Educational Research Journal*, *54*(1), 3–34. doi:10.3102/0002831216679817

Kant, E. (1991). *The metaphysics of morals*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511809620.008

Karl, C. (2008, November 11). *The Two worlds: Plato's two world theory from the Gorgias to the Republic*. Retrieved from https://cameronscottkarl.wordpress.com/2011/01/13/the-two-worlds-plato%E2%80%99s-two-world-theory-from-the-gorgias-to-the-republic/

Lau, J. (2007). *Diretrizes sobre desenvolvimento de habilidades de informação para a aprendizagem permanente.* The Hague: IFLA.

Lloyd, A. (2017). Information literacy and literacies of information: A mid-range theory and model. *Journal of Information Literacy*, *11*(1), 91–105. doi:10.11645/11.1.2185

Marcondes, D., & Japiassu, H. (2015). *Dicionário básico de filosofia*. São Paulo: Jorge Zahar.

Martínez-Ávila, D. (2012). Problems and Characteristics of Foucauldian Discourse Analysis as a Research Method. In R. P. Smiraglia & H.-L. Lee (Eds.), *Cultural frames of knowledge* (pp. 99–110). Würzburg, Germany: Ergon.

Martínez-Ávila, D. & Zandonade, T. (2017). *Social epistemology: still the best framework for LIS?* Presented at Social epistemology as theoretical foundation for information science: supporting a cultural turn, Copenhagen, Denmark.

Mihailidis, P. (2014). *Media literacy and the emerging citizen: Youth, engagement and participation in digital culture*. New York, NY: Peter Lang.

Moreira, W., & Martínez-Ávila, D. (n.d.). Concept Relationships in Knowledge Organization Systems: Elements for Analysis and Common Research Among Fields. Cataloging & Classification Quarterly, 56(1), 19–39.

Nietzsche, F. W. (1917). *Thus spoke Zarathustra*. New York: Modern Library.

Nietzsche, F. W. (1918). *The genealogy of morals*. New York: Boni and Liveright.

Nietzsche, F. W. (2019). *The will to power*. Mineola, NY: Dover Publications.

Ochs, E. (1992). Acquisition of Competence. In *Oxford Encyclopedia of Linguistics* (Vol. 1, pp. 358–361). New York: Oxford University Press.

Olivier, B. (2012). *Foucault on the functioning of discourse in society*. Retrieved from https://thoughtleader. co.za/bertolivier/2012/03/19/foucault-on-the-functioning-of-discourse-in-society/

Orlandi, E. (1994). Discurso, imaginário social e conhecimento [Discourse, Social Imagination and Knowledge]. In *Em Aberto* (pp. 52-59). Brasília. Retrieved from <http://emaberto.inep.gov.br/index. php/emaberto/article/viewFile/1943/1912&gt

Ottonicar, S. L. C., Valentim, M. L. P., & Feres, G. G. (2016). Competência em informação e os contextos educacional, tecnológico, político e organizacional. *Revista Ibero-Americana de Ciência da Informação, 9*(1), 124-142. DOI: . doi:10.26512/rici.v9.n1.2016.2203

Ottonicar, S. L. C., Valentim, M. L. P., Jorge, L. F., & Mosconi, E. (2019). Fake News, Big Data e o Risco à democracia: novos desafios à competência em informação e midiática. *E-prints in Library and Information Science.* Retrieved from: http://eprints.rclis.org/34337/

Pariser, E. (2011). *The filter bubble: how the new personalized web is changing what we read and how we think*. New York: Penguin Press.

Popper, K. R. (1979). *Objective knowledge: An Evolutionary Approach* (Revised Edition). Oxford, UK: United.

Reale, G., & Antiseri, D. (1990). *História da Filosofia do humanismo a Kant* [The History of Humanism Philosophy to Kant]. 5th ed.). São Paulo: Paulus.

Rezende, A. (2018). *Curso de Filosofia [Philosophy Course]*. Rio de Janeiro: Zahar.

Silva, J. A. D. (2000). *Curso de Direito Constitucional Positivo [Positive Constitution Law Course]*. São Paulo: Malheiros Editores.

Silva, R. G. (2004). Análise do discurso: princípios e aspectos gerais [Discourse Analysis: principles and general aspects]. In *Congresso Brasileiro de Hispanistas*. Florianópolis: UFSC.

Starkey, L. H., & Calogero, G. (2011). *Eleaticism. Encyclopedia Britannica*. Retrieved from https://www.britannica.com/topic/Eleaticism

Stocker, B. (2019). *Foucault on Parrhesia: Liberty and Speech*. Retrieved from: https://www.academia.edu/2413321/Foucault_on_Parrhesia_Liberty_and_Speech

Stocker, B. (n.d.). *Foucault on Parrhesia: Liberty and Speech*. Retrieved from https://www.academia.edu/2413321/Foucault_on_Parrhesia_Liberty_and_Speech

Sundar, S. S. (2016, December 8). There's a psychological reason for the appeal of fake news. *New Republic*. Retrieved from https://newrepublic.com/article/139230/theres-psychological-reason-appeal-fake-news

Tollison, R. (Ed.). (1985). *Smoking and society: Toward a more balanced assessment*. Lanham, MD: Lexington Books.

Wardle, C., & Derakhshan, H. (2017). *Toward an interdisciplinary framework for research and policymaking*. Strasbourg: Council of Europe. Retrieved from http://scholar.google.com.br/scholar_url?url=http://www.theewc.org/content/download/2105/18430/file/INFORMATION%2520DISORDER.pdf&hl=pt-BR&sa=X&scisig=AAGBfm3KVfwwfvXH-acu2WJzkTfpca5U-g&nossl=1&oi=scholarr

Watson, R.A. (2016). Cartesianism. In *Encyclopedia Britannica*. Retrieved from https://www.britannica.com/topic/Cartesianism.

Yafushi, C. A. P. (2015). *A Competência em informação para a construção de conhecimento no processo decisório: estudo de caso na Duratex de Agudos (SP)* [Information literacy to construct knowledge in the decision-making process: a case study at Duratex Agudos (SP)] (Master's Dissertation). Retrieved from: https://repositorio.unesp.br/handle/11449/126599

Zattar, M. (2017). Competência em informação e desinformação: um olhar para os critérios de avaliação de fontes de informação [Information Literacy and Misinformation: a focus on evaluation criteria of information sources]. *Liinc em Revista*, *13*(2), 285–293. doi:10.18617/liinc.v13i2.4075

Zuccari, P., & Belluzzo, R. C. B. (2016). A competência em informação e o perfil empreendedor no âmbito das organizações. *Perspectivas em Gestão & Conhecimento, João Pessoa*, *6*, 61–71.

ADDITIONAL READING

Aguaded, I., & Romero-Rodriguez, L. M. (2015). Mediamorphosis and misinformation in the infosphere: Media, digital and information literacy face of changes in information consumption habits. *Education in the Knowledge Society*, *16*(1), 44–57. doi:10.14201/eks20151614457

Bluemle, S. R. (2018). Post-Facts: Information Literacy and Authority after the 2016 Election. *Portal (Baltimore, Md.)*, *18*(2), 265–282.

Canata, F. (2017). How to Spot Fake News? *Turkish Librarianship*, *31*(1), 188–189.

Caridad-Sebastian, M., Morales-Garcia, A. M., Martinez-Cardama, S., & García-López, F. (2018). Infomediation and post-truth: The role of libraries. *El Profesional de la Información*, *27*(4), 891–898. doi:10.3145/epi.2018.jul.17

Chen, X., Sin, S. C. J., Theng, Y. L., & Lee, C. S. (2015). Why Students Share Misinformation on Social Media: Motivation, Gender, and Study-level Differences. *Journal of Academic Librarianship*, *41*(5), 583–592. doi:10.1016/j.acalib.2015.07.003

Martínez-Cardama, S., & Algora-Cancho, L. (2019). Lucha contra la desinformación desde las bibliotecas universitarias. *El Profesional de la Información*, *28*(4). doi:10.3145/epi.2019.jul.12

KEY TERMS DEFINITIONS

Critical Thinking: The ability to interpret a text critically. The skill of identifying authors' ideology and intentions.

Fake News: Lies about a person, organization, or situation shared in social media.

Information and Media Literacy: The ability to access, evaluate, and use information critically.

Information Science: Interdisciplinary field of Applied Social Sciences that studies information in many contexts.

Information Society: Social relations based on information communication technology. The focus of this society is the information as an element that influences knowledge.

Multidisciplinary: The connection between two or more fields of knowledge to create new ideas and innovate.

Post-Truth: Circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.

ENDNOTE

[1]   There are divergences from what is postmodernism. The French author Lyotard "introduces the idea of the postmodern condition as a necessity for overcoming modernity, especially belief in science and emancipating reason, considering that these are, on the contrary, responsible for the continued subjugation of the individual" (Japiassu & Marcondes 2005, p.190). On the other hand, Habermas understands that the postmodernist project is being constantly created, renewed, and, for the ap-

preciation of critical reason, is the one in which the subject can get rid of the ideological chains of political - economic power (Japiassu & Marcondes, 2005). Postmodernism and poststructuralism usually go together. While poststructuralism (with Jacques Derrida and the French feminists) is a theory of knowledge and language, postmodernism (including authors such as Michel Foucault, Roland Barthes, Jean-François Lyotard, and Jean Baudrillard) is a theory of society, culture, and history (Agger 1991, p.112).

Chapter 7
Verification of Information and Evaluation of Approaches of Information Professionals in Accessing Accurate Information

Özgür Külcü

https://orcid.org/0000-0002-2204-3170
Hacettepe University, Turkey

ABSTRACT

Accurate information for information professionals means recorded data that has integrity, validity, reliability, and authenticity. However, confidence in information sources can be pushed to the background when easily accessible and sensational information becomes so popular. It is often difficult even for professionals to decide on which content and which sources are credible. The chapter will describe the result of a survey of 236 information professionals that evaluated the personal and institutional communication and information acquisition environments, information searching behaviors, information and media literacy perspectives. The study looked at information requirements and information seeking behaviors, e-government services, citizenship issues, social and cultural activities and evaluated them within the framework of internet search engines, radio and television channels, social media, and information centers.

INTRODUCTION

Digital ghettos, which emerge due to the customizable structure of social media, and where emotions and beliefs come to the forefront in the shaping of public opinion; where communications and technology channels allow different groups to bend the truth according to their beliefs; and where the voices of the most powerful can dominate all others are quite different from the digital heaven that was imagined in the 1990s. Where in the fuzzy logic labyrinths of today's Internet can we find the truth, the pure truth, or where to look for it? This is a serious research question.

For information professionals, accurate information means recorded data whose integrity, validity, reliability, and authenticity are guaranteed. However, confidence in information sources may be devalued, and easily accessible and sensational information may be popular and appealing. Sometimes, it may even be challenging for information professionals to decide who is defending the truth. Post-truth has emerged as an expression to describe the ambiguity of today's digital environment. For example, the Oxford English Dictionary chose the word "post-truth" as its word of 2016.

These issues are evident within the digital world which has reshaped the scope of information and record management. Discussions of the epistemology of knowledge and information have given way to discussions of the reliability, preservation and accessibility of information in the digital age.

The reliability of information in general consists of the completeness and integrity of the information and can include its availability. It also includes the registered forms, approvals, and quality of evidence. Information security must be dealt with in a broad framework of information management, including print and electronic systems, which enable the media/form structure and also consider information transfer/migration, storage and access.

In addition to considering the contribution to efficiency of corporate electronic information and records management systems, the fragility of the new information environment is emphasized. It is known that more efforts should be spent on digital content, especially on its long-term protection, access and security than on the printed environment. It is difficult to say that, despite the opportunities offered by developing technologies, these concerns have been completely eliminated. In addition, the security and protection of intelligence knowledge constitute another important topic in today's information system.

INFORMATION AS A CASE AND VERIFICATION OF INFORMATION

While developing technologies provide new opportunities to access information, concerns about access to accurate information and information security are nevertheless increasing. Social media is increasingly as effective as mass media in information communication and transmission. However, the sharing and rapid dissemination of mostly unverified information on social media platforms; the fact that different groups have begun to see the Internet as an area of influence; and public interest in sensational news all increase these concerns. Personalization, filter bubbles, and echo chambers where users are separated from each other in the virtual environment have paved the way for new kinds of digital divisions. The climate of conflict which may be caused by social divisions will increase as people consume only the information fed to them by specific information and communications channels, without regard for any objective point of view.

From the epistemological point of view, theoretical debates can address the verification of knowledge, but all aspects of these discussions agree on certain objective criteria for the verification of scientific knowledge. During the validation process, the diversity of the channels of access to information and the objective view are the basics of access to accurate information. At this point, scientific research techniques, media and information literacy approaches, information/data centers, and access to first hand resources in archives have an important place in the information verification process.

While information for early philosophers means shaping of mind and character, nowadays, the characteristics and features of information and communications have come to the fore (Uçak, 2010). At this point, the following aphorisms about information are worth noting. Information:

- Fills the gap in space.
- Is always in motion, making noise.
- Needs energy for movement.
- Is the basis of development.
- Is both insubstantial and amorphous material.
- Has a weight (for example, a giga byte weighs less than a fingerprint).
- Can be moving or frozen over time.
- Is sometimes uncomfortable;.
- Is solid as it can be stored.
- Is also liquid because it can be transmitted.
- Can be destructive when in motion (Canbek and Sağıroğlu, 2006).
- Supports quantum physics because it can be in multiple locations at the same time; and
- Is the foundation of the truth, which it multiplies as it shares.

The complex structure of information is related to the diversity of the data. Access to the right information and information literacy are, in essence, related to the objectivity of the sources where the information is obtained and to the information user's ability to synthesize the content accessed. The ability to synthesize information can also be explained by the field of information search behavior. In order to make access to information more efficient (Uçak and Guzeldere, 2006), it is within the scope of the field of information and document management to determine the needs of information seekers and to provide resources related to their requirements (Uçak, 1997).

Information Access Activation and Information / Media Literacy

The need to access information to meet users' information needs can be triggered by a desire to clarify a situation or to verify the validity and reliability of existing situation. At this point, information search behavior should follow a systematic path and should not be based solely on personal characteristics or trends. However, information search behavior in the cycle of decision-making, examination, synthesis and problem-solving (Rouse and Rouse, 1984) may also be affected by the searcher's personality traits (Westbrook, 1993). The following framework should be evaluated in studies to enable information access by examining information search behaviors:

- Determination of the need for information.
- Accessibility level and amount of information.
- Cost of information.
- Communication environments.
- Availability as time and content.
- Environmental conditions.
- Socio-cultural factors and personality.
- Learning features (Krikelas, 1983; Wilson, 1996).

The studies aiming to develop effective information access strategies by examining information seeking behavior are evaluated within the field of information literacy. Information literacy is defined briefly as the ability to solve information problems (ALA, 2000; Kurbanoğlu, 2001; Kurbanoğlu, 2010).

Moreover, the information literate person is defined as the person who is aware of their information needs, accurately identifies the research questions and the research methodology, correctly determines the sources for the solution of the information problem, and correctly interprets the information obtained by synthesizing it (Doyle, 1994). Kurbanoğlu (2001) defines the stages of information literacy as follows:

- Identification of information needs: In this context, it is necessary to determine what kind of information is needed to solve the searcher's information problem.
- Searching for information that is needed: It is necessary to determine the methodology for determining where (in what sources) the information can be obtained and how to evaluate the relevant resources.
- Access to information: Related information in different contexts should be identified.
- Use and synthesis of information: Information related to information needs has to be read, synthesized, integrated and reconfigured.
- Interpretation: The evaluation of the results obtained and the solution to the initial problem or situation should be interpreted.

Drawing accurate roadmaps to meet information literacy needs is an important contribution. Today's multiplicity of information access environments has led to the prominence of media, the Internet, and social media as platforms for communication but also for information search. In this context, the importance of media literacy in accessing the right information is increasing. All media where information is generated, stored, and transmitted are evaluated within the scope of media literacy (Kurbanoğlu, 2010). Media literacy requires analytical thinking, judgement, questioning, and the ability to synthesize. Users' ability to assess the validity and reliability of the content viewed through any media source depends on their developing media awareness. Critical thinking, questioning and reasoning skills can only be developed through rational approaches to the acquisition of scientific knowledge. They require simultaneous monitoring of channels with different perspectives on a given situation in order to create the right media culture. However, the quality and reliability of the content is extremely important at this point.

Information Security and Access to Reliable Information

It is a matter of information security to maintain the reliability and integrity of the information content and to be protected by preventing access to information by unwanted persons (Pfleeger, 1997). However, as important as information security is the reliability of the information itself (Orlikowski, 2007). However, these discussions, especially within today's electronic environment, focus on the changes made in the original content of knowledge rather than the objectivity of knowledge.

Pushing the whole of the information into the second tier and removing the desired parcels, directing the information flow according to the situation, and changing the content as required are among the most fundamental problems facing information access nowadays.

By the 1990s, information security principles (Henkoğlu and Yılmaz, 2013), which focused on the preservation of the physical integrity of information, began to focus on the deterioration, change, completeness, and usability of information (McCumber, 2005). Integrity in information security in electronic environments is an important issue (Haklı, 2012). At this point, not only the environment where the information is produced but all environments in the information life cycle should be assessed for adequate security (Despres, 2016; Eminağaoğlu and Gökşen, 2009). Especially in social media environments such

as Facebook and Twitter, where uncontrolled content is shared through different channels, ensuring the integrity and reliability of information and addressing concerns about the reliability of information in social media platforms reveal the importance of media literacy programs.

For information professionals, the correct information means information that is securely controlled for registration, accuracy, reliability and authenticity. Despite the opportunities offered by technology, the roles of information professionals in accessing accurate information remain extremely important (Külcü, 2018).

Development of Information Literacy and Changing Roles of Library and Information Science

While information literacy was defined as the ability to find and use information in the 1970s, this definition has changed over the following years. Defining the need for information, finding information, using information, evaluating and transmitting information, including all stages of problem solving, have been added to the term's definition (Kurbanoğlu, 2010). It is very important for individuals to develop the information literacy skills of critical thinking, problem solving, communication, and synthesizing information as life skills in order to solve information problems (Dedebali, 2018).

According to Wilson (2001), information literacy is the basis for lifelong learning. It requires the use of knowledge in education at all levels and in all learning environments (Wilson, 2001). Information literacy is at the core of lifelong learning. It involves seeking, using, evaluating and communicating information relevant to personal, social, vocational, and educational goals, and is necessary to empowering people. It supports access to and use of education, health, and all other human services. Critical thinking, interpretation, and empowering individuals and societies are also relevant to the use of current technologies (IFLA, 2005; 2006). The main purpose of information literacy should be to support consistent decisions about any information found and used through critical thinking.

The concept of information literacy emerged as a result of developments in information technology in the early 1970s (Bruce, 2004). The term was first used in 1974 by Information Industry Association President Paul G. Zurkowski. The concept of information literacy has continued to grow, as the term's definition and the scope of studies on information literacy have expanded (ACRL, 2000, 2011, 2016).

Information literacy was defined in the American Library Association Information Literacy Committee Final Report (1989) as the ability to explain the need for information and to find, evaluate, and effectively use the information needed. The report drew attention to many important points related to information literacy. Some of these are: the relationship between information literacy and lifelong learning; that information literacy is a learning process; its relationship with self-learning; the inclusion of information literacy in schools; the role of the teacher, the librarian and the family; and the importance of information literacy for individuals, businesses and citizens.

On the other hand, new media and developments in this field, which have emerged thanks to the shift from traditional media to the computer, that is, digitization, continue to affect and shape today's social structure. Parallel to the development of new media, new concepts and debates about these media have emerged. Individuals living in the 21st century have to acquire many literacy skills such as information literacy, computer literacy, and media literacy.

With the development of modern media and computer technologies, the concept of media, which includes a wide range of communication tools including verbal, written, printed, text, and images, has emerged and has been used since the 1920s (Mora, 2008). The Internet, which allows communication

in print media akin to newspapers, magazines, books, brochures, to audiovisual media such as television and cinema, and to audio media such as radio, can be counted within this concept.

Media literacy provides a framework for accessing, analyzing, evaluating and creating messages. Media literacy, in addition to the role of media in society, enables the acquisition of basic skills such as questioning and self-expression necessary to become effective citizens in democracies (Thoman & Jolls, 2008). Changes in technology, media and society require the development of critical media literacy in order for students and citizens to be active participants in a democratic society, to read media messages correctly, and to produce media themselves (Kellner & Share, 2005).

Moody (2009) points out the lack of a definition of information requirements in current media literacy approaches, and states that librarians can play an active role in addressing this issue. This is because librarians are experienced in identifying the information needs of users and facilitating information literacy due to the reference tables in libraries.

The main purpose of all literacy skills called information, media, or new media literacy is to provide users with the ability to search, evaluate, use, and create information effectively (The Alexandria Manifesto, 2005). Librarians should fulfill their responsibilities in new media literacy by continuing to provide services in this new media environment.

In this context, librarians should assist their users with the following issues (Nijboer and Hammelburg, 2009):

- Use of computers and the Internet.
- Teaching correct search techniques in search engines and gaining critical thinking skills about the results.
- Accessing information and evaluating the accuracy, integrity, reliability of the information sources accessed.
- Blog writing, video, image or another media production.
- Safe and informed navigation in digital areas.
- Complying with ethical rules in this new world where all kinds of social norms exist;
- Helping users to ask appropriate questions before deciding how much information they will share online.
- Collaborating with teachers and encouraging them to explore the effects of openness in the context of new media.
- Recognizing different priorities and values that motivate behavior in online environments and identifying key questions to ask before sharing personal information (Ekici, 2018).

Given the changing technology and information environments and the responsibilities of librarians for new media literacy, it is obvious that information professionals must continually upgrade their skills. In order to play an active role in new media literacy, librarians need to add or develop their existing expertise, knowledge, skills, leadership, collaboration, management, teaching methods, IT skills and lifelong learning skills (Ekici, 2018).

METHODOLOGY

As part of the case study, a survey of 236 information professionals was conducted to identify the conditions for the issues discussed in the field of information services and the students in the iSchool in Turkey. In this study, participants' personal and institutional communication and information acquisition environments, information searching behaviors, and information and media literacy perspectives were evaluated. Firstly, age, gender, educational status, occupation and organizational responsibilities of the participants were obtained. In the second chapter of the survey, information requirements and information seeking behaviors; e-government services; citizenship issues; and social and cultural activities were evaluated within the framework of Internet search engines, radio and television channels, social media, and information centers. The strategies and verification processes used by the participants in Internet searches were examined within the framework of information and media literacy principles. It was found that social media is seen as a source of information on different topics. In learning about current economic, political, and social developments and scientific and technical developments, the Internet, news groups, similar news portals, different types of news portals, search engines, e-government resources or public information sources, wiki encyclopedias or wiki dictionaries, forums, and agencies were all used to some extent. Within the scope of the study, it was questioned how participants engaged in information verification behavior of this information.

Quantitative research methodology was used in the study (Greene et al., 2005). The fieldwork of the study was based on survey methodology and action research in the literature (McNiff & Whitehead, 2006). Action research is defined as pre-planned, regulated, and collaborative systematic reviews to improve quality of life through critical reflection and inquiry (Uzuner, 2005). It is important to conduct case studies in the field of action research, to connect research and practice directly, and to conduct the investigations in the field (Greenwood and Levin, 2003). As a method, the survey method is helpful in exploring various fields such as context, object, and institution (Kaptan, 1989). It is a research method consisting of questions designed to describe the living conditions, behavior, beliefs, opinions, and attitudes of individuals (Akalın, 2015). Data were collected by administering a questionnaire to participating information professionals.

The sample was considered as a simple random sample, given the breadth of the study scope. In determining the 47 simple random sample, the researchers ensured that the participants examined were distributed homogeneously and that differentiation wouldnot change as a result (İslamoğlu, 2003). In the simple random sample, the chances of sampling are accepted as equal (Arıkan, 2003). Descriptive statistics of the findings were used (Baş, 2001). SPSS software was used in the evaluation of the questionnaire. The validity and reliability of the questionnaires (Lorcu, 2015) was calculated using the Alpha model (Cronbach Alpha Coefficient), which is the most commonly used method. The Cronbach alpha coefficient, which takes a value between 0 and 1, demonstrates the internal consistency within the scale (Baş, 2001).

FINDINGS OF THE SURVEY

In the following, the results of the questionnaire, which was administered to 236 participants including employees and students in the information services, are analyzed to evaluate personal and corporate communication and information acquisition; information search behavior; and information and media

literacy. In this context, the age, gender, educational status, occupation and occupational responsibilities of the participants and their demographic data are examined.

60.9% of the respondents were 35 years old or younger. The rate of participants aged 56 and older is 18.3%. The ratio of participants aged 36 and over is 39%. The results show that the participants consisted of relatively younger generations.

Gender distribution of survey participants are very close to each other. The number of women is 120 and the number of men is 118.

75.2% of the survey responses were from employees and 24.8% were from students. Employees were employed predominantly in public institutions.

31.5% of the working participants were employed in administrative roles and 21.8% were employed in technical positions. While the ratio of the employees in the expert staff is 18.1%, the manager ratio is 4.6%.

The rate of those who describe their computer use as weak is 2.1%, while the very weak option received no responses. The percentage of respondents who described their skills as 22.7%. It is noteworthy that the percentage of those describing their skills as good and very good choices is 75.2%.

The survey participants report first using Internet search engines to find the information they are looking for in any subject. The arithmetic mean value of the search engines is 4.48 out of 5. Then there

Table 1. Age distribution of Survey Participants

	N	%
18-25	70	29,4
26-35	75	31,5
36-45	47	19,7
56-65	31	13,0
65 +	15	6,3

Table 2. Gender of Survey Participants

	N	%
Female	120	50,4
Men	118	49,6
Total	238	100,0

Table 3. Working Areas of Survey Participants

	N	%
Students	59	24,8
Public employees	146	61,4
Private sector	33	13,9
Total	238	100,0

Table 4. Working Position of Survey Participants

	S	%
Administrative staff	75	31,5
Technical staff	52	21,8
Expert	43	18,1
Unemployed	57	23,9
Manager	11	4,6
Total	238	100,0

Table 5. Computer Skills of Survey Participants

	S	%
Very weak	0	0.0
Poor	5	2.1
Average	54	22.7
Good	128	53.8
Very good	51	21.4
Total	238	100.0

is the use of books for information search (M 3.68). Newspapers and journals are in the third place and family is in fourth place. It is noteworthy that the consultant (M 2.83) has lower proportions. This suggests that people are trying to find information individually instead of consulting the experts on topics such as health, culture, and the economy.

Survey participants primarily use the Internet to find the information they are looking for. This result supports the results of the previous table. Further, participants use the Internet to access current events and news (M 4,14). Research, education and occupational reasons were also offered. Social and cultural life, technology, personal hobbies, transportation, and political issues are often among the reasons for Internet use. Although not high up in the rankings, health, tourism, e-government, legal issues, business/

Table 6. Information Search Behaviors of Survey Participants

	N	Mean	sd
Civil society	238	2.73	1.108
Subject expert	238	2.82	1.100
Radio / TV	238	3.02	1.055
Working organization	238	3.10	1.077
Family	238	3.34	1.042
Newspaper / Periodical	238	3.40	.992
Book	238	3.68	1.215
Search engines	238	4.48	.680

Table 7. Reasons why Survey Participants Used the Internet

	N	Mean	ss
Emotional relations	238	2.22	1.207
Investment and finance	238	2.68	1.262
Home / family house	238	2.89	1.219
Real Estate	238	2.91	1.239
Religious subjects	238	3.21	1.086
Shopping	238	3.25	1.203
Public works	238	3.27	1.070
Jobs and careers	238	3.33	1.092
Legal issues	238	3.34	1.025
E-government	238	3.38	1.151
Tourism and travel	238	3.44	1.061
Health	238	3.46	.953
Political issues	238	3.57	1.103
Transportation	238	3.57	1.007
Personal hobbies	238	3.69	1.057
Technology	238	3.95	1.013
Social and cultural life	238	3.98	.911
Vocational subjects	238	4.06	.928
Research and training	238	4.12	.823
News	238	4.14	.962
Information search	238	4.35	.796

career, shopping, and religious issues were offered as participant reasons for using the Internet. Internet use in real estate, home, family, investment, and finance are lower than other subjects. Emotional relationships also scored low as a reason for Internet use (M 2,22).

When the reasons for Internet usage of the survey participants are grouped, it is seen that social and cultural life have a weighted ratio. Internet use for personal reasons settled into second place. While Internet usage in business life is moderately high, it is evident that the use rates of e-government applications can be improved.

Figure 1. Reasons for the use of the Internet by groups of participants
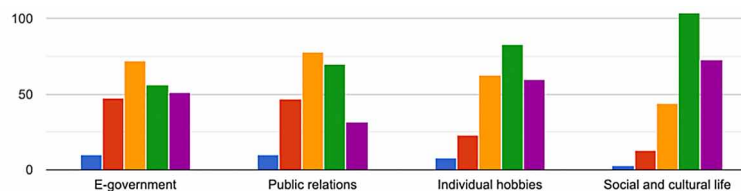
The two primary tools that survey participants use to access the Internet are computers and smartphones. The rates of use of both tools are very close to each other. The rate of access to the Internet is 24.9%.

When participants examined their ways of accessing the information they need, it was found that they prefer the easiest way, and go directly to Google, Yandex, and similar search engines to examine the top-ranked pages. The rate of verification of Internet information from different channels is marked in the second place. The rate of confirmation of the information from the authority / expert sources is marked in the third place. Making research plans and then browsing the topics in this plan was an occasionally-reported behavior.

A significant proportion of survey participants see social media as a source of information. The rate of those who never see social media as a source of information remains low, at 1.7%. It is noteworthy that the percentage of respondents indicating use of social media as an information source most of the time and always exceed 60%.

Figure 2. Reasons for the use of the Internet by groups of participants
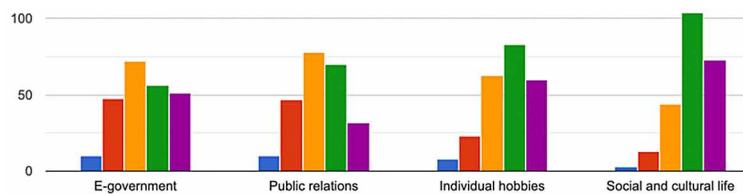
Figure 3. Access Tools for Survey Participants
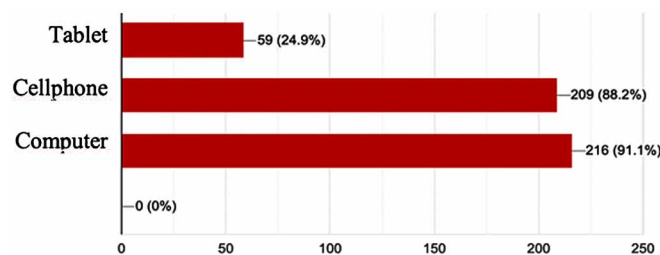
Table 8. Methods used to Search for the Information Needed on the Internet

	N	Mean	sd
Typing all the topics to the browsers as a sentence	238	3.06	1.177
I make a research plan.	238	3.12	1.029
I search by associating keywords using boolean (and / or / not).	238	3.39	1.118
I confirm the information about the subject from the expert pages (such as Ministry of Health, TURKSTAT, Ministry of Development, authority institutions)	238	3.54	1.089
I will verify the Internet information from different channels (subject matter authority source, book and so on)	238	3.62	1.060
Written the topict directly to google yandex etc. search engines review the first pages directly	238	3.92	.904

Table 9. Use of Social Media as a Source of Information

	N	%
Never	4	1.7
Seldom	21	8.8
Sometimes	64	26.9
Most often	71	29.8
Always	78	32.8
Total	238	100.0

Information on current developments in the Internet environment is found primarily through social media. In this case, mainly the mass media instead of participants in Turkey is important because it shows that users follow current developments in social media. It is noteworthy that the rate of use of web sites and e-government applications of public institutions where users can access first-hand resources is less than 1%.

The participants complained about the lack of quality information in the information search activities on the Internet. In addition, information that is not related to the resources they are looking for is listed among the problems of Internet browsing. While the problem of reliability of information appears to be a moderately significant problem, low connection speed is a relatively insignificant problem compared to others.

As can be seen from the chart above, there is a moderate degree of trust in information accessed on the Internet. While the participants experience some indecision about whether to trust information accessed on the Internet, the rate of those who believe and trust that information very much remains 25.3%.

Table 10. Information about the Latest Developments in the Internet

	S	%
Social Media	148	62.2
Mass media in similar thought	46	19.3
Search engines	27	11.3
Total	15	6.3
Websites of public institutions	1	.4

Figure 4. Problems in Internet Usage and Information Search
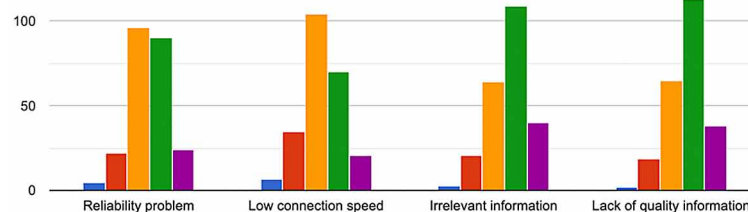
Figure 5. Confidence Rate in the Internet
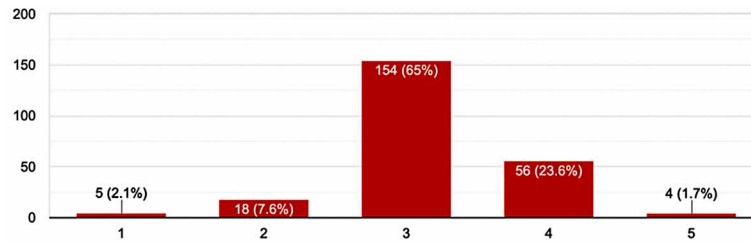
The rate of regular checks on websites by those that do not rely on the information they access on the Internet is 66.2%. The percentage of those who do not occasionally check the Internet resources is 29.9%.

The rate of those who use more than one source to confirm information accessed is 41.2%. Validating information is so controversial that approximately 60% do not use different resources for confirming the information.

In case of violations of information security, the participants' first inclination is to inform the information processing unit for the employees. The reporting rates to institutional management are also above average. It is interesting that the rate of reporting to the police is the lowest (M: 2.19). Even the rate of not making any attempt at all was higher than the police reporting rate. Informing family members and friends and service providers of problems and individual solutions are listed among occasional ap-

Table 11. Control Ratio of Resources Accessed From the Internet

	N	%
Never	3	1.3
Seldom	13	5.5
Sometime	55	23.1
Most of the time	84	35.3
Always	83	34.9
Total	238	100.0

Table 12. Against Information Security Violence

	N	Mean	sd
Report to the police	237	2.19	1.259
Make no attempt	234	2.26	1.191
Finding an individual solution	234	2.56	1.153
Reporting to an Internet service provider	234	2.65	1.262
Notification to the software company	234	2.74	1.319
Notification to family and / or friends	234	2.76	1.294
Reporting to the management of the institution worked	234	3.21	1.306
Reporting to the data processing unit in the institution	234	3.54	1.260

proaches. The above results suggest that in the face of information security violations, participants are generally passive and do not engage in serious attempts to resolve these issues. The general tendency of the employees is to focus on the managing departments' solutions.

31.5% of the respondents stated that they did not change their passwords frequently; 25.2% stated that they changed their password when they shared it with someone else. However, it is interesting that the rate of those who change and those who do not change is 34.6%. Those who do not change their password frequently, if they are suspicious, those who change it, but who change it when they share it with someone, total 90%. Those who change at least every six months remain at 9.7%.

Channels Providing Information From the Internet

In order to determine how economic, social, scientific and technical developments and political issues are addressed on the Internet, 11 options have been questioned in the following headings:

- Channels Providing Information on Economic and Social Developments.
- Channels Providing Information on Scientific and Technical Developments.
- Channels Providing Information on Political Developments.

Options

1. My friends Facebook, Twitter etc. shares.
2. Newspaper or news portals that similar ideas with me.
3. Newspapers or news portals with different thoughts.
4. Google, Yandex etc. search engines.
5. E-government applications.
6. On the web pages of the relevant authorities (such as TÜBİTAK, TURKSTAT, Ministry of Development etc.).
7. Electronic library, archive and museum pages.
8. Electronic books or periodicals of well-known publishers.
9. Wikipedia – Wikipedia.
10. Ekşi dictionary, uludağ dictionary and similar wiki dictionaries.
11. Donanımhaber, ShiftDelete or similar discussion platforms.
12. Other.

Table 13. Identifying Passwords That Turn to Information Security

	S	**%**
I change it at least every six months	23	9.7
I never change	32	13.4
I'm changing if I suspect that someone has my password	48	20.2
If I have to give my password to someone, I change it	60	25.2
I don't change my password often	75	31.5
Total	238	100.0

Channels Providing Information on Economic and Social Developments

As can be seen from the graph below, participants acquire information about economic and social developments primarily from search engines, their friends' sharing, and channels with similar thoughts or opinions. The use of news channels expressing different thoughts or opinions remains at 52%. The use of e-Government applications is only 19.9%. While the use of electronic resources remains at 20.3%, the use of electronic information centers is 27.7%. In spite of the limitations on access to Wikipedia in Turkey, Wikipedia is used by 41.1% of the participants to search for information on economic and social issues. In addition, wiki dictionaries are used by a considerable number of respondents (35.2%). The usage rate of forums is 18,2%. Other options including news agencies received less than a 1% response rate.

Participants follow the scientific and technical developments primarily from search engines (75.8%). Then, it is listed in similar proportions (51.7%), in webpages with different opinions (48.3%), in webpages with similar opinions (45.8%). Unlike the previous chart, it is quite striking that the participants follow the scientific and technical developments from the webpages with different opinions from themselves, not from the sites of close opinion. In the pursuit of scientific and technical developments, the authority on the subject remains 36.9% of the resources. Wikipedia is still over 35%. While the use of Internet dictionaries is 23.3%, the use of forums where technological developments such as donanımhaber.com, shiftdelete.com are shared 12.3%. Other options include news agencies and so on has less than 1% ratio.

Channels Providing Information on Political Developments

Information on political developments on the Internet is primarily accessed by search engines (68.2%), then sites with different opinions in similar proportions (67.4%) to sites expressing similar thoughts (64.4%) and, finally, friends (61.4%) are listed. The results suggest that participants are more democratic in search strategies by using search engines in political participants. However, 16.9% of the use of authority institutions related to the issue of political developments shows that participants are oriented to the

Figure 6.
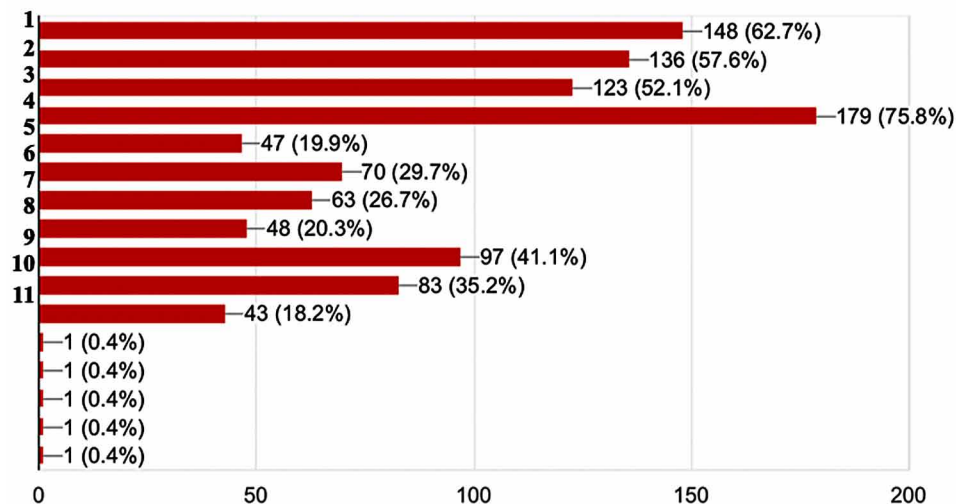
Figure 7.
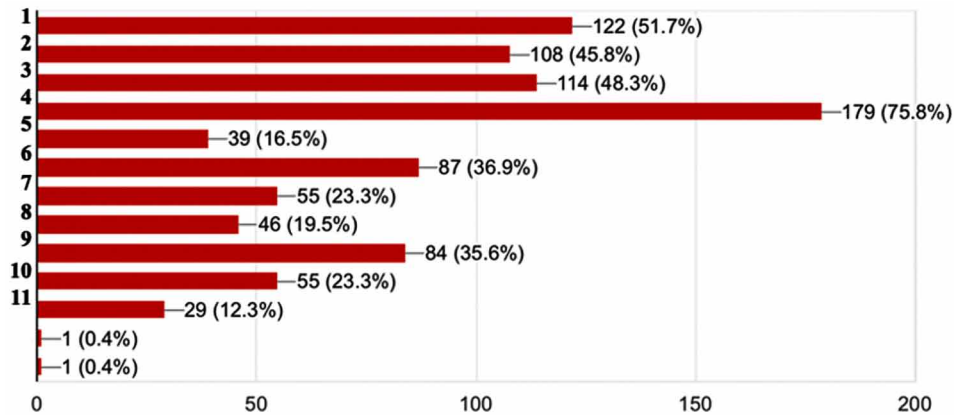
sources they have the easiest access to, from sites with similar or different opinions. In this context, the use of e-Government applications is 11%, while the use of information centers is 10.6%. E-dictionary and Wikipedia use is more than 20%.

Ways to Verify the Accuracy of Information Received on the Internet

Participants marked the following options for how Internet information is verified.

1. The trust I have in my shared friend.
2. My confidence in the news channel.
3. I am comparing news channels with different opinions.
4. I confirm the web sites of the relevant authorities (TUBITAK, TURKSTAT, Ministry of Development etc.)

Figure 8.
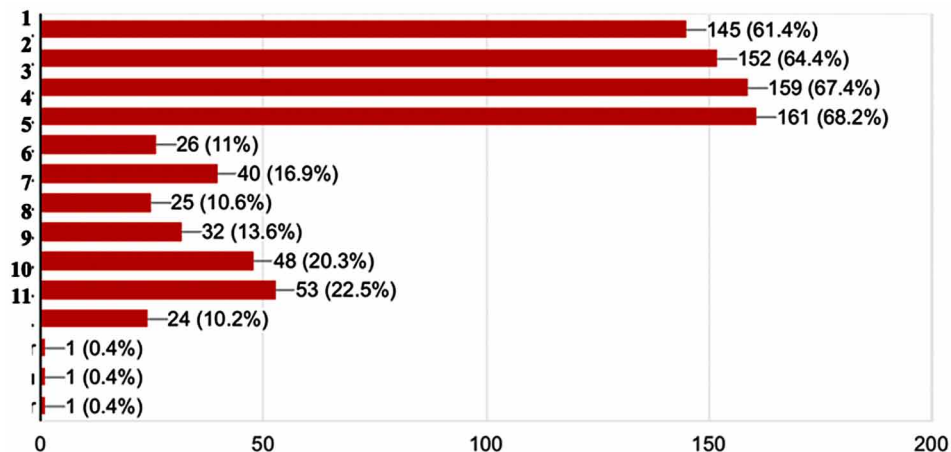
5.   I confirm the contents of the electronic library, archives and museums.
6.   I confirm the electronic books and periodicals of well-known publishers.
7.   Wikipedia - I confirm from Wikipedia.
8.   Ekşisözlük, uludağ dictionary and other wiki dictionaries.
9.   Donanımhaber, ShiftDelete or similar discussion platforms.
10. Teyit.org and similar verification sites.
11. No verification.

As can be seen from the graph below, the participants tend to compare the news channels with different channels in the ratio of 69.5% to verify information accessed on the Internet. On the other hand, 61.9% of the respondents declared that if they rely on shared news channels, they do not need any confirmation. The rate of confirmation of the relevant information from the public authority institutions is 47.9%. 19.5% of respondents feel confident if they share the information and do not feel the need for verification. While the use of Wikipedia is 27.1%, the information centers remain at 25%. The use of Teyit.org, which was established as a fact-checking organization in Turkey, was marked as 12.7%.

CONCLUSION

Today, information technologies reach all segments of society much more easily. The vast free market of the Internet makes limitations and censorship practices almost impossible. In the period we are living in, information is spreading effectively and rapidly in the networked environment. All these developments, which may have been difficult to imagine even in the 1990s, are unfortunately not exclusively positive in their effects. Today's world requires new approaches and abilities to find and access the right information in a growing information avalanche.

Beyond beliefs, emotions, and learning, the search for truth through the objective principles of science, not getting lost in the labyrinths of the electronic world, not sticking to closed-off networks of commercial, political or social interest groups, and not applying personal censorship require the development of new media literacy skills. In order to investigate the dimensions of the problems experienced in this

Figure 9.
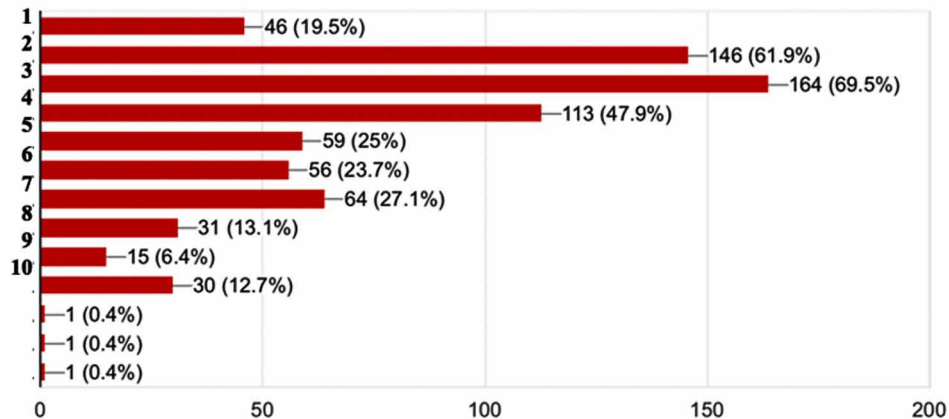
context, this study was conducted with professionals in the field of information and records management. The answers of those who are expected to undertake leadership in related areas and whose professional careers revolve around the effective use of information are very striking.

Approximately 60% of the participants are younger than 35 years old. Approximately 75% of respondents are employees, while students make up 25%. Employees work predominantly in public institutions. While 31.5% of the employees are administrative staff, the percentage of technical personnel and experts is about 40% and the percentage of employees working as managers is around 5%. The ability to use a computer is so strong that more than 75% of respondents indicated that it is good or very good. These results indicate that survey participants have the abilities necessary to access information in electronic environments.

Participants are primarily interested in finding the information they are looking for on the Internet through search engines. The use of books, newspapers and magazines is listed after search engines. Participants tend to access information directly by entering search engines without consulting the nearest family members and without resorting to scientific resources. This raises the question of how participants interpret search engine results in accessing the correct information.

The Internet is primarily seen as an information access tool, a resource for the improvement of professional development, and an environment where research and training needs are met. According to these results, use of the Internet for emotional relationships is rare. The Internet is not used extensively in shopping and public affairs. There is a need to develop the perception that the Internet is not only a means of access to information, but that the practices related to public affairs and social life should be used effectively.

Internet searches do not follow a specific strategy. Most of the time, the first spontaneous search results are evaluated. Social media is more widely used than the Internet, especially in accessing information on current events.

More than 82% of the participants follow current events in social media and in the mass media that holds similar views to them. This suggests that post-truth debates about echo chambers and filter bubbles remain relevant.

Participants are seriously concerned about access to quality information. The reliability of information is also a medium-level concern. Participants are in a state of uncertainty about their confidence in the information they access and use on the Internet. Despite this, use of multiple sources to verify information remains low.

In case of violations related to information security, firstly, managing departments are contacted. The rate of informing relevant police departments is very low. In addition, the percentage of those who do not take necessary precautions regarding information security exceeds 35%.

Although the tools used according to the type of information sought in the Internet environment change, the first priority is still search engines. Then, social media shares come to the fore in economic, social and scientific developments. Participants tend to further diversify their sources of information on political developments. Wikipedia continues to be used as a common access tool on the Internet, despite access restrictions in Turkey. Internet dictionaries are another means of access to information and are also used more than public resources and e-government. On the other hand, information centers as a tool for accessing information in the electronic environment are, unfortunately, not frequently used.

When the participants rely on the information access platform, they do not verify the information. They tend to verify suspicious information from different news channels. Verification rates of information from public authority sources is below 50%.

The results indicate that information professionals also need support in information searching behavior, media and social media literacy, verification and reliability of information on the Internet. It is recommended that iSchools develop curricula and create training programs to assist students, professionals, and the public in building these skills. Improved information search behaviors, media and social media literacy, validation of knowledge, as well as increased scientific research on reliability, will enable further exploration of these multi-faceted problems and will help identify solutions. Future studies can also evaluate corporate and social data by using data mining tools and methods.

For the masses who tend to consume information that is easy to access, without considering principles of scientific research methodology, or who interpret the world according to what is prevalent among their social ties, without knowing how to navigate the dark mazes of the Internet, our age may hold many dangers. Combatting these dangers should be among the top priorities of information professionals.

REFERENCES

ALA. (2000). *Information literacy: a position paper on information problem solving*. Wisconsin Educational Media Association.

American Library Association. (1998). *A Progress report on information literacy: An Update on the American Library Association presidential committee on information literacy: Final report*. Retrieved from http://www.ala.org/acrl/publications/whitepapers/progressreport

Akalın, M. (2015). *Örnek açıklamalarıyla sosyal bilimlerde araştırma tekniği anket*. Ankara: Seçkin Yayıncılık.

Arıkan, R. (2004). *Araştırma Teknikleri Ve Rapor Hazırlama*. Ankara: Asil Yayın.

Association of College and Research Libraries. (2000). *Information literacy competency standards for higher education.* Chicago: ALA. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency#f

Association of College and Research Libraries. (2011). *Information literacy standards for teacher education.* Retrieved from http://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/ilstandards_te.pdf

Association of College and Research Libraries. (2016). *Framework for information literacy for higher education.* Retrieved from http://www.ala.org/acrl/standards/ilframework

Arıkan, R. (2004). *Araştırma Teknikleri Ve Rapor Hazırlama*. Ankara: Asil Yayın.

Baş, T. (2001). *Anket: anket nasıl hazırlanır, anket nasıl uygulanır, anket nasıl değerlendirilir*. Ankara: Seçkin.

Bruce, C. (2004) Information literacy as a catalyst for educational change. A background paper. In *Proceedings Lifelong learning: Whose responsibility and what is your contribution?", the 3rd International Lifelong Learning Conference* (pp. 8-19). Yeppoon: Queensland. Retrieved from http://eprints.qut.edu.au/4977/

Canbek, G., & Sağıroğlu, Ş. (2006). Bilgi, Bilgi Güvenliği ve Süreçleri Üzerine Bir İnceleme. *Politeknik Dergisi, 9*(3), 165-174. Retrieved from http://www.politeknik.gazi.edu.tr/index.php/PLT/article/view/299

Dedebali. (2018). Bilgi okuryazarlığı. In A. D. Öğretir Özçelik & M. N. Tuğluk (Eds.), *Eğitimde ve endüstride 21. yüzyıl becerileri içinde* (pp. 53-70) Ankara: Pegem Akademi.

Despres, G. (2016*). Fact denial and the record under threat brandies records manager.* Brandeis Records Manager. Retrieved from https://blogs.brandeis.edu/records/2016/12/21/fact-denial-and-the-record-under- threat/

Doyle, C. S. (1994). *Information literacy in an information society: A Concept for the information age.* Academic Press.

Ekici. (2018). Yeni Medya Okuryazarlığında Kütüphanecilerin Rolleri. In *Kamusal Alan Olarak Bilgi Merkezleri ve Yenilikçi Yaklaşımlar.* Hiperlink.

Eminağaoğlu, M., & Gökşen, Y. (2009). Bilgi Güvenliği Nedir,Ne Değildir, Türkiye'de Bilgi Güvenliği Sorunları ve Çözüm Önerileri. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 11*(4), 1-15. Retrieved from http://www.sbe.deu.edu.tr/dergi/cilt11.say%C4%B14/Eminagao%C4%9Flu%20Goksen%2011.4.pdf

Green, J. C., Krayder, H., & Mayer, E. (2005). Combining qualitative and quantitative methods in social inquiry. In B. Somekh & C. Lewin (Eds.), *Research methods in the social sciences* (pp. 275–282). London: Sage.

Greenwood, D. J., & Levin, M. (2003). Reconstructing the relationships between universities and society through action research. SAGE.

Haklı, T. (2012). *Bilgi güvenliği standartlari ve kamu kurumlari bilgi güvenliği için bir model önerisi. In Yayımlanmamış yüksek lisansn tezi.* Isparta Süleyman Demirel Üniversitesi.

Henkoğlu, T., & Yılmaz, B. (2013). Avrupa Birliği (AB) bilgi güvenliği politikaları [European Union (EU) information security policies]. Tür*k Kütüphaneciliği, 27*(3), 451-471. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/Henko%C4%9Flu.pdf

International Federation of Library Associations and Institutions (IFLA). (2005). *Beacons of the information society.* Retrieved from https://www.ifla.org/publications/beacons-of-the-information-society-healexandria-proclamation-on-information-literacyadresindenerişildi

International Federation of Library Associations and Institutions (IFLA). (2006). Guidelines on information literacy for lifelong learning. In J. Lau (Ed.), *Mexico: Information Literacy Section.* Retrieved from Http://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-en.pdf

İslamoğlu, A. H. (2003). *Bilimsel Araştırma Yöntemleri.* İstanbul: Beta Basım Yayım.

Kaptan, S. (1989). *Bilimsel araştırma ve gözlem teknikleri.* Ankara: Tekışık Matbaası.

Kellner, D., & Share, J. (2005). Toward Critical Media Literacy: Core concepts, debates, organizations, and policy. *Studies in the Cultural Politics of Education, 26*(3), 369–386. doi:10.1080/01596300500200169

Kurbanoğlu, S. S. (2010). Bilgi okuryazarlığı: Kavramsal bir analiz. *Türk Kütüphaneciliği, 24*(4), 723–747.

Krikelas, J. (1983). Information seeking behavior: Patterns and concepts chart. *Drexel Library Quarterly, 9*(Spring), 5–20.

Kurbanoğlu, S. (2001). Öğrencilere bilgi okuryazarlığı becerilerinin kazandırılmasının önemi ve okul kütüphanecilerinin bu alandaki rolü. *Bilgi Dünyası, 2*(1), 1-19. Retrieved from http://www.bby.hacettepe. edu.tr/yayinlar/dosyalar/1-19.pdf

Kurbanoğlu, S. (2010). Bilgi okuryazarlığı: Kavramsal bir analiz. *Türk Kütüphaneciliği, 24*(4), 723-747. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/2253-4361-1-PB.pdf

Külcü, Ö. (2018). *Bilgi Kuramı ve Bilgi Yönetimi*. İstanbul: Hiper Yayın.

Lorcu, F. (2015). *Örneklerle Veri Analizi SPSS Uygulamalı*. Ankara: Detay Yayıncılık.

McCumber, J. (2005). *Assessing and managing security risk in IT systems*. Washington, DC: CRC.

McNiff, J., & Whitehead, J. (2006). *All you need to know about action research*. SAGE.

Moody, K. E. (2009). A Constructivist Approach To Media Literacy Education: The Role Of The Library. *World Library And Information Congress: 75th IFLA General Conference And Council*, 23-27.

Mora, N. (2008). Medya ve Kültürel Kimlik. *Uluslararası İnsan Bilimleri Dergisi*, *5*(1), 1–14.

Nijboer, J., & Hammelburg, E. (2009). Extending Media Literacy: A New Direction For Libraries. *New Library World*, *111*(1/2), 36–45. doi:10.1108/03074801011015676

Pfleeger, P. (1997). The fundamentals of information security. *Software, IEEE*, *14*(1), 14. doi:10.1109/52.566419

Orlikowski, W. J. (2007). Sociometric practices: Exploring technology at work. *Organization Studies*, *28*(9), 1435–1448. doi:10.1177/0170840607081138

Rouse, W.B., & Rouse, S. H. (1984). Human information seeking and design of information systems. *Information Processing and Management, 20*(1,2), 129-138.

The Alexandria Manifesto on Libraries: The Infsormation Society In Action. (2005). *Australian Library Journal, 54*(4), 415.

Thoman, E., & Jolls, T. (2008). 21. Yüzyıl Okuryazarlığı. (Çev. Cevat Elma ve Alper Kesten) *Ekinoks Yayınları*. Retrieved from http://www.kff. org/entmedia/upload/Key-Facts-Media-Literacy.pdf

Uçak, N. Ö. (1997). Bilgi gereksinimi ve bilgi arama davranışı. *Türk Kütüphaneciliği, 11*(4), 315-325. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/1475-2949-1-PB.pdf

Uçak, N. Ö., & Güzeldere, Ş. O. (2006). Bilişsel yapının ve işlemlerin bilgi arama davranışı üzerine etkisi [The impact of cognitive structure and processes on information seeking]. *Türk Kütüphaneciliği, 20*(1), 7-28. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/1994-3966-1-PB.pdf

Uçak, N. Ö. (2010). Bilgi: Çok yüzlü bir kavram [Information: A multi-faceted concept]. *Türk Kütüphaneciliği, 24*(4), 705-722. Retrieved from http://www.bby.hacettepe.edu.tr/e-bulten/dosyalar/file/mart2011/ucak_TK24(4).pdf

Uzuner, Y. (2005). Özel eğitimden örneklerle eylem araştırmaları. *Ankara Üniversitesi Eğitim Fakültesi Özel Eğitim Dergisi, 6*(2).

Westbrook, L. (1993). User needs: A synthesis and analysis of current theories for the practitioner. *Reference Quarterly*, *32*(Summer), 541–549.

Wilson, T. D. (1996). *Models in information behavior search*. Sheffield, UK: University of Sheffield, Department of Information Studies.

Wilson, L. A. (2001). Information literacy: Fluency across and beyond the university. In B. I. Dewey (Ed.), Library User Education: Powerful Learning, Powerful Partnerships (pp. 1-17). London: Scarecrow Press.

Wilson, T. D. (1981). User studies and information needs. *The Journal of Documentation*, *3*(March), 3–15. doi:10.1108/eb026702

Chapter 8
Political Advertising Effects on Perceived Bias, Value, and Credibility in Online News

Salma Mariam Ayad
East Tennessee State University, USA

Robert Andrew Dunn
https://orcid.org/0000-0003-0415-6662
East Tennessee State University, USA

Stephen William Marshall
https://orcid.org/0000-0001-8624-082X
East Tennessee State University, USA

ABSTRACT

This study represents an investigation of the effect of political advertising on readers' perceptions of bias, value, and credibility in an online news article. Participants read an unbiased news article placed alongside three advertisements. Participants randomly entered one of three conditions—right-leaning advertisements, left-leaning advertisements, or neutral advertisements. They then answered questions about the perceived bias and credibility of the article. The researchers predicted biased political ads would prime perceptions of bias for the news article, despite its neutrality. Though the findings trended in the hypothesized direction, a lack of significance suggests political advertising may not serve as a prime for news readers in making decisions about the political bias, credibility, and news value of an article or news source. However, participants who had a higher prior knowledge of politics did place a higher news value on the article than those with low prior knowledge. Also, men were more likely to see a liberal bias and to rate a news story higher on news value.

INTRODUCTION

Internet use in the United States has continued to increase over the last two decades, as now 90 percent of Americans are online (Pew Research Center, 2019). Because of its ease of use and few regulations, the Internet has allowed the number of news sources to flourish. Most American adults have used the Internet to check the news, thus providing an audience for the continually increasing number of news outlets (Morris, 2007). Although television news is still the most popular among news consumers, the Internet is quickly gaining ground (Gottfried & Shearer, 2017). The Internet surpassed print publications as a popular news source in 2010 (O'Dell, 2011), and getting news from social media surpassed getting it from print news in 2018 (Shearer, 2018). Today, online news is practically ubiquitous in the United States as "88% of Americans ever get news on a mobile device and 84% ever get news on a computer" (Fedeli & Matsa, 2018, para. 3) . But as the number of online news outlets has increased, so has the fragmentation of the news media (Morris, 2007).

Niche websites have started to attract news consumers and steer them away from mainstream sources (Morris, 2007). The number of people that access these niche sites has increased as the Internet has become a major source of information (Baum & Groeling, 2008). Most news blogs and sites that cater to niche audiences are split by political ideology. Although their audiences are small, niche news sites that provide one-sided political coverage, such as DailyKos.com on the left and FreeRepublic.com on the right, have developed a loyal following. This fragmented news environment has given Americans the ability to choose from a variety of sources to seek political information and news (Morris, 2007). Research has shown that those who feel like they do not receive information from mainstream sources that confirm their point of view seek out other news outlets online (Choi, Watt, & Lynch, 2006). The Internet boasts many news outlet options, but given a choice of what to read, people tend to choose news items that reinforce their own opinions rather than material that challenges their beliefs (Garrett, 2009).

This trend in news consumption has led to a more politically polarized public (Morris, 2007). A study by Coe et al. (2008) showed that television viewership is divided along partisan lines. The researchers found that liberals were more likely to report viewing the liberally-aligned *The Daily Show* than more conservative Fox News. Part of what motivates people to watch certain news programs is the tendency of those shows to present "a relatively partisan view of current events" (Coe et al., 2008, p. 209). The study found that audience appreciation of a news program that shared their point of view was a significant predictor of whether they chose to watch it.

Not only are people more likely to watch programs that reinforce their beliefs, but they also rate those programs as less biased (Coe et al., 2008). Arceneaux, Johnson, and Murphy (2012) found that people who viewed television news that agreed with their political attitudes rated the shows as more fair, friendly, good, and cooperative than those who saw shows countering their political attitudes. Participants who watched counter-attitudinal shows were also more likely to find the shows uninformative, unbalanced, and less American than those who watched the pro-attitudinal show. Another study found that the liberal-leaning program, *The Daily Show*, was rated significantly more biased by conservatives and Fox News, a conservative news channel, was rated significantly more biased by liberals (Coe et al., 2008).

Despite the proliferation of niche news media online, mainstream news outlets, such as local television news stations, the Wall Street Journal, ABC News, CBS News, and NPR, are still more trusted today than more politicized news outlets, such as liberal-leaning Huffington Post and conservative-leaning Breitbart (Kalogeropoulos & Fletcher, 2018). And currently, the most popular news websites are Yahoo News and Google News, aggregating sites typically pulling from mainstream media (eBizMBA, 2019).

The political approach of major news outlets is different from niche, alternative media. Most mainstream news organizations attempt to present news in an objective way, using multiple sources, and attempt a balanced perspective (Ognianova & Endersby, 1996). Some of these sources, including CNN and Reuters, have received more neutral evaluations by both liberals and conservatives (Baum & Groeling, 2008; Coe et al., 2008). Despite these ratings, the mass media is still suffering from a distrusting public, hitting an all-time low in 2016, the year of President Donald Trump's election (Brenan, 2019). This nadir in trust also coincides with a rise in concern from the public over "fake news," with 64% believing fabricated stories are causing confusion among the masses (Barthel, Mitchell, & Holcomb, 2016).

Research has shown that consumers' perceptions of a media organization's political ideology have a significant impact on which news medium they prefer (Ognianova & Endersby, 1996). Those political affiliations also tend to dictate how trustworthy people perceive their news sources to be. Conservatives trusted right-leaning Fox News the most of all media sources and trusted right-wing Breitbart nearly as much as local news. Liberals, on the other hand, trusted left-leaning Huffington Post nearly as much as local news (Kalogeropoulos & Fletcher, 2018). This means that a cue to a news website's political leaning can influence how a news consumer interprets the source's beliefs and the news content's bent. Because news organizations accept money from advertisers to place ad content, ads are one way that consumers gauge the political leaning of a news publication and its website (Saba, 2010). Political advertising in particular can be perceived as indicative of news organization's support of a party, candidate, or issue. As increasing numbers of news consumers flock to the Internet to consume news, political ads rather than news content might play an increasingly influential role in readers' perceptions of credibility and bias.

ONLINE NEWS BIAS

Bias and objectivity speak to the credibility of an article because in most instances, the credibility of a news story is determined by the level of objectivity it exhibits (Ognianova & Endersby, 1996; Sundar, 1999). A study by Fico, Richardson, and Edwards (2004) found the level of balanced coverage predicted the level of perceived story bias. They found that when presented with a balanced and imbalanced article, readers perceived the imbalanced stories as biased. Readers also evaluated the newspapers publishing the imbalanced articles as less credible. The imbalanced story structure was a significant predictor of perceived story bias. This study suggests that readers will evaluate articles they perceive as favoring one side of an issue as less credible. Recent research has also shown distrust in media outlets is often tied to perceived political bias, particularly in an extremely politicized country like the United States (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2017).

Online news in particular is perceived differently by consumers and receives different credibility ratings from newspapers or television news. Consumers of online news sources, such as like CNN.com and Time Online, placed an additional emphasis on bias and objectivity (Abdulla, Garrison, Salwen, Driscoll, & Casey, 2002). These two factors were more important to consumers when they considered online news versus print or TV news. This study does not stand alone. Researchers have found time and again that the Internet elicits unique responses from Web users. Fletcher and Park (2017) found that people who trusted news the least were more likely to seek alternatives online, such as social media outlets and blogs. Preference for online news is growing, with 34% of Americans favoring online news to traditional sources. However, that means almost two-thirds still prefer traditional sources, TV news

in particular. And while 20% of adults say they regularly get news from social media, more than half of those same people think much of the news they see from those outlets is inaccurate (Geiger, 2019).

Most news organizations realize that objective reporting is a worthwhile investment (Ognianova & Endersby, 1996). Reader perceptions of story credibility are important for the news organization's image. Because many studies have found that as the public's perception of media credibility increases, so does media consumption, perceived credibility is key to gaining readers and increasing profits (Rimmer & Weaver, 1987).

Yet, overall perceived media credibility is on the decline. The news media has seen its credibility ratings spiral downward since the mid-1980s (Brenan, 2019; Greer, 2003). Reader perceptions of story credibility are important for a newspaper's image. Slater and Rouner (1996) argued that readers use source credentials and the message itself to evaluate credibility, and that "audience evaluation of message content has a great deal more to do with source credibility judgments and subsequent belief change than previously assumed" (p. 975). Slater and Rouner also argued that

when confronted with a message, especially one from a source one knows nothing about other than source credentials, one would reasonably make inferences about that source's credibility based on the perceived quality of the message" (p. 975).

If readers perceive an online article to be unfair, and therefore of lower quality, they might judge the entire website or news organization to be of low quality as well. One of the keys to online news credibility lies in the study of context effects.

Context Effects

There is a fair amount of research exploring the interaction between media content and advertisements. These studies show a significant link between content context and interpretation. A study by Yi (1990a) found that the context of ads affects how persuasive they might be. The study looked at ads within magazine articles and found that the content of the magazine article affected how readers evaluated the ads on those pages. Readers who read the article related to safety were more likely to use this construct to evaluate the car ad, whereas those who read the article about oil were more likely to use fuel economy to evaluate the car ad. Other studies found similar context effects for television commercials. Perry, Jenzowsky, Hester, King, and Yi (1997) found that commercials that were more humorous actually enhanced viewer enjoyment of a funny TV show. Another study found that the inclusion of commercials affected how viewers perceived low- and high-quality news broadcasts (Perry, Trunnell, Ellis, & Kazoleas, 2009). The study found that the removal of commercials from a low-quality newscast led to a more negative emotional response toward the news broadcast. The removal of commercials from a high-quality newscast, however, led to a more positive emotional response.

The Internet has also been the subject of context effects research. Fogg et al. (2003) investigated the pieces of a website that users use to evaluate its credibility and found that the main content of the site is just a small piece of the puzzle. Fogg et al. found that many consumers notice advertising and use it to evaluate the credibility of a website. Their exploratory study categorized comments on surveys filled out by more than 2,500 Web users on their evaluations of specific websites. On the issue of site credibility, the researchers found that advertising was mentioned, usually negatively, by about 13.8% of the

participants. Although news sites were among the webpages that participants were asked to evaluate, the study did not break up the credibility comments by type of site.

While not the focus of this paper, when discussing the Internet, political advertising and context effects, it is hard to not mention social media. Social media has become a powerful tool in political advertising and there is much research in this area. Tucker, Guess, Barberá, Vaccari, Siegel, Sanovich, Stukal and Nyhan (2018) produced a significant review of the scientific literature on the topic examining the consequences, producers, strategies and tactics, etc. to find the key research gaps. While their piece is comprehensive involving politics in social media, one of the key research gaps they identified was, "What are the effects of exposure to information and disinformation on individual beliefs and behavior (p.54)?"

Despite the proliferation of Internet use by news consumers, there have been only a few studies on the ways in which advertising shapes perceptions of online news. This is problematic as some researchers have expressed concern about the increasing importance of advertising revenue and of how it might blur the line between editorial and commercial content on news websites (Mitchelstein & Boczkowski, 2009; Yang & Oliver, 2004). Singer (2003) argues that "online media sites are integrating content that generates revenue from advertisers and marketers with content that ostensibly is intended to fulfill the professional obligation to provide information whose sole purpose is public service" (p. 154). Yang and Oliver (2004) found that the seriousness of online ads can affect how readers perceive the accompanying news article. They found that some Internet users perceived hard news stories paired with silly advertisements as having less news value and less credibility than hard news stories paired with serious ads or no ads. The researchers argued that if online news consumers perceive a serious news article as less newsworthy because it is paired with a humorous ad, "this may imply that the issues themselves are less important (Yang & Oliver, 2004, p. 745), a serious implication for a news outlet. Another study found a weak correlation between ad credibility and story credibility (Greer, 2003). Although most conditions showed some effect of ad credibility on story credibility, only one condition was statistically significant — when a low-credibility ad was paired with a highly credible source. These studies provide some evidence that advertising placed next to an article can affect the article's perceived credibility.

The most compelling evidence that ads may affect the perceived credibility of news articles comes from a study conducted by *The Seattle Times* (Saba, 2010). The newspaper placed a political ad for the state's land commissioner next to an investigative article about landslides in Washington. In response, not only did the newsroom reporters object to the pairing, but the paper's readers also responded negatively, wondering if the newsroom did it on purpose. This study was exploratory and was not performed in a controlled environment; reader reactions were also not analyzed quantitatively. However, the study did find that, overall, "too many contextual ads surrounding news stories … made readers suspicious" (p. 20). The audience did not respond as severely when contextual ads were paired with soft news, such as entertainment or sports.

Priming

One theoretical framework that may explain context effects is media priming. Media priming refers to the "the effects of the content of media on people's later behavior or judgments related to the content that was processed" (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2009, p. 74). Research shows that online news users pay little attention to ads (Greer, 2003). Therefore, priming serves as an ideal theoretical basis for this study. In priming, even a subconscious glance at an ad can activate the brain and lead to conscious thoughts about surrounding content.

Priming has been used many times to explain how an advertisement's surrounding context affects ad evaluations. A study by Schmitt (1994) found that people who are primed to think about certain values apply those values as their framework when interpreting an ad. The study showed that "depending on the context, subjects assigned different interpretation to the same picture" (p. 7). A study by Yi (1990b) also demonstrated a similar result. Yi found that the advertising context affected how viewers evaluated the advertising brand. The study showed that the activation of a particular product attribute guided the participants' interpretation of the brand. The researcher concluded that adjacent materials have an effect on how users evaluated an ad. Another study found that ad context also primes how viewers interpret the ad itself, not just its brand (Yi, 1990a). Yi found that "the ad context is not merely a benign background for ads, but it can also become an effective communication itself" (p. 47).

Advertising on news sites placed adjacent to the news articles might play a similar role in readers' evaluation of the news article or news source. This is especially true of political advertising because of increasing party polarization (Morris, 2007).

Political Advertising

Research on political advertisements has shown that Internet ads elicit a different response from consumers than other campaign materials. Although few studies have explored the differences of advertising effects based on Internet versus traditional media, there is some evidence in political science research of differences in consumer response based on medium (Kaid, 2002; McKinney & Gaddie, 2000). For example, McKinney and Gaddie (2000) found that viewers who watched a New Hampshire primary debate online learned much more about the issues than those who watched the debate on television. In another study, Kaid (2002) found that leading up to the 2000 presidential election, undecided voters who were exposed to online advertising changed their vote to Gore, whereas those exposed to the same videos on television changed their votes to Bush. This research provides evidence that the Internet is a unique advertising platform that elicits a different response from consumers than traditional media.

The Internet also affords new hurdles for advertisers. Although the number of individuals using the Internet has increased, research shows that online ad clickthrough rates (a measure of online advertising success) for display or banner-type ads have declined in recent years from 0.1% in 2009 (Wasserman, 2011) to just .05% in 2019 (Chaffey, 2019). The trend for consumers to avoid online ads has been demonstrated further by the "banner blindness" phenomenon in which Internet users "avoid fixing their eyes on anything that looks like a banner ad" (Cho & Cheon, 2004, p. 89). This is a phenomenon that continues even in today's more sophisticated digital advertising world (Pernice, 2018). Although advertising avoidance is seen in traditional media as well, Cho and Cheon noted a few reasons why people might avoid banner ads. For one, online ads are often perceived to be a barrier in reaching goals, such as seeking information. Because ads get in the way of those tasks, ads are avoided more vigorously. Also, the interactivity of the Internet, such as the need for consumers to click on ads in order to see additional content, makes online ads less likely to be observed. This would certainly help to explain the large discrepancies seen between clickthrough rates for ads that appear during Internet searches and ads that appear as display or banner ads (Volovich, 2019). For instance, Google Ads reports that its clickthrough rate is 3.17% for search advertising versus 0.46% for display advertising (Chaffey, 2019).

It's no surprise that the CTR on the search network is much higher than in the display network since in the search network, searchers are typing in product and brand names when they have specific intent so

the ads are more relevant. This isn't the case in the display network where they are responding to banner and text ads, typically on publisher sites (Chaffey, 2019, para. 14).

Despite these possible issues with online advertising, the use of online political advertising has continued to increase in presidential election campaigns since the late 1990s (Kaid, 2002). After the 1996 election, campaign professionals began to realize the potential of the Internet to reach voters (Connell, 1997). Registered voters take note of online campaign information from a variety of sources, including the campaign materials themselves (Smith & Duggan, 2012). Research on the 2012 presidential election showed that 55% of registered voters viewed political videos online and 36% of registered voters reported watching specifically political advertisements online. The effect of political advertising on consumers has generally followed a direct effects perspective in which the ad transfers information to the consumer (Kaid, 2002). In this sense it can serve as perfect prime for news consumers.

Just as with news sources, individuals engage in selective exposure when it comes to political ads (Chang, 2003). Consumers reinforce their existing beliefs upon exposure to ad information from either political party. Ads by candidates consumers support are favored over ads by candidates with opposing viewpoints. Overall, though, consumers see political advertising as lacking credibility (Johnson & Kaye, 1998). Johnson and Kaye found that political candidate flyers and websites were not viewed as credible by politically-interested Web users. Online political ads, which carry the same messages in the same ways as on candidate websites, most likely have a similar effect on consumers. It is possible that this distrust of candidate material translates to the news article placed next to candidate ads through priming. In other words, political ads on a news webpage could influence readers' perception of the news article itself.

METHOD

Based on literature on priming theory, the following hypotheses are proposed:

H1a: Participants will perceive a news article surrounded by conservative ads as biased toward conservatives.

H1b: Participants will perceive a news article surrounded by liberal ads as biased toward liberals.

H1c: Participants will perceive an online news source with partisan ads as showing more favor toward a political party than a news source with nonpartisan ads.

Because increased bias is closely linked to decreased credibility and news value, the following hypotheses are proposed (Ognianova & Endersby, 1996; Sundar, 1999; Yang & Oliver, 2004).

H2: Participants will perceive a news article surrounded by partisan ads as less credible than a news article featuring nonpartisan advertising.

H3: Participants will perceive a news article surrounded by partisan ads as having less news value than a news article featuring nonpartisan advertising.

Prior Knowledge

Research has shown that prior knowledge of content can have an effect on perceived credibility of a source. A study by Eastin (2001) showed that previous knowledge on an issue led to a perception of higher credibility when reading about that issue online. Participants filled out a questionnaire about a health topic before reading about it online. Those who were more knowledgeable about the topic according to the pretest found the online message on the topic to be more credible than those who did not know much about the health topic beforehand. This shows that those with higher prior knowledge about a topic will perceive an article about that topic as more credible. Because this study is about political news, it stands to reason that in the context of this study, prior knowledge refers to knowledge about politics.

H4: Participants with prior knowledge about political issues will perceive the news article to be more credible than those without political knowledge.

Previous literature also shows that prior knowledge of news increases reader interest because readers already have a foundation of information on which to build (Eilders, 2006). This interest leads them to perceive the material to be more newsworthy (Sallot, Steinfatt, & Salwen, 1998). Therefore, the following hypothesis is proposed.

H5: Participants with prior knowledge about political issues will perceive the news article to have more news value than those without political knowledge.

Gender

Studies that investigate the correlation of demographic variables and the perception of media credibility have consistently found that gender is a significant predictor (Johnson & Kaye, 1998; Johnson & Kaye, 2000; Perry et al., 2009; Robinson & Kohut, 1988). In a study about the interaction between media believability and a number of demographic variables, Robinson and Kohut (1988) found that gender was the most significant predictor of attitudes towards the press. The correlation was most powerful in network believability for which men were much more likely than women to be critical of the media. Ten years later, Johnson and Kaye (1998) found the same result. Gender was the only variable that was significantly related to credibility of all four online sources in the study, with women finding the Internet as more credible and trustworthy than men. Perry et al. (2009) found that gender played a role in how much TV ad quality and ad presence affected the participants' perceptions on TV news. The study found that women were significantly more likely to perceive news broadcasts as happy when shown with high-quality commercials as opposed to low-quality commercials. On the other hand, men reported higher levels of happiness when viewing news broadcasts alongside low-quality commercials. In the absence of advertisements, men perceived the news broadcasts to be more bold, strong, dark, and hard, whereas women perceived those broadcasts to be more timid, weak, light, and soft.

RQ1: Is there a difference between men's and women's perceptions of political bias, credibility and new value in news articles featuring political advertising?

Participants

The 144 participants in this study were students from a medium-sized southeastern public university. Participants were recruited primarily from courses in the communication and psychology departments. Any student under the age of 18 was excluded from the study. The study recruited 52 males and 92 females.

Participants were recruited using convenience sampling. The researchers relied on students who had access to an online survey data collection system to volunteer to participate in the survey. Students who volunteered their participation read an informed consent document online before beginning the study. Respondents were offered a minimal amount of extra credit for their participation.

RESEARCH DESIGN

The study was a randomized one-way (condition: conservative ads, liberal ads, nonpartisan ads) between-subjects design experiment.

The news article used as the stimulus for this study was an actual news article about the Electoral College. This article was used because the topic had the potential to be perceived as partisan. A class of undergraduate students rated the article for its potential bias. The rater's tool consisted of the first 10 items on the full questionnaire for this study. Statistical analyses showed the article was perceived by the raters as unbiased and was therefore appropriate for use in this study.

The political ads used for this study were created solely for purpose of this research. There were three sets of ads – conservative, liberal, and neutral. Each set comprised three ads with the following topics: the school system, the military, and voting. The three sets of ads created the three conditions: the article with conservative ads, the article with liberal ads, and the article with neutral ads. Every attempt was made to keep the overall look of the ads the same in the different conditions and altering only the message content and the ad sponsor.

The questionnaire collected information in the following categories: political affiliation, perceived political bias, article credibility, article news value, political knowledge, and gender. The survey results were recorded online.

To determine perceived political bias, the researchers adapted the news credibility scale developed by Arpan and Raney (2003). The 12 survey items asked respondents to rate the article, the reporter and the newspaper on bias. The article was rated on whether it was biased toward a political leaning, made a political leaning seem more or less likeable, or made a political leaning seem better or worse. The reporter and the newspaper were rated on whether they were biased toward a particular political leaning. Each item was measured on a 7-point Likert scale, ranging from -3 to +3. The first five questions asked about conservative leaning and were later combined into a single conservative bias scale. Cronbach's alpha was used to evaluate the reliability of all scales. The conservative bias scale was a reliable measure (α=.89). The next five questions asked about liberal leaning and were later combined into a single liberal bias scale (α=.89). The final two items asked whether the reporter and newspaper favored a political party and were scaled from 7 to 1, from Democrat to Republican. These two items were later merged to form a single party favor scale (α=.77).

To determine article credibility, the news credibility scale developed by Gaziano and McGrath (1986) was used. The scale asked participants to rank the article based on fairness, overall bias, completeness, accuracy, invasion of privacy, watching after reader interest, concern for community, separation of fact

and opinion, trustworthiness, concern for public interest, whether it was factual or opinionated, and whether the reporters appeared well-trained. The 12 items were measured on a 7-point Likert scale, numbered from 7 to 1. The second and fifth items were reverse-coded. The reliability coefficient for this scale was .90.

News value was measured using a scale adapted from D'Alessio (2003) and Sallot et al. (1998). The five items were measured using a 7-point Likert scale, numbered from 7 to 1. The items aimed to capture how participants perceived the article's interest to readers, usefulness, completeness, timeliness, and grammatical accuracy. The reliability coefficient for this scale was .73.

Political knowledge was determined by asking respondents whether they consider themselves up-to-date on political issues. The response format was a 7-point Likert scale, ranging from "I stay current" to "I do not consume political news at all." Respondents self-reported their gender as male or female.

Procedure

Data were collected via an online survey data collection system, featuring the three conditions. Participants self-selected into a condition without knowing which condition they were choosing. Participants were not told which condition they were in, and they were only allowed to participate in one condition for the study. Each of the three conditions was labeled as a different precious stone or metal (platinum, diamond, and gold) to disguise the nature of the study and the condition. Participants could take the survey in any location and at any time during the dates the study was available. The number of participants in each condition was comparable. There were 44 participants in the control group, 53 in the conservative ad condition, and 47 in the liberal ad condition.

After entering the survey by clicking a button ensuring their consent, participants read a balanced news article with three ads situated on the page. Participants were not instructed to note the ads but only to read the article and to answer the subsequent questions. Each participant saw the same article about the Electoral College with a banner ad above the article and two ads embedded in the text. The ads varied depending on the condition (conservative, liberal, or neutral). Participants were asked if they read the entire article and then instructed to proceed to the next page and enter the questionnaire. The survey was complete when participants had answered all the questions and exited the online survey.

RESULTS

The first set of hypotheses predicted that the experimental condition would affect bias toward the article. A series of one-way analyses of variance (ANOVA) was conducted to compare conservative bias, liberal bias, and party favor against which condition participants were in (See Table 1).

No significant difference was found among the participants in the three conditions with regard to their evaluations of conservative bias ($F(2, 141) = 0.94$, p=.39). Subsequent Tukey HSD and Bonferroni post-hoc tests also revealed no further significant differences among the variables. Thus, H1a was not supported. However, the data do show a trend. The liberal ad condition was rated less than the control group, which was rated less than the conservative ad condition on the conservative bias scale.

No significant difference was found among the participants in the three conditions with regard to their evaluations of liberal bias ($F(2, 141) = 1.75$, p=.18). Subsequent Tukey HSD and Bonferroni post-hoc tests also revealed no further significant differences among the variables. Thus, H1b was not supported.

Table 1. ANOVA Results

Hypothesis	Mean	Standard Deviation	F Value	p Value	N
H1a	-0.32	1.08	0.94	0.39	144
H1b	0.24	1.07	1.75	0.18	144
H1c	4.16	1.23	0.12	0.89	144
H2	4.15	0.93	0.05	0.95	144
H3	4.42	1.09	1.13	0.33	144

However, the data do show a trend. The conservative ad condition was rated less than the control group, which was rated less than the liberal ad condition on the liberal bias scale.

Participants in the three conditions did not significantly differ in their evaluation of party favor (F(2, 141) = 0.12, p=.89). Subsequent Tukey HSD and Bonferroni post-hoc tests also revealed no further significant differences among the variables. Thus, H1c was also not supported. However, the data do trend. Participants in the liberal ad condition rated the article as more biased toward the Democratic party than those in the conservative ad condition, and the control group's ratings are between the two other conditions.

The second and third hypotheses test a relationship between credibility or news value and condition. One-way ANOVAs were used to determine if there was an effect (See Table 1). No significant difference was found among participants in the three conditions with regard to the article's perceived credibility (F(2, 141) = 0.05, p=.95). Subsequent Tukey HSD and Bonferroni post-hoc tests also revealed no further significant differences among the variables. So H2 was not supported. However, there was a trend in that the control group rated the article as more credible than the other two conditions. Participants in the three conditions did not significantly differ in their evaluation of news value (F(2, 141) = 1.13, p=.33). Subsequent Tukey HSD and Bonferroni post-hoc tests also revealed no further significant differences among the variables. Therefore, H3 was not supported.

The final set of hypotheses predicted relationships between prior knowledge and credibility as well as prior knowledge and news value. A simple linear regression was calculated to determine if a significant correlation existed (See Table 2). For credibility as the dependent variable, the regression equation was not significant (F(1, 142) = 0.01, p=.94) with an R^2 of 0. A β of .01 shows a positive relationship. A participant's prior knowledge cannot be used to predict perceived credibility. H4 was not supported. However, for news value as the dependent variable, the regression equation was significant at the .05 level (F(1, 142) = 10.01, p=.002) with an R^2 of .07. A β of .26 shows a positive relationship. A participant's prior knowledge can be used to predict perceived news value. H5 was supported.

The research question in the study sought to explore the relationship between gender and a number of other variables. Independent-sample *t* tests were used to compare the mean scores of males and the mean scores of females on bias, credibility and news value (See Table 3).

No significant difference was found between the mean of females (*m* = -0.26, *sd* = 1.16) and the mean of males (*m* = -0.42, *sd* = 0.91) in relation to conservative bias (*t*(142) = .86, p=.39). However, the difference between the mean of females (m = 0.09, sd = 1.14) and the mean of males (m = 0.49, sd = 0.87) in relation to liberal bias were significant at the .05 level (t(142) = -2.17, p=.03). No significant difference was found between the mean of females (*m* = 4.13, *sd* = 1.31) and the mean of males (*m* = 4.20, *sd* = 1.10) in relation to party favor (*t*(142) = -0.33, p=.74). No significant difference was found

between the mean of females (*m* = 4.13, *sd* = 0.89) and the mean of males (*m* = 4.18, *sd* = 1.00) in relation to credibility (*t*(142) = -0.29, p=.77). However, there was significance at the 0.10 level between the mean of females (*m* = 4.30, *sd* = 1.08) and the mean of males (*m* = 4.63, *sd* = 1.09) in relation to news value (*t*(142) = -1.76, p=.08).

DISCUSSION AND CONCLUSION

This study sought to discover if political ads could serve as a prime for readers in evaluating the bias, credibility, and news value of an online news article and its source. The findings of this study suggest that political advertising does not serve as a prime for news readers in making decisions about the political bias, credibility, and news value of an article or news source. Participants in different conditions did not vary significantly on their perceptions of the article and source. Furthermore, the study sought to understand if political affiliation of participants affected their evaluation of news article. The findings of this study indicated no such effect. Participants' political affiliation and the political ad condition they were placed in did not interact to affect their perceptions on the news article's bias, credibility, and news value.

This finding has implications for political advertisers as well as online news sites. Little previous research has been conducted to determine whether online advertisements affect the perceptions of the content they are paired with. It is possible that consumers have become so accustomed to online ads that they do not even notice them. If people gloss over ads without attending to them, then priming cannot take place. In this case, advertisers might need to reevaluate their strategies toward the use of basic ban-

Table 2. Regression Results

Hypothesis	R Square	Beta	F Value	p Value	N
H4	0.00	0.01	0.01	0.94	144
H5	0.07	0.26	10.01	0.002	144

Table 3. RQ1: Gender

Dependent Variable	Gender	N	Mean	Standard Deviation	t Value	p Value
Conservative Bias	Female	92	-0.26	1.16	0.86	0.39
	Male	52	-0.42	0.91		
Liberal Bias	Female	92	0.09	1.14	2.17	0.03
	Male	52	0.49	0.87		
Party Favor	Female	92	4.13	1.31	-0.33	0.74
	Male	52	4.20	1.10		
Credibility	Female	92	4.13	0.89	-0.29	0.77
	Male	52	4.18	1.00		
News Value	Female	92	4.30	1.08	-1.76	0.08
	Male	52	4.63	1.09		

ner ads placed next to website content. It is also possible that news readers see the advertising, but that the ads do not prime ideas toward the other website content.

The level of prior political knowledge, however, was statistically significant. Participants who had a higher prior knowledge of politics placed a higher news value on the article than those with low prior knowledge. This means that those who already consume political news on a regular basis find more news value in articles than those who do not stay up to date. Newsrooms can expect consumers who regularly visit their sites to continue to find their content newsworthy.

This study also explored the influence of gender in online news perceptions. The study found that gender had an effect on perceived liberal bias. Men were more likely to see a liberal bias in the news article than women across all conditions. Therefore, these results could indicate that men in this study were more conservative overall and were therefore more likely to see a liberal bias in the media coverage. This corresponds with a finding in recent years that women are more likely to identify as Democrat than men (Newport, 2009). This has implications for conservative politicians who might need to change their advertising and marketing strategies to appeal to an increasingly liberal female demographic.

Results for the research question on gender also revealed that men were more likely to rate a news story higher on news value across all conditions. It is also possible that the name of a male reporter's byline cued readers to the news values present in the article. Studies show that male and female reporters emphasize different news values in articles (Grabe, Samson, Zelankauskiate, & Yegiyan, 2011; Kyung-Hee & Youngmin, 2009; Muramatsu, 1990). Readers might have seen a male reporter byline and assumed that the news values aligned with those of males. Men might also have felt a connection to the writer because of his gender, making them value his writing more (Guo, 2012). This finding has implications for newsrooms that might not realize that the writer's identity could influence readers' perceptions of the article.

REFERENCES

Abdulla, R. A., Garrison, B., Salwen, M., Driscoll, P., & Casey, D. (2002, August). *The credibility of newspapers, television news, and online news*. Paper presented at the meeting of Association for Education in Journalism and Mass Communication, Mass Communication and Society Division, Miami, FL.

Arceneaux, K., Johnson, M., & Murphy, C. (2012). Polarized political communication, oppositional media hostility, and selective exposure. *The Journal of Politics*, *74*(1), 174–186. doi:10.1017/S002238161100123X

Arpan, L. M., & Raney, A. A. (2003). An experimental investigation of news source and the hostile media effect. *Journalism & Mass Communication Quarterly*, *80*(2), 265–281. doi:10.1177/107769900308000203

Barthel, M., Mitchell, A., & Holcomb, J. (2016, December 15). *Many Americans Believe Fake News Is Sowing Confusion*. Retrieved October 29, 2019, from Pew Research Center's Journalism Project website: https://www.journalism.org/2016/12/15/many-americans-believe-fake-news-is-sowing-confusion/

Baum, M. A., & Groeling, T. (2008). New media and the polarization of American political discourse. *Political Communication*, *25*(4), 345–365. doi:10.1080/10584600802426965

Brenan, M. (2019, September 26). *Americans' Trust in Mass Media Edges Down to 41%*. Retrieved October 28, 2019, from Gallup.com website: https://news.gallup.com/poll/267047/americans-trust-mass-media-edges-down.aspx

Chaffey, D. (2019, September 10). *Average display advertising clickthrough rates*. Retrieved October 29, 2019, from Smart Insights website: https://www.smartinsights.com/Internet-advertising/Internet-advertising-analytics/display-advertising-clickthrough-rates/

Chang, C. (2003). Party bias in political-advertising processing. *Journal of Advertising*, *32*(2), 55–67. doi:10.1080/00913367.2003.10639129

Cho, C., & Cheon, H. J. (2004). Why do people avoid advertising on the Internet? *Journal of Advertising*, *33*(4), 89–97. doi:10.1080/00913367.2004.10639175

Choi, J. H., Watt, J. H., & Lynch, M. (2006). Perceptions of news credibility about the War in Iraq: Why war opponents perceived the Internet as the most credible medium. *Journal of Computer-Mediated Communication*, *12*(1), 209–229. doi:10.1111/j.1083-6101.2006.00322.x

Coe, K., Tewksbury, D., Bond, B. J., Drogos, K. L., Porter, R. W., Yahn, A., & Zhang, Y. (2008). Hostile news: Partisan use and perceptions of cable news programming. *Journal of Communication*, *58*(2), 201–219. doi:10.1111/j.1460-2466.2008.00381.x

Connell, M. (1997). New Ways to Reach Voters and Influence Public Opinion on the Internet. *Campaigns and Elections*, *18*, 64–68.

D'Alessio, D. (2003). An experimental examination of readers' perceptions of media bias. *Journalism & Mass Communication Quarterly*, *80*(2), 282–294. doi:10.1177/107769900308000204

Eastin, M. S. (2001). Credibility assessments of online health information: The effects of source expertise and knowledge of content. *Journal of Computer-Mediated Communication*, *6*(4), 0. Retrieved from http://jcmc.indiana.edu/vol6/issue4/eastin.html. doi:10.1111/j.1083-6101.2001.tb00126.x

eBizMBA. (2019, September 1). *Top 15 Most Popular News Websites | September 2019*. Retrieved October 28, 2019, from eBizMBA website: http://www.ebizmba.com/articles/news-websites

Eilders, C. (2006). News factors and news decisions: Theoretical and methodological advances in Germany. *Communications*, *31*(1), 5–24. doi:10.1515/COMMUN.2006.002

Fedeli, S., & Matsa, K. E. (2018, July 17). *Use of smartphones or tablets to get news grows again in 2017 in U.S.* Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2018/07/17/use-of-mobile-devices-for-news-continues-to-grow-outpacing-desktops-and-laptops/

Fico, F., Richardson, J. D., & Edwards, S. M. (2004). Influence of story structure on perceived story bias and news organization credibility. *Mass Communication & Society*, *7*(3), 301–318. doi:10.120715327825mcs0703_3

Fletcher, R., & Park, S. (2017). The Impact of Trust in the News Media on Online News Consumption and Participation. *Digital Journalism*, *5*(10), 1281–1299. doi:10.1080/21670811.2017.1279979

Fogg, B. J., Soohoo, C., Danielson, D. R., Marable, L., Stanford, J., & Tauber, E. R. (2003). How do users evaluate the credibility of web sites? A study with over 2,500 participants. *Proceedings of the Conference on Designing for user experiences*. doi:10.1145/997078.997097

Garrett, R. K. (2009). Echo chambers online?: Politically motivated selective exposure among Internet news users. *Journal of Computer-Mediated Communication*, *14*(2), 265–285. doi:10.1111/j.1083-6101.2009.01440.x

Gaziano, C., & McGrath, K. (1986). Measuring the concept of credibility. *The Journalism Quarterly*, *63*(3), 451–462. doi:10.1177/107769908606300301

Geiger, A. W. (2019, September 11). *Key findings about the online news landscape in America*. Retrieved October 29, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2019/09/11/key-findings-about-the-online-news-landscape-in-america/

Gottfried, J., & Shearer, E. (2017, September 7). *Americans' online news use is closing in on TV news use.* Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2017/09/07/americans-online-news-use-vs-tv-news-use/

Grabe, M. E., Samson, L., Zelankauskiate, A., & Yegiyan, N. (2011). Covering presidential election campaigns: Does reporter gender affect the work lives of correspondents and their reportage? *Journal of Broadcasting & Electronic Media*, *55*(3), 285–306. doi:10.1080/08838151.2011.597470

Greer, J. D. (2003). Evaluating the credibility of online information: A test of source and advertising influence. *Mass Communication & Society*, *6*(1), 11–28. doi:10.1207/S15327825MCS0601_3

Guo, Q. (2012). Perceptions of news value: A comparative research between China and the United States. *China Media Research*, *8*(2), 26–35.

Johnson, T. J., & Kaye, B. K. (1998). Cruising is believing? Comparing Internet and traditional sources on media credibility measures. *Journalism & Mass Communication Quarterly*, *75*(2), 325–340. doi:10.1177/107769909807500208

Johnson, T. J., & Kaye, B. K. (2000). Using is believing: The influence of reliance on the credibility of online political information among politically interested Internet users. *Journalism & Mass Communication Quarterly*, *77*(4), 865–879. doi:10.1177/107769900007700409

Kaid, L. L. (2002). Political advertising and information seeking: Comparing exposure via traditional and Internet channels. *Journal of Advertising*, *31*(1), 27–35. doi:10.1080/00913367.2002.10673658

Kalogeropoulos, A., & Fletcher, R. (2018, June 13). *In the U.S., the left trusts the mainstream media more than the right, and the gap is growing*. Retrieved October 28, 2019, from Nieman Lab website: https://www.niemanlab.org/2018/06/in-the-u-s-the-left-trusts-the-mainstream-media-more-than-the-right-and-the-gap-is-growing/

Kyung-Hee, K., & Youngmin, Y. (2009). The influence of journalists' gender on newspaper stories about women Cabinet members in South Korea. *Asian Journal of Communication*, *19*(3), 289–301. doi:10.1080/01292980903039004

Lee, C., Shin, J., & Hong, A. (2018). Does social media use really make people politically polarized? Direct and indirect effects of social media use on political polarization in South Korea. *Telematics and Informatics*, *35*(1), 245–254. doi:10.1016/j.tele.2017.11.005

McKinney, M. S., & Gaddie, K. C. (2000, November). *The medium and the message: TV vs. Internet viewing of a presidential primary debate*. Paper presented at the meeting of National Communication Association, Seattle, WA.

Messing, S., & Westwood, S. J. (2014). Selective exposure in the age of social media: Endorsements Trump Partisan source affiliation when selecting news online. *Communication Research*, *41*(8), 1042–1063. doi:10.1177/0093650212466406

Mitchelstein, E., & Boczkowski, P. J. (2009). Between tradition and change: A review of recent research on online news production. *Journalism*, *10*(5), 562–586. doi:10.1177/1464884909106533

Morris, J. S. (2007). Slanted objectivity? Perceived media bias, cable news exposure, and political attitudes. *Social Science Quarterly*, *88*(3), 707–728. doi:10.1111/j.1540-6237.2007.00479.x

Muramatsu, Y. (1990, August). *Of women, by women, for women? Toward new hopes for television in Japan*. Paper presented to the Conference of the International Association of Mass Communication Research, Bled, Yugoslavia.

Newman, N., Fletcher, R., Kalogeropoulos, A., Levy, D., & Nielsen, R. K. (2017). *Reuters Institute Digital News Report 2017* (SSRN Scholarly Paper No. ID 3026082). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=3026082

Newport, F. (2009, June 12). *Women more likely to be Democrats, regardless of age*. Retrieved from http://www.gallup.com/poll/120839/women-likely-democrats-regardless-age.aspx

O'Dell, J. (2011, March 14). *For the First Time, More People Get News Online Than From Newspapers*. Retrieved October 28, 2019, from Mashable website: https://mashable.com/2011/03/14/online-versus-newspaper-news/

Ognianova, E., & Endersby, J. (1996). Objectivity revisited: A spatial model of political ideology and mass communication. *Journalism and Mass Communication Monographs*, *159*, 1–36.

Pernice, K. (n.d.). *Banner Blindness Revisited: Users Dodge Ads on Mobile and Desktop*. Retrieved October 29, 2019, from Nielsen Norman Group website: https://www.nngroup.com/articles/banner-blindness-old-and-new-findings/

Perry, S. D., Jenzowsky, S. A., Hester, J. B., King, C. M., & Yi, H. (1997). The influence of commercial humor on program enjoyment and evaluation. *Journalism & Mass Communication Quarterly*, *74*(2), 388–399. doi:10.1177/107769909707400210

Perry, S. D., Trunnell, D., Ellis, C., & Kazoleas, D. (2009). Commercial quality influence on perceptions of television news. *Electronic News*, *3*(1), 32–51. doi:10.1080/19312430802631517

Pew Research Center. (2019a, June 12). *Internet/Broadband Fact Sheet*. Retrieved October 28, 2019, from Pew Research Center website: https://www.pewInternet.org/fact-sheet/Internet-broadband/

Rimmer, T., & Weaver, D. (1987). Different questions, different answers? Media use and media credibility. *The Journalism Quarterly*, *64*(1), 28–36. doi:10.1177/107769908706400104

Robinson, M. J., & Kohut, A. (1988). Believability and the press. *Public Opinion Quarterly*, *52*(2), 174–189. doi:10.1086/269093

Roskos-Ewoldsen, D. R., Roskos-Ewoldsen, B., & Carpentier, F. D. (2009). Media priming: An updated synthesis. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 74–93). New York, NY: Routledge.

Saba, J. (2010). Web gets sticky. *Editor & Publisher*, *143*(1), 18–22.

Sallot, L. M., Steinfatt, T. M., & Salwen, M. B. (1998). Journalists' and public relations practitioners' news values: Perceptions and cross-perceptions. *Journalism & Mass Communication Quarterly*, *75*(2), 366–377. doi:10.1177/107769909807500211

Schmitt, B. H. (1994). Contextual priming of visual information in advertisements. *Psychology and Marketing*, *11*(1), 1–14. doi:10.1002/mar.4220110103

Shearer, E. (2018, December 10). *Social media outpaces print newspapers in the U.S. as a news source.* Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2018/12/10/social-media-outpaces-print-newspapers-in-the-u-s-as-a-news-source/

Singer, J. B. (2003). Who are these guys? The online challenge to the notion of journalism professionalism. *Journalism*, *4*, 139–163.

Slater, M. D., & Rouner, D. (1996). How message evaluation and source attributes may influence credibility assessment and belief change. *Journalism & Mass Communication Quarterly*, *73*(4), 974–991. doi:10.1177/107769909607300415

Smith, A., & Duggan, M. (2012). *Online Political Videos and Campaign 2012* (Pew Research Center Report). Retrieved from Pew Internet & American Life Project website: http://pewInternet.org/~/media//Files/Reports/2012/PIP_State_of_the_2012_race_online_video_final.pdf

Sundar, S. S. (1999). Exploring receivers' criteria for perception of print and online news. *Journalism & Mass Communication Quarterly*, *76*(2), 373–386. doi:10.1177/107769909907600213

Tucker, J. A., Guess, A., Barbera, P., Vaccari, C., Siegel, A., Sanovich, S,. Stukal, D., & Nyhan, B. (2018). Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature. *SSRN*. doi:10.2139srn.3144139

Volovich, K. (2019). *What's a Good Clickthrough Rate? New Benchmark Data for Google AdWords.* Retrieved October 29, 2019, from HubSpot website: https://blog.hubspot.com/agency/google-adwords-benchmark-data

Wasserman, T. (2011, August 19). *Google: Click-Through Rates Fell in 2010* [STUDY]. Retrieved October 29, 2019, from Mashable website: https://mashable.com/2011/08/19/google-click-through-rates-fell-in-2010-study/

Yang, H., & Oliver, M. B. (2004). Exploring the effects of online advertising on readers' perceptions of online news. *Journalism & Mass Communication Quarterly*, *81*(4), 733–749. doi:10.1177/107769900408100402

Yi, Y. (1990a). Cognitive and affective priming effects of the context for print advertisements. *Journal of Advertising*, *19*(2), 40–48. doi:10.1080/00913367.1990.10673186

Yi, Y. (1990b). The effects of contextual priming in print advertisements. *The Journal of Consumer Research*, *17*(2), 215–222. doi:10.1086/208551

ADDITIONAL READING

Baumgartner, S. E., & Wirth, W. (2012). Affective priming during the processing of news articles. *Media Psychology*, *15*(1), 1–18. doi:10.1080/15213269.2011.648535

Boyle, T. P. (2004). Presidential priming: Incumbent and challenger advertising. *Atlantic Journal of Communication*, *12*(4), 200–215. doi:10.120715456889ajc1204_2

Iversen, M. H., & Knudsen, E. (2019). When politicians go native: The consequences of political native advertising for citizens' trust in news. *Journalism*, *20*(7), 961–978. doi:10.1177/1464884916688289

Nyilasy, G., King, K. W., Reid, L. N., & McDonald, S. C. (2011). Checking the pulse of print media: Fifty years of newspaper and magazine advertising research. *Journal of Advertising Research, 51*(1 50th Anniversary Supplement), 167–181.

Roskos-Ewoldsen, D. R., Klinger, M. R., & Roskos-Ewoldsen, B. (2007). Media priming: A meta-analysis. *Mass Media Effects Research: Advances through Meta-Analysis*, 53–80.

Valenzuela, S. (2009). Variations in media priming: The moderating role of knowledge, interest, news attention, and discussion. *Journalism & Mass Communication Quarterly*, *86*(4), 756–774. doi:10.1177/107769900908600403

Willnat, L. (1997). Agenda setting and priming: Conceptual links and differences. *Communication and Democracy: Exploring the Intellectual Frontiers in Agenda-Setting Theory*, 51–66.

Wu, M., Huang, Y., Li, R., Bortree, D. S., Yang, F., Xiao, A., & Wang, R. (2016). A tale of two sources in native advertising: Examining the effects of source credibility and priming on content, organizations, and media evaluations. *The American Behavioral Scientist*, *60*(12), 1492–1509. doi:10.1177/0002764216660139

KEY TERMS AND DEFINITIONS

Banner Advertisement: Online advertisements that stretch across the top, middle, or sides of a website.
Media Priming: Priming that takes place by way of media images or information.
News Bias: A measure of how ideologically slanted a piece of news appears to be to an audience.
News Credibility: A measure of how trustworthy and believable a piece of news appears to be to an audience.

News Value: A measure of how useful, timely, and complete a piece of news appears to be to an audience.

Political Affiliation: The ideologies a person subscribes to, often aligned with political parties.

Political Knowledge: A measure of how much one knows about politics and how current their information is on the matter.

Priming: An effect that occurs in the brain by which stimuli can access related memories or mental imagery and thereby trigger a response to later stimuli, often unconsciously.

Section 3

National Laws and Organizational Policies: How to Ensure Consequences of Deliberately Disseminating Fake News, Alternate Facts, and Misinformation

Chapter 9
Brazilian Policy and Actions to Fight Against Fake News:
A Discussion Focused on Critical Literacy

Selma Leticia Capinzaiki Ottonicar

https://orcid.org/0000-0001-6330-3904

Sao Paulo State University, Brazil

ABSTRACT

Fake news has influenced politics, economy, and society in Brazil. Because of that, some people have developed actions to fight against fake news and disseminate its consequences to people. In order to fight against fake news, individuals need critical literacy to verify the trustfulness of information sources. This chapter has three purposes: It intends to discuss the state of the art of scientific studies of fake news in Brazil. It aims to do documentary research to describe the policies and actions that were created to inform the population about the consequences of fake news. And it aims to show critical literacy concepts and the application of Brazilian standards and indicators of information and media literacy. The methodology is based on documentary research and a systematic literature review. The results demonstrate the journalistic, scientific, and political actions to fight against fake news.

INTRODUCTION

Fake news has impacted many peoples' lives, especially people who are connected to social media. Various companies have been hired by organizations to disseminate fake news. A major factor facilitating the spread of fake news is the high level of confidence that people have in information they receive through social media, since they do not always search for information in the news media. Fake news is dangerous to many aspects of contemporary life (Cooke, 2017). Individuals may believe it and change their behaviour accordingly.

Fake news has generated debates in various fields of knowledge, including Information Science, Journalism, Law, Medicine, Political Science, and Business Management. Fake news in Brazil has cre-

ated new risks in politics and for public health. It affects not only those with no formal education, but also those who are highly educated. The challenge facing researchers is to find ways to combat it.

Furthermore, fake news is not only a problem for developing countries such as Brazil, but also for developed countries such as the United States and the United Kingdom. Why do nations with a high level of investment in education still suffer from fake news? Twenty-first century researchers are grappling with this question. Fake news is known to the majority of those who are involved in partisan politics. Political parties around the world use it to smear rival candidates using manipulative and false information (Kellner, 2018; Toynbee, 2019).

Certain candidates have used fake news strategically, in an unethical way, and have succeeded in winning elections. This phenomenon has been remarked upon by various news media organizations, and it is worrisome to them. The aim of this chapter is to present other consequences of fake news outside the realm of politics, such as crimes against healthcare workers and, tragically, even murders of innocent people.

Individuals possess the ability to think critically (Cooke, 2017; Alvermann, 2017; Craig & Wiebe, 2018), and there is a body of studies suggesting that they have their own personal, social, and cultural motivations which lead them to value good-quality information (Cooke, 2017). Media literacy is also fundamental to help students to access and analyze information in an ethical way (Frechette, 2019; Kellner & Share, 2019). Based on those considerations, this proposed book chapter has two purposes:

1. To discuss the state of the art of scientific studies of fake news in Brazil.
2. To conduct documentary research to describe some of the policies and actions that have been implemented to inform the population about the consequences of fake news.

In this chapter, critical literacy is understood as one of several theories about information and media literacy. Critical literacy concepts are based on Paulo Freire's ideas. Paulo Freire is well-known throughout the world for changing our understanding of education. He is the author of Pedagogy of the Oppressed, a book that has changed the relationship between teachers and students. Freire implemented many literacy courses for poor people. The focus of his work was on reducing social inequality by improving access to education.

This theme is relevant to Brazil, since the country is one of the pioneers of critical literacy. Furthermore, this chapter demonstrates how critical literacy is understood in Brazil. This chapter is innovative, since few studies to date have used documentary research to explain fake news in the Brazilian context. Further, the Brazilian educational system needs initiatives to develop critical literacy, so this chapter emphasizes the relevance of critical literacy to citizenship.

The chapter's methodology includes a systematic literature review of Brazilian scientific databases. These databases are interdisciplinary; they include subjects studied in Brazil in many fields of research. BRAPCI covers Information Science journals in Brazil, while SciELO is an electronic library with subscriptions to journals in all branches of science (social sciences, natural sciences, applied sciences, etc.) Furthermore, this chapter also uses the documentary research method to demonstrate possible consequences of fake news for Brazilian society and to describe government actions and public policy intended to address this challenge. The chapter's focus on public policy intends to make people more aware of the consequences of fake news and to encourage the teaching of critical literacy in schools.

This chapter is interdisciplinary because it demonstrates the implications of fake news to the fields of Information Science, Education, Public Policy, Health and Journalism. It is fundamental to understand the role of critical literacy to society. Critical literacy helps citizens to become critical thinkers (Brisola

& Romeiro, 2018) in many contexts. Furthermore, it influences ethical and critical knowledge. Therefore, the audience of this chapter is professional educators in the elementary and high school contexts, librarians, university students, and business managers.

This chapter is structured as follows: first, it defines critical literacy and addresses some of the history of this concept. Second, it introduces historical, political, and social aspects that involve fake news. Third, it includes a bibliographic review of research on social media in the context of fake news. Fourth, it describes the methodological procedures, including a systematic literature review and documentary research. The steps of the research methodology are presented in detail. Fifth, the results section discusses journalistic, scientific, and political actions to counter fake news. This section also discusses how critical literacy has been researched in Brazil, as well as this pedagogy's importance to minimizing the spread of fake news. Finally, the chapter concludes with a discussion of the problems of fake news and solutions adopted in the Brazilian context.

BACKGROUND

Critical Literacy

The concept of critical literacy has been developed drawing on Paulo Freire's ideas in his book Pedagogy of the Oppressed. In this book, Freire (1968) explains that critical thinking is fundamental to individuals. Individuals can free themselves from the oppression of powerful actors in society. Powerful actors include members of governments and large companies.

Freire (1968) criticizes social inequality and oppression. He advocates critical literacy as a form of smart learning that helps individuals achieve freedom from oppression and develop the ability to criticize current social systems. According to Freire, education must therefore be a major focus of society, so that individuals can become critical throughout their lives. According to Vasquez (2017), Freire emphasized the critical consciousness of students. He popularized the idea that learning is not only about decoding words, but is also about interpreting information.

Critical literacy considers the unequal power relations between social classes in society and addresses topics such as equity and social justice. Educators need to understand that sometimes multilingual children are treated unjustly because of their different skills (Vasquez, 2017). In addition, schools should encourage teaching about political topics. Fake news has been shared especially during election campaigns, so students need to become critical thinkers to interpret it.

There is a considerable body of research on the methods and materials that can be used in the classroom to improve students' critical thinking (Luke, 2018). This kind of research helps students to practice critical literacy and to think critically based on their analysis. Further, fake news and alternative facts are popular topics in online contexts. These challenges can be mitigated by information and media literacy (Budd & Stewart, 2018).

Fake News and Social Media

Even before the Internet, there were many strategies to disseminate gossip and lies about targets. There are sources that prove that this was a common practice during turbulent times in history, such as the French Revolution, for example. Today, the Web makes these unethical practices easier thanks to the

quantity, speed, and variety of information available. Big Data technology accelerates the dissemination of fake news (Santos, 2019). The speed of fake news' spread is a challenge to researchers, journalists, and other stakeholders.

Fake news has become a topic of much discussion in recent years. It can be defined as a "truth" created to benefit some organizations (Vitorino & Renault, 2019). The content of fake news is often based on quality news. Fake news creators use the same language and structure of real or traditional news, so that they are difficult to distinguish. Fake news producers normally address topics about politics, culture, society, or a location (Fante, Silva, & Graça, 2019).

Fake news manipulates reality and spreads lies about a given topic. Junk news is a subcategory of fake news which exaggerates information to inflate the value of someone or of an organization (Fante, Silva, & Graça, 2019). According to Budd and Stewart (2018), social media makes the dissemination of fake news easier, by spreading the ideas of people who otherwise would not have been heard, which can be both positive and negative.

Social media are networks in which every user has a personal profile. People share news, text, images, and information with their contacts. Individuals can also participate in discussion groups about celebrities, job opportunities, and so on. In these media platforms, anyone can produce and share information according to their opinions. Examples of social media include Facebook, Twitter, Instagram, Whatsapp, Snap Chat, and YouTube. Some people have even become famous because the content they share attracts many followers, leading those users to become digital influencers. Digital influencers influence the behavior of others, so some companies partner with them as a marketing strategy.

Fake news is shared by some groups or organizations to damage a target's image or to influence people's ideas and behavior. Fake news producers use images, photos, or videos and disseminate this content via social media groups. Further, some companies have hired these unethical professionals to share fake news online.

Politicians in many countries are also involved with fake news. Fake news has influenced citizens' votes and public decision-making. The consequences for people are complicated; the influence of fake news can touch upon issues of ethics, interpretation, and freedom of expression. Because of this, individuals must be critically literate to face misinformation and fight against manipulation.

The fight against fake news is one of the missions of Information Science, since we all need to access quality information. Individuals should consider and be prepared to interpret the intentions of a text; the author's identity and ideology; and the interests or influence of powerful groups. Likewise, fake news is a problem for some newspapers in Brazil. Critical literacy must therefore be included in every level of education. Therefore, Information Science can make valuable contributions to research, teaching, and practice in that country.

Fante, Silva and Graça (2019) do not consider fake news as news, since it is unethical and exaggerates, contains double meanings, and disconnects society from journalistic information sources. Furthermore, fake news inverts real facts and impersonates public and other figures. It does not care about quality and has no commitment to the public.

METHODOLOGY

The methodology of the research reported in this chapter is based on a systematic literature review (SLR) and documentary research. The steps in this methodology are presented in detail below (Figure 1).

The SLR was focused on the connection between critical literacy and fake news, specifically in the Brazilian context. This review was conducted using two scientific databases, BRAPCI and SciELO, to identify how Brazilian authors have addressed both of these topics. The SLR is a transparent method, which can be reproduced by other researchers.

The SLR included every year because both critical literacy and fake news are current topics in academia. The search keywords used were critical literacy and fake news. We first analyzed the titles, keywords, and abstracts of papers. Afterwards, relevant papers were selected to be read completely. The ideas of the selected authors were used in the discussions and results in this chapter.

The keywords of the SLR were "fake news AND critical literacy" and "misinformation AND critical literacy." Both of these terms were combined to retrieve the papers included. The major challenge was to retrieve papers from SciELO, because the database did not show a single paper with the keywords in advanced research. Therefore, the paper search was conducted with the keywords individually to retrieve every paper published on the topic.

After the SLR, we conducted documentary research on newspaper websites which are considered to be quality information sources in Brazil. Furthermore, we researched actions and policies implemented to combat fake news in Brazil. The documentary research is focused on Brazilian newspapers, magazines and government organizations such as *Globo, Folha de São Paulo, Estadão, Superinteressante, Carta Capital, Correio Braziliense, Tribunal Superior Eleitoral* (Superior Electoral Court) and BBC Brazil.

RESULTS

The results were based on a search for critical literacy and fake news together in BRAPCI and SciELO. BRAPCI and SciELO are databases of Brazilian journals. They were chosen for the research in this chapter because of their focus on the Brazilian context. Table 1 shows the quantity of papers retrieved.

BRAPCI has 12 papers that discuss the topic. This result suggests that there is not a lot of prior research about critical literacy and fake news in Information Science in Brazil. SciELO, which is an international database, also showed that there are only a few papers on this topic (12 papers). The search for relevant papers considered every year and every type of bibliographic information.

Figure 1. Methodology of the Book Chapter
Source: (Ottonicar, 2020)
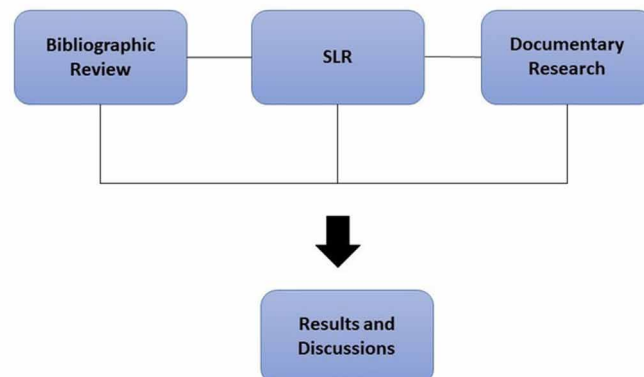
Table 1. Quantity of Papers Retrieved

Database	Retrieved Papers	Analyzed Papers
BRAPCI	12	8
SciELO	12	8

Source: (Ottonicar, 2020)

The Boolean combination critical literacy AND fake news showed zero papers at SciELO. Because of that, we decided to search for these topics separately. Table 2 illustrates the title, authors, and purpose of those papers. A total of sixteen (16) papers were read in their entirety.

In one of the retrieved papers, there is an interesting discussion of fake news and lies. Heuer (2019) explains that lying is not a new phenomenon in society. Humans have lied for many years in order to facilitate political and social life. Individuals lie about 200 times per day. Fake news is part of this lying behavior to manipulate people. Another problem of fake news is that it tends to spread and to remain within a group which has the same ideological worldview, especially in the political context. Because of this, people do not access different information. This creates an artificial perception of consensus about a topic. This phenomenon is affecting Brazilian democracy, especially during elections (Recuero & Gruzd, 2019).

Valverde (2019) argues that there is no gender equality in capitalism, since most politicians are male, so women do not participate as much in politics. Because of that, there is no ethical equality between people (Valverde, 2019), including in Brazil. Fake news also humiliates women in political positions, so they look "dumb" to become a politician. Another thing that facilitates fake news is photos, which are often shared, and which can be easily manipulated. This context has increased virtual crimes, so forensic policy needs to solve these problems (Ferreira et. al., 2019).

Media platforms need to create a digital archive to show examples of fake news to society, especially during elections (Magallon Rosa, 2019). Such digital archiving and news could improve the public image of newspapers or magazines providing this service. Individuals would likely see them as a quality information source, so that the newspaper and its journalists would become more credible (Eichler, Kalsing, & Gruszynsky, 2018).

In addition to concerns about the credibility of newspapers and magazines, people also need to become digitally literate and able to criticize information intelligently and to value digital platforms that denounce or debunk fake news (Pangrazio, 2018). Digital literacy should be addressed in journalists' education so that they can verify information accuracy. The Netherlands has a high level of education; however, fake news still has influenced people there (Vergeer, 2018).

Information literacy helps to guide people in identifying fake news. Furthermore, it contributes to understanding citizenship rights. Citizenship rights are connected to privacy and security (Maia et. al, 2018, Sampaio, Lima & Oliveira, 2018). Critical literacy is a useful tool to address information problems, and it is also capable of transforming individuals (Oliveira & Souza, 2018).

Information literacy is useful to fight against fake news about the LGBT community. These critical abilities are based on international recommendations (Sampaio, Lima & Oliveira, 2018). Furthermore, fake news discussions can also lead to the creation of mechanisms of censorship. Abilities such as critical thinking and ethical use of information can help to interpret fake news issues. Critical thinking and ethics are part of critical literacy conception and use in society (Brisola & Bezerra, 2018).

Table 2. Analyzed Papers

Paper	Objectives	Database
Heuer, W. (2019). Las tentaciones de la mentira. *Universitas Philosophica, 36*(72), 53-70. https://dx.doi.org/10.11144/javeriana.uph36-72.tdlm	According to Heuer (2019) lies are not a new phenomenon used by humans. This paper draws on Arendt's ideas and explains political and social aspects of post-truth. This paper takes a philosophical approach to the problem of fake news in society.	SciELO
Recuero, Raquel, & Gruzd, Anatoliy. (2019). Cascatas de Fake News Políticas: um estudo de caso no Twitter. *Galáxia (São Paulo)*, (41), 31-47. Epub May 23, 2019. https://dx.doi.org/10.1590/1982-25542019239035	Recuero and Gruzd (2019) develop a case study on Twitter because it is a tool used by some Brazilian politicians to get more votes. The authors explain that fake news is shared by a small number of users. Therefore, fake news may be limited to an ideological cluster in social media.	SciELO
Valverde, M. (2019). Confesión y autenticidad en el discurso populista de hoy. *CS*, (27), 143-165. https://dx.doi.org/10.18046/recs.i27.3435	According to Valverde (2019) some politicians are focused on extreme right and left populism. The paper uses Adorno's and Foucault's ideas to explain the content of information, which is shared by those politicians. The author concludes that gender inequality in politics is an ethical breach because women are not adequately represented. Political women tend to be more cosmopolitan when compared to man.	SciELO
Ferreira, A., Carvalho, T., Andaló, F. & Rocha, A. (2019). Counteracting the contemporaneous proliferation of digital forgeries and fake news. *Anais da Academia Brasileira de Ciências, 91*(Suppl. 1), e20180149. Epub February 14, 2019.https://dx.doi.org/10.1590/0001-3765201820180149	Society has a responsibility to fight against fake news. Because of this, scientists have studied digital forensics, especially to analyze pictures. This paper demonstrates that pictures are manipulated and that technology can help to find those lies (Ferreira et al., 2019).	SciELO
Magallón Rosa, R. (2019). Verificado México 2018: Desinformación y fact-checking en campaña electoral. *Revista de Comunicación, 18*(1), 234-258. https://dx.doi.org/10.26441/RC18.1-2019-A12	Fake news is also used as a tool to win elections in Mexico. Because of that, professionals have created a project called *VerificadoMX* . A group of experts worked on this project to identify fake news on Twitter. The paper explains that this kind of project needs to be regulated to avoid compromising the content of political information. Government regulation cannot interfere in the content, but can affect how information is shared. Therefore, the government does not influence freedom of speech (Megallón Rosa, 2019).	SciELO
Pangrazio, L. (2018). What's new about 'fake news'? Critical digital literacy in an era of fake news, post-truth and clickbait. *Páginas de Educación, 11*(1), 6-22. https://dx.doi.org/10.22235/pe.v11i1.1551	The author explains that Facebook scandals have increased popular concern about fake news and users' data dissemination. Digital literacy contributes to learning about the process of creation and dissemination of fake news (Pangrazio, 2018, p. 6).	SciELO
Eichler, Vivian Augustin, Kalsing, Janaína, & Gruszynskig, Ana. (2018). O ethos do jornal O Globo e a campanha contra as fake news. *Media & Jornalismo, 18*(32), 139-154. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S2183-54622018000100011&lng=pt&tlng=pt.	The paper examines a newspaper's actions to fight against fake news. The *O Globo* newspaper created a campaign called "*O Globo, conteúdo que você confia e compartilha*" (The *Globo*, a content that you share and trust). This campaign reinforced the image of the newspaper to readers. The focus is on showing the commitment of O Globo to the truth (Eichler, Kalsing & Gruszynsky, 2018, p. 139).	SciELO
Vergeer, M. (2018). Incorrect, fake, and false. Journalists' perceived online source credibility and verification behaviour. *Observatorio (OBS*)*, *12*(1), 37-52. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S1646-59542018000100003&lng=pt&tlng=en .	Vergeer (2018) identifies how journalists evaluate the truthfulness of information. The perception of information credibility and behaviour are not influenced by journalists' education. Education helps journalists to understand that political information online can be uncertain. Primary and secondary schools are more likely to help people to evaluate information than post-secondary education (Vergeer, 2018, p. 37).	SciELO
Maia, c. M.; Furnival, a. C.; martinez, V. C. A (2018). Competência informacional e fake news: uma reflexão sob a perspectiva do marco civil da Internet e de ignacio ramonet. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/103726>.	This paper demonstrates the relevance of information literacy to online information use. Furthermore, it discusses the rights of citizens related to information use. This paper is the result of an ongoing Ph.D. thesis, and it was published as a poster (Maia, Furnival & Martinez, 2018).	BRAPCI
Oliveira, M. L. P.; Souza, E. D. (2018). A competência crítica em informação no contexto das fake news: os desafios do sujeito informacional no ciberespaço. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/102566>.	This paper explains the concepts and characteristics of fake news that can trick information literate people. The authors explain that information literacy indicators cannot be a standard to research, since people live in specific contexts. This paper is the result of the author's Ph.D. thesis (Oliveira & Souza 2018).	BRAPCI
Sampaio, D. B.; Lima, I. F.; Oliveira, H. P. C. (2018). Estratégias fact-checking no combate à fake news: análises informacional e tecnológica no e-farsas e boatos.org. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/103103>.	This paper focuses on fake news about a Brazilian drag queen known as Pablo Vittar on two websites, Boatos.org e E-farsas. This type of fake news represents an example of homophobia in the country. (Sampaio, Lima & Oliveira, 2018).	BRAPCI
Brisola, A.; Bezerra, A. C. (2018) Desinformação e circulação de "fake news": distinções, diagnóstico e reação. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/102819>.	This paper identifies aspects of fake news and disinformation. The authors define fake news and disinformation as different concepts. The conclusions suggest that critical literacy can help people to deal with fake news in a creative way (Brisola & Bezerra, 2018).	BRAPCI
Oliveira, S. M. P. (2018). Disseminação da informação na era das fake news. Múltiplos Olhares em Ciência da Informação, n. Especial EREBD. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/106362>.	The authors study the concepts of information literacy, misinformation, and post-truth. Furthermore, the paper discusses the role of information professionals in this context. The author points to several examples of fake news in society and argues that the mission of an information professional is to facilitate digital inclusion (Oliveira, 2018).	BRAPCI
Ribeiro, B. C. M. S.; Franco, I. M.; Soares, C. C. (2018). Competência em informação: as fake news no contexto da vacinação. Múltiplos Olhares em Ciência da Informação, n. Especial EREBD, Disponível em: <http://hdl.handle.net/20.500.11959/brapci/106451>.	Ribeiro, Franco and Soares (2018) approach fake news in the health context. They analyze the understanding of health professionals about fake news for vaccines. Furthermore, the authors explain that the lower rate of vaccination is connected to the increase in fake news.	BRAPCI

Table 2. Continued

Paper	Objectives	Database
Moura, A. R. P.; Furtado, R. L.; Belluzzo, R. C. B. (2019). Desinformação e competência em informação: discussões e possibilidades na arquivologia. Ciência da Informação em Revista, v. 6, n. 1, p. 37-57, 2019. DOI: 10.28998/cirev.2019v6n1c	The paper studies misinformation and information literacy in the context of archiving. This research is theoretical and applicable to the Brazilian context. There is a gap in the literature about fake news and archiving. Because of this gap, the authors argue that their paper is an innovative contribution to the field of archiving (Moura, Furtado & Belluzzo, 2019, p. 37).	BRAPCI
Brisola, A. C.; Romeiro, N. L. (2018). A competência crítica em informação como resistência: uma análise sobre o uso da informação na atualidade. Revista Brasileira de Biblioteconomia e Documentação, v. 14, n. 3, p. 68-87, 2018. Disponível em: <http://hdl.handle.net/20.500.11959/brapci/100164>	Brisola and Romeiro (2018) explain the connection between critical literacy and ethics. Critical literacy is considered fundamental to ethical citizenship. Librarians can contribute to teaching and instilling this literacy in the library context.	BRAPCI

Source: (Ottonicar, 2020)

Librarians are important professionals in the context of fake news, since they must work with information. They can disseminate the relevance of fighting against fake news to their social circle (Oliveira, 2018). Information professionals can create social projects to disseminate the consequences of fake news to the community. According to Moura, Furtado and Belluzzo (2019), fake news also affects the archiving field, so archivists must be information literate to organize and evaluate documentary information.

In the context of health, information literacy is crucial to combat lies about medication and vaccines. Clinics and doctors can use social media to share the importance of medical research (Ribeiro, Franco, & Soares, 2018). Ethics should be a central topic in discussions of critical literacy. Citizens need to understand the intentions of advertisements and the social and political relations of power in society (Brisola & Romeiro, 2018).

Brazilian magazines and newspapers have tried to alert people to the consequences of fake news. Some journalists work hard to spread information about the consequences of fake news and their danger to society. The most prominent concerns about fake news are related to politics. Recently, many journalists have denounced political candidates who used fake news and lied to citizens to get votes. Table 3 shows the main national media and their actions to fight against fake news in Brazil.

Beyond those initiatives, Brazilian politicians created the *Comissão Parlamentar de Inquérito* (CPI), a commission to investigate politicians who used fake news to win the 2018 elections. The legislative branch is responsible for these investigations, which involves the Chamber of Senators. The purpose of the CPI is to investigate the involvement of companies that produced fake news during the 2018 presidential elections. This CPI was created in 2019 by deputies and senators.

Those initiatives are a result of popular and media pressure to fight against fake news in Brazilian politics. Fake news shared on social media such as Facebook and Whatsapp have influenced the elections in many countries. Beyond the political context, fake news is dangerous to the economy as well. Some businesses have shared fake news about competitors or about their own organizations as part of a marketing strategy.

Some entrepreneurs use unethical approaches to compete, which as a negative impact on the economy. They share lies about new products or services that are provided by the business, so that other entrepreneurs feel inferior. Furthermore, fake news has influenced society as well. Some groups shared misleading or fraudulent news about vaccines and encouraged parents not to vaccinate their children. Because of that, child mortality increased in the country in 2019. Brazil's Ministry of Health created a social program to fight against fake news called "*Saúde sem Fake News*"[8] (Health without Fake News) to fight against these issues.

Another case was the murder of Fabiane Maria de Jesus. Someone spread fake news in social media about a woman who was stealing children to use them in a witchcraft ritual. One day, Fabiane was walk-

Table 3. Actions to fight against fake news in Brazil

Name of the Media	Type	Actions
"G1 – Fato ou Fake" Globo News[1]	Online Newspaper	The webpage of G1 was created to denounce fake news which is shared by social media. They confirm if the information is true or false.
Folha de São Paulo[2]	Online and print newspaper	Shares news about the impact of fake news in Brazil and government actions to fight against it.
Estadão Verifica - Jornal Estadão[3]	Online and print newspaper	This newspaper created a means of communication with readers. People who receive fake news by Whatsapp app can forward it to Estadão Whatsapp so journalists can verify the truthfulness of the information.
Beyond Fake News Conference - BBC Brazil [4]	Online newspaper	BBC has developed workshops to debate fake news issues and the importance of critical thinking to society. Furthermore, BBC shares some news to demonstrate the consequences of fake news in Brazil.
Superinteressante[5]	Magazine	Superinteressante shares information about how to identify fake news, especially news disseminated through Whatsapp.
Tribunal Superior Eleitoral (TSE)[6]	Online page of the Superior Electoral Court	The Superior Electoral Court is a court that manages elections in Brazil. The TSE realized that fake news can adversely impact elections, so they decided to investigate the influence of misinformation during elections. They also created conferences to share and debate these issues with society.
Carta Capital[7]	Print magazine	Carta Capital disseminates which news is false in economic, social and political context. Furthermore, this magazine shares international information in critical perspective.
Correio Braziliense	Newspaper	Correio Braziliense is a newspaper that shares information about fake news, especially in the political context. This newspaper is situated in Brasilia, where the Chamber of Deputies and the Senate are located.

Source: (Ottonicar, 2020)

ing on the street and gave a banana to a child. When some people saw that, they got scared and thought she was "the bad witch," so they beat Fabiane to death[9]. The fake news shared about the child-stealing witch made people imagine that Fabiana was that person.

Fake news encourages hate and influences people's behavior, so they may believe in gossip and even commit murder. Individuals' lives are at risk because of lies. Because of that, Brazilians need to make effective decision-making throughout their lives; this means they must access quality information. Critical literacy is crucial so that Brazilians know how to evaluate the content and sources of information. We

need to pay attention to the ideology and intentions hidden behind information. Furthermore, individuals must investigate information and not panic at the drop of a hat.

SOLUTIONS AND RECOMMENDATIONS

As a solution, some countries have used information literacy standards and indicators to guide the school curriculum. These standards can be applied to develop critically literate students. Critical literacy is another way to fight against fake news, so media and political efforts are also relevant.

The ACRL (2015), Lau (2007) and Bundy (2004) have contributed to the development of information literacy standards. In Brazil, academics use the ones created by Belluzzo (2007). In this book chapter, Belluzzo's standards (2007) were adapted to promote critical literacy in the country. Table 4 shows these steps.

Belluzzo's standards (2007) are based on five main steps:

1. Information need.
2. Information access.
3. Information evaluation.
4. Information use.
5. Understanding of context.

Figure 2 below illustrates how these standards work together to support people in developing their critical thinking. The goal is to better understand economic, political, social, and cultural contexts.

The first standard addresses the moment when individuals identify information needs. They may feel anxiety which makes them realize they need more information to make a decision or solve a problem. The second standard addresses information access, which occurs when individuals access information in a variety of formats. Individuals can search for information online, in books or documents, and with other people.

The third standard is fundamental because it guides individuals to evaluate information sources and their content. This step helps people to evaluate the quality of information, which is relevant to the fight against fake news. Standard 3 was illustrated in the middle of the circle, since it is key for the purposes of this chapter.

The fourth step is related to information use, which is the purpose of information access. Information use can be achieved by solving a problem, making a decision, or innovating a process or product. Information use creates knowledge through learning every day.

The last standard is connected to critical thinking. It represents how individuals understand the economic, social, and political consequences of information to society. Figure 2 is represented by a circle because every standard is important and because the standards occur sequentially in practice.

We recommend that libraries, schools, and other organizations adapt information literacy standards to critical literacy standards. These standards can inform courses and practices. Critical literacy helps individuals to become critical thinkers and to analyze the truthfulness of information. The pillars of critical literacy (Figure 2) can be used to implement actions to fight against fake news in many organizations. It is a flexible model which can be adapted to diverse contexts.

Table 4. Critical Literacy Standards, Indicators and Results

Standards, Indicators and Results	Description
Standard 1	Individuals identify the nature and extent of the information need.
Indicator 1.1	Define and recognize the information need.
Result 1.1.1	Identify a research topic or other information need.
Result 1.1.2	Ask proper questions based on the information need or research topics.
Result 1.1.3	Use general or specific information sources to increase knowledge about a topic.
Result 1.1.4	Modify the information need or research topic to finalize the focus of the research.
Result 1.1.5	Identify concepts and key words which represent the information need, research topic, or question.
Indicator 1.2	Identify a variety of formats and potential information sources
Result 1.2.1	Identify the value of and differences between sources in several formats.
Result 1.2.2	Identify the purpose and the kind of information in tendentious sources.
Result 1.2.3	Distinguish primary sources from secondary sources; recognize their use and their importance to each field.
Indicator 1.3	Consider the costs and benefits of information acquisition.
Result 1.3.1	Determine the availability of the information needed. Make decisions about the research strategy, the use of information services, and the proper media.
Result 1.3.2	Develop a practical plan and a timeline which is adequate to gather the needed information.
Standard 2	Individuals access the needed information effectively.
Indicator 2.1	Select the appropriate research methods or information systems.
Result 2.1.1	Identify the kind of information in a system.
Result 2.1.2	Properly select information retrieval systems to investigate a problem/ topic.
Result 2.1.3	Identify different types of research to find information.
Indicator 2.2	Construct and implement search strategies that are established effectively.
Result 2.2.1	Develop a research plan which is appropriate to information retrieval systems and/or research methods.
Result 2.2.2	Identify key words, sentences, synonyms and words related to information needed.
Result 2.2.3	Select specific vocabulary as a research tool. Identify the vocabulary registered, and execute the research successfully using proper vocabulary.
Result 2.2.4	Construct and implement the research strategy using codes and commands which are appropriate to the information retrieval system.
Result 2.2.5	Use information retrieval systems and other methods (for example: information professionals) to improve their results.
Indicator 2.3	Seek information electronically or in person. Use a variety of methods.
Result 2.3.1	Use different information retrieval systems in several formats (printed or digital).
Result 2.3.3	Use several classification plans or other systems to locate information sources and services.
Result 2.3.4	Use online services or specialized people who are available in the organization to retrieve information needed.
Indicator 2.4	Rework and improve the search strategy, as needed.
Result 2.4.1	Evaluate the quantity, quality, and relevance of research results to define alternative information systems or research methods.
Result 2.4.2	Identify information gaps which are the results of the previous research.
Result 2.4.3	Review research strategies and assess whether it is necessary to gather more information.
Indicator 2.5	Extract, register, and manage information and its sources.
Result 2.5.1	Register all information and sources to retrieve them in the future.
Result 2.5.2	Understand how to organize and process gathered information.
Result 2.5.3	Distinguish among cited sources. Understand the elements and the correct way to cite different sources based on the rules of convention and intellectual property.
Standard 3	Individuals evaluate information and its sources critically.
Indicator 3.1	Demonstrate knowledge of the information gathered.
Result 3.1.1	Select relevant information based on information sources and ideas.
Result 3.1.2	Reformulate concepts in their own words.
Result 3.1.3	Identify information which was redrafted or rephrased.
Indicator 3.2	Apply evaluation criteria to information and its sources.
Result 3.2.1	Analyze and compare information from different sources to evaluate its reliability, validity, accuracy, authority, and points of view.
Result 3.2.2	Analyze the logic of gathered information.
Result 3.2.3	Recognize and describe several aspects of a source, its impacts, and value to the project/work/activity. Individuals also describe trends and impacts related to cultural policy, geographical, historical, or timeliness assumptions of the information source.
Result 3.2.4	Demonstrate the ability to find information about authors and editors which produce technical manuals, proceedings, and documents.
Result 3.2.5	Understand and interpret manuals and reports. Those manuals and reports are found in several sources, and they are also a way to access precise and valid information.
Result 3.2.6	Understand the necessity to verify precise and complete data or facts.
Indicator 3.3	Compare the new knowledge with the previous knowledge to determine the value added, contradictions, or other characteristics of the information.
Result 3.3.1	Determine if the gathered information is adequate or if it is necessary to seek more information.
Result 3.3.2	Evaluate whether information sources are contradictory.
Result 3.3.3	Compare new information with one's own knowledge and other sources which are considered reliable about the subject.
Result 3.3.4	Select information that applies evidence to the problem, research topic or other information needed.
Standard 4	Individuals use information effectively to reach a goal or a result individually or in a group.
Indicator 4.1	Individuals are capable of synthesizing information to complete a project, activity, or task.
Result 4.1.1	Organize information using plans or structures.
Result 4.1.2	Understand how to use an author's citations, paraphrases, or texts to support ideas and arguments. This item is used for writing activities, reports, documents and manuals.

Table 4. Continued

Standards, Indicators and Results	Description
Indicator 4.2	Communicate the results of the projects, activities, or work effectively.
Result 4.2.1	Use documentation norms and formats properly to develop a project, activity or work task.
Standard 5	Individuals understand economic, legal and social issues of information use. Also, they access and use information ethically and legally.
Indicator 5.1	Understand the legal, ethical, and socioeconomic issues which involve information, communication, and technology.
Result 5.1.1	Identify and discuss issues related to open access versus private access to information and communication services.
Result 5.1.2	Understand legal questions about intellectual property nationally and internationally.
Result 5.1.3	Define and identify examples of intellectual property.
Result 5.1.4	Demonstrate knowledge of institutional policies about products and brands. Those policies are related to intellectual property to investigate a product in business organizations.
Indicator 5.2	Respect laws, rules, institutional policies, and guidelines related to information access and information source use.
Result 5.2.1	Use passwords properly to access information sources.
Result 5.2. 2	Respect organizations' policies about access to information sources.
Result 5.2.3	Preserve information sources, equipment, systems, and tools which are available to access and use information.
Result 5.2.4	Know the rules of intellectual property and use them in documents. Understand issues connected to reports, manuals, and catalogs which guide products use and processes.
Result 5.2.5	Identify protected elements in different sources and formats. Consider authorization required to copy texts, images, and sounds.
Indicator 5.3	Indicate the information source in the communication of results.
Result 5.3.1	Use style and language appropriate to field.
Result 5.3.2	Identify elements of citation to information sources in different formats. For example: individuals should know how to investigate documents and mention government documents, laws, and training courses.
Result 5.3.3	Understand norms of documentation which are recommended for a task (for example: product development norms, memorandum, and official reports in the organization).

Source: (Adapted from Belluzzo, 2007)

FUTURE RESEARCH DIRECTIONS

Future research can investigate how libraries and schools have implemented critical literacy to fight against fake news in Brazil. Furthermore, public policy with respect to critical literacy needs to be implemented in Brazil. Brazilian researchers can publicize critical literacy conferences to the public so that people can learn more about critical literacy.

There is a critical literacy gap in the business context as well. Managers need to access and evaluate information to make smart decisions. Researchers can connect critical literacy to information management, competitive intelligence, project management, and other types of management. Critical literacy can help businesses to become more competitive.

Critical literacy should be encouraged in the general public, not left within the confines of universities. Researchers, librarians, teachers, and managers can help to share the importance of critical thinking in the fight against fake news. Individuals should be encouraged to understand economic, legal, and social issues affecting information use. In addition, they must learn to access, use, and share information ethically and legally.

Some researchers are studying information and media literacy in the field of Information Science. These researchers draw on international concepts to define and refine these types of literacy. However, few papers to date have drawn on Paulo Freire and the topic of critical literacy. There is a knowledge gap in this area. Incorporating critical literacy is therefore an opportunity for further research by information scientists in Brazil.

Figure 2. Pillars of Critical Literacy
Source: (Ottonicar, 2020)
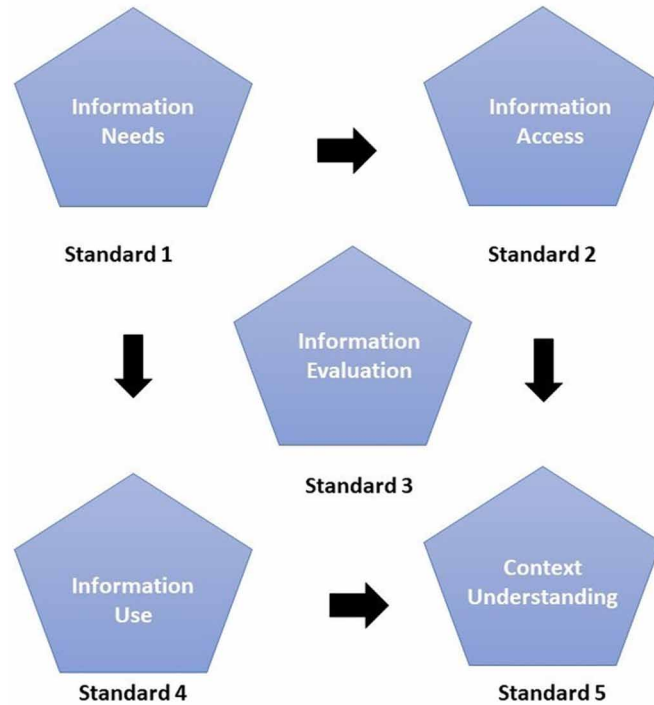
CONCLUSION

The SLR demonstrated that despite the work of Brazilian Paulo Freire and his followers developing critical literacy, few researchers within the field of Information Science are studying this subject in Brazil. The papers that were retrieved explained that critical literacy and information literacy are fundamental to citizenship. In order to improve citizenship, individuals need to evaluate information critically and pursue lifelong learning.

The database BRAPCI identified only one paper discussing critical literacy. The other papers used the expression Information Literacy. These papers were included in the SLR. Because of this gap in the literature, it is recommended that Information Science researchers in Brazil should pay more attention to this subject.

Critical literacy is based on individuals' critical thinking and aims to help them live in society in a more thoughtful and intelligent way. A critically literate person can analyze information sources' quality and intentions. A critically literate society will be less likely to be manipulated by fake news.

The papers included demonstrated that social media platforms are the main means of dissemination for fake news. Users therefore need to be critical so they can navigate in this digital environment analytically. Furthermore, these papers also addressed the relevance of critical literacy to the field of journalism, libraries, education, and politics.

The government of Brazil has not yet created any public policy to fight against fake news. However, major newspapers and magazines have demonstrated their concerns with fake news by creating webpages to denounce lies and manipulation. People can consult these webpages at any time for free.

Some researchers at the University of Sao Paulo (USP) have created a tool that seeks information and verifies the truthfulness of facts. The user conducts keyword searches and the software finds information for them. Therefore, academics have also worked to fight against fake news in Brazil.

ACKNOWLEDGMENT

REFERENCES

ACRL. (2015). *First part of the draft framework for information literacy for higher education*. Available at: http://acrl.ala.org/ilstandards/wp-content/uploads/2014/02/Framework-for-IL-for-HE-Draft-1-Part-1.pdf

Alvermann, D. E. (2017). Social Media Texts and Critical Inquiry in a Post-Factual Era. *Journal of Adolescent & Adult Literacy*, *61*(3), 335–338. doi:10.1002/jaal.694

Belluzzo, R. C. B. (2007). *Construção de mapas: desenvolvendo competências em informação e comunicação*. Bauru: Cá Entre Nós.

Brisola, A., & Bezerra, A. C. (2018) *Desinformação e circulação de "fake news": distinções, diagnóstico e reação.* Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/102819

Brisola, A. C., & Romeiro, N. L. (2018). *A competência crítica em informação como resistência: uma análise sobre o uso da informação na atualidade*. Revista Brasileira de Biblioteconomia e Documentação, Online First.

Budd, J. M., & Stewart, K. N. (2018). News, Fake News, and Critical Authority. In Information Literacy in the workplace. Springer.

Bundy, A. (2004). *Australian and New Zealand Information Literacy Framework: principles, standards and practice, 2004*. Available at: http://archive.caul.edu.au/info-literacy/InfoLiteracyFramework.pdf

Cooke, N. A. (2017). Posttruth, Truthiness, and Alternative Facts: Information Behavior and Critical Information Consumption for a New Age. *The Library Quarterly: Information, Community and Policy, 87*(3).

Craig, R., & Wiebe, T. (2018). *Not Another Fake News Lesson Plan: Inspiring Critical Information Literacy*. WILU 2018 – Atelier annuel sur la formation documentaire // WILU 2018 – Workshop on Instruction in Library Use, Ottawa, Canada.

Eichler, V. A., Kalsing, J., & Gruszynskig, A. (2018). O ethos do jornal O Globo e a campanha contra as fake news. *Media & Jornalismo, 18*(32), 139-154. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S2183-54622018000100011&lng=pt&tlng=pt

Fante, A., Silva, T. M., & Graça, V. (2019). Fake News e Bakthin: Gênero Discursivo e a (Des)Apropriação da Notícia. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

Ferreira, A., Carvalho, T., Andaló, F., & Rocha, A. (2019). Counteracting the contemporaneous proliferation of digital forgeries and fake news. *Anais da Academia Brasileira de Ciências, 91*(Suppl. 1). doi:10.1590/0001-3765201820180149

Frechette, J. (2019). Keeping Media Literacy Critical during the Post-Truth Crisis Over Fake News. *The International Journal of Critical Media Literacy*, *1*(1), 51–65. doi:10.1163/25900110-00101004

Freire, P. (1968). *Pedagogia do oprimido*. São Paulo: Paz e Terra.

Heuer, W. (2019). Las tentaciones de la mentira. *Universitas Philosophica*, *36*(72), 53–70. doi:10.11144/Javeriana.uph36-72.tdlm

Kellner, D. (2018). Trump's War Against the Media, Fake News, and Social Media. In C. Happer, A. Hoskins, & W. Merrin (Eds.), *Trump's Media War*. Cham: Palgrave Macmillan.

Kellner, D., & Share, J. (2019). *The Critical Media Literacy Guide*. Leiden, The Netherlands: Brill Sense. doi:10.1163/9789004404533

Land, C. L., Taylor, L. A., Lavender, H., & McKinnon, B. (2018). Making space for choice, voice and critique: Critical literacy workshop in the era of Trump. *English Teaching*, *17*(1), 28–43. doi:10.1108/ETPC-06-2017-0100

Lau, J. (2007). *Diretrizes sobre desenvolvimento de habilidades de informação para a aprendizagem permanente. The Haague: IFLA, 2007*. Avaiable at http://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-pt.pdf

Luke, A. (2018). Critical literacy in Australia: A matter of context and standpoint. In A. Luke (Ed.), *Critical literacy, schooling, and social justice: The selected works of Allan Luke* (pp. 168–188). New York: Routledge. (Original work published 2001) doi:10.4324/9781315100951-7

Magallón Rosa, R. (2019). Verificado México 2018: Desinformación y fact-checking en campaña electoral. *Revista de Comunicación*, *18*(1), 234–258. doi:10.26441/RC18.1-2019-A12

Maia, M., Furnival, A. C., & Martinez, V. C. A. (2018). *Competência informacional e fake news: uma reflexão sob a perspectiva do marco civil da Internet e de ignacio ramonet*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/103726

Moura, A. R. P., Furtado, R. L., & Belluzzo, R. C. B. (2019). Desinformação e competência em informação: Discussões e possibilidades na arquivologia. *Ciência da Informação em Revista*, *6*(1), 37–57. doi:10.28998/cirev.2019v6n1c

Oliveira, M. L. P., & Souza, E. D. (2018). *A competência crítica em informação no contexto das fake news: os desafios do sujeito informacional no ciberespaço*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/102566

Oliveira, S. M. P. (2018). *Disseminação da informação na era das fake news*. Múltiplos Olhares em Ciência da Informação, n. Especial EREBD. Disponível em: http://hdl.handle.net/20.500.11959/brapci/106362

Pangrazio, L. (2018). What's new about 'fake news'? Critical digital literacies in an era of fake news, post-truth and clickbait. *Páginas de Educación*, *11*(1), 6–22. doi:10.22235/pe.v11i1.1551

Recuero, R., & Gruzd, A. (2019). Cascatas de Fake News Políticas: Um estudo de caso no Twitter. *Galáxia (São Paulo)*, *41*(41), 31–47. doi:10.1590/1982-25542019239035

Ribeiro, B. C. M. S., Franco, I. M., & Soares, C. C. (2018). Competência em informação: as fake news no contexto da vacinação. *Múltiplos Olhares em Ciência da Informação*. Retrieved from: http://hdl.handle.net/20.500.11959/brapci/106451

Sampaio, D. B., Lima, I. F., & Oliveira, H. P. C. (2018). *Estratégias fact-checking no combate à fake news: análises informacional e tecnológica no e-farsas e boatos.org*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB. Retrieved from: http://hdl.handle.net/20.500.11959/brapci/103103

Santos, M. C. (2019). Desconexão e Reconexão Algorítmica: Contágio e Limiar Social como Lógicas de Influência no Ambiente Digital. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

Scheufele, D. A., & Krause, N. M. (2019). Science audiences, misinformation, and fake news. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(16), 7662–7669. doi:10.1073/pnas.1805871115 PMID:30642953

Toynbee, P. (2019). *The anti-EU lies are back to exploit Britain's weak spot again.* Retrieved from https://www.theguardian.com/commentisfree/2019/mar/04/anti-eu-brexit-fake-news

Valverde, M. (2019). Confesión y autenticidad en el discurso populista de hoy. *CS, 27,* 143-165. doi:10.18046/recs.i27.3435

Vasquez, V. M. (2017). *Curriculum and pedagogy, educational purposes and ideals, educational theories and philosophies*. Oxford Research Encyclopedia of Education.

Vergeer, M. (2018). Incorrect, fake, and false. Journalists' perceived online source credibility and verification behavior. *Observatorio, 12*(1), 37-52. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S1646-59542018000100003&lng=pt&tlng=en

Vitorino, M. M., & Renault, D. (2019). A Irrupção da Fake News no Brasil: uma Cartografia da Expressão. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

ADDITIONAL READING

Brummette, J., DiStaso, M., Vafeiadis, M., & Messner, M. (2018). Read All About It: The Politicization of "Fake News" on Twitter. *Journalism & Mass Communication Quarterly*, *95*(2), 497–517. doi:10.1177/1077699018769906

Frederiksen, L. (2017). Fake News. *Public Services Quarterly*, *13*(2), 103–107. doi:10.1080/15228959.2017.1301231

Jang, S. M., & Kim, J. K. Third person effects of fake news: Fake news regulation and media literacy interventions. *Computers in Human Behavior, 80,* 295-302. . doi:10.1016/j.chb.2017.11.034

Jones-Jang, S. M., Mortensen, T., & Liu, J. (2019). Does Media Literacy Help Identification of Fake News? Information Literacy Helps, but Other Literacies Don't. *The American Behavioral Scientist*. doi:10.1177/0002764219869406

Nelson, J. L., & Taneja, H. (2018). The small, disloyal fake news audience: The role of audience availability in fake news consumption. *New Media & Society*, *20*(10), 3720–3737. doi:10.1177/1461444818758715

Sullivan, M. C. (2019). Why librarians can't fight fake news. *Journal of Librarianship and Information Science*, *51*(4), 1146–1156. doi:10.1177/0961000618764258

KEY TERMS AND DEFINITIONS

Critical Literacy: The ability to access, use and evaluate information. It is also known as critical thinking.

Documentary Research: Research method based on relevant documents about a topic. It is frequently used in the field of history.

Fake News: Manipulated information to change people's opinion about a fact.

Information and Media Literacy Standards: Guidelines and steps to help people to develop critical thinking.

Information Source: It is the source of information, for example a person, a newspaper, an organization, etc.

Information Use: The things people do with information. Information use can be learning, decision-making, problem solving, innovation, etc.

Systematic Literature Review: A scientific method used to show the state of the art about a topic.

ENDNOTES

[1]   Available at: https://g1.globo.com/fato-ou-fake/
[2]   Available at: https://www.folha.uol.com.br/
[3]   Available at: https://politica.estadao.com.br/blogs/estadao-verifica/recebeu-algum-boato-pelo-whatsapp-envie-para-o-estadao-verifica/
[4]   Available at: https://www.bbc.com/portuguese/brasil-47547772

5   Available at: https://super.abril.com.br/sociedade/como-identificar-e-combater-fake-news/

6   Available at: http://www.tse.jus.br/imprensa/noticias-tse/2019/Abril/tse-e-uniao-europeia-realizam-
     seminario-internacional-sobre-fake-news

7   Available at: https://www.cartacapital.com.br/blogs/blog-do-socio/algoritmos-fake-news-e-a-
     esquerda-que-elegeu-bolsonaro/

8   Available at: http://saude.gov.br/fakenews

9   Available at: https://www1.folha.uol.com.br/cotidiano/2018/09/veja-o-passo-a-passo-da-noticia-
     falsa-que-acabou-em-tragedia-em-guaruja.shtml

Chapter 10
Spiritualism and the Resurgence of Fake News

Kristy A. Hesketh
Independent Researcher, Canada

ABSTRACT

This chapter explores the Spiritualist movement and its rapid growth due to the formation of mass media and compares these events with the current rise of fake news in the mass media. The technology of cheaper publications created a media platform that featured stories about Spiritualist mediums and communications with the spirit world. These articles were published in newspapers next to regular news creating a blurred line between real and hoax news stories. Laws were later created to address instances of fraud that occurred in the medium industry. Today, social media platforms provide a similar vessel for the spread of fake news. Online fake news is published alongside legitimate news reports leaving readers unable to differentiate between real and fake articles. Around the world countries are actioning initiatives to address the proliferation of false news to prevent the spread of misinformation. This chapter compares the parallels between these events, how hoaxes and fake news begin and spread, and examines the measures governments are taking to curb the growth of misinformation.

INTRODUCTION

The Victorian era saw the birth of one of the largest religious movements when the Fox sisters' claim to be able to communicate with departed spirits rapidly spread across the Western world. The Victorians had a prominent death culture which fueled their interest in these claims and permitted them to accept the possibility of communicating with loved ones beyond the grave. This religious movement was an attractive belief system because of the high death rate experienced by both the upper and lower classes. This movement became known as Spiritualism, and its followers, Spiritualists. The rapid growth of the movement occurred as a result of the advent of mass media. The proliferation of Spiritualist followers can be directly correlated with the new printing technology that permitted newspapers to be printed at a cheaper cost, which became known as the penny press. Prior to the penny press, printing technology was expensive and newspapers were targeted at an upper class audience who could make regular pur-

chases or afford subscriptions. Once newspapers could be printed at a lower cost, individuals from the middle and lower classes were also able to afford to purchase the paper. The entire newspaper industry shifted as papers began to make revenue from advertising, and as this newly tapped audience wanted to read stories different than those that appealed to the upper class. The penny press spawned the era of mass media as new newspapers were established, printed en masse, and sold. News stories of mediums and communication with the spirit world were frequently featured in the popular press, and the constant controversy about whether it was a hoax or not only encouraged the popularity and spread of the Spiritualist movement.

In the information era, the Internet and social media platforms are the new technologies that have profoundly influenced and changed mass media. The Internet and social media, such as Facebook and Twitter, can be argued to be today's equivalent of the penny press. The more sensational a news story was in the penny papers, the more papers it sold and the more advertisers were willing to pay for running advertisements. Spiritualist mediums capitalized on this new form of media and often prompted controversies about their own stage shows in order to create a sensational story for the papers. Similarly, today, stories posted and shared on social media platforms are published with the sole intention of capturing attention via sensationalized clickbait titles that encourage viewers to click the website link, which generates ad revenue for the site's owner. Similar to the penny press, the Internet and social media have further facilitated the authoring of content and the sharing of information. Penny papers enabled new newspapers, publishers, and journalists to become established and allowed information to be consumed by more people by being sold inexpensively due to the revenue generated by advertisements. The Internet has done much the same, especially in the Western world. The Internet and social media have enabled anyone to be a publisher or author, and have allowed information to be consumed at a rapid rate by a large audience with revenue generated by advertisement.

Controversy, hoaxes, and sensational stories were published in the penny press to propel the Spiritualist movement. The promise of contacting a loved one who had passed on gained a strong following during a time when the death tolls of the American Civil War and the First and Second World Wars affected so many. Today, fake news and misinformation likewise gain traction by exploiting people's fears and prejudices through the publication and promotion of stories that confirm people's preconceptions. The titles of fake news stories are skillfully crafted for confirmation bias as they encourage people to click on a story that confirms their personal views, providing them with proof that their views are accurate. The ad revenue generated from fake news stories can be a profitable business for its publishers and can be used as an effective tool to spread misinformation to gain public support.

Spiritualism, hoaxes, and false news have all had outspoken opponents. Similar to England's Fraudulent Mediums Act that legislated against mediums purposely deceiving their paying customers, governments around the world today are taking action against deceptive misinformation. Around the globe countries have set up task forces to prevent foreign influence on election campaigns and are allocating funds to educate the public about misinformation online. This chapter investigates how fake news is not a new phenomenon. It suggests that by examining our past and gaining an understanding of the motives that drive people to believe the unbelievable, we can better formulate how to approach similar issues concerning misinformation that persist today.

The Spiritualist Movement

In 1848, sisters Maggie and Kate Fox spurred one of the largest religious and cultural movements and eventual hoaxes in the Western world. 15-year-old Maggie and 12-year old Kate lived with their parents in their family's rental farmhouse in Hydesville, New York. In late March of that year, rapping and knocking noises began to be heard throughout the house by the family. After multiple nights of these noisy rappings, the sisters attempted to communicate with the strange noises. They started by mimicking the knocking sounds, and when the noises of the house responded, they began to ask them yes and no questions. These, in turn, were answered with rhythmic taps. The sisters refined their communication with the knocking noises by reciting the alphabet until the correct letter was acknowledged with a knock. Using this rapping communication method, which later inspired the setup of the Ouija board (Peters, 1999), the sisters came to learn that the noises were from a deceased peddler whose remains were allegedly buried in the cellar of their house. The sisters announced that they could communicate with this spirit using their coded rapping sounds, and their claim quickly gained the attention of neighbours. Their house was soon filled with people wanting to witness this alleged communication with the dead (Weisberg, 2004).

Death was a prominent cultural concern in the Victorian era, and news of the sisters' communication with the dead rapidly spread beyond their neighbourhood. Maggie and Kate offered proof that there was life after death, and the Fox sisters were soon performing for crowds of hundreds. In just a few short years following the Fox sister's discovery of their ability to communicate with the dead, other mediums with similar abilities began to emerge and mediumship became so common it was soon considered a profession. By 1850 Spiritualist groups were organized across the United States and there were an estimated one hundred mediums in New York City alone (Peters, 1999; Walliss, 2001).

The Victorian era's relationship with death contributed to public interest in communication with the deceased. Communication with the dead was not a new idea, but the Spiritualist movement sprang from a growing popularity in healers and hypnosis; it was also, in part, a reaction to the religious predestination doctrine. Regardless of one's class, death touched every home and mourning was central to Victorian culture. Queen Victoria herself was known for her participation in the death culture of the time. For instance, every day she set up her late husband's shaving kit until her own death decades after his (Peters, 1999). Victorian death culture was fueled by the high death toll of the American Civil War and later by the two World Wars. Spiritualists believed that the dead continued to exist in a spirit world and that those spirits were able to communicate with the material world through mediums. Spiritualism offered a form of connection to those suffering from the loss of loved ones.

Spiritualism and the Mass Media

Spiritualism spread quickly and widely across the United States, Canada, England, and parts of Western Europe, and became one of the first religions to become widespread because of mass media (Natale, 2016). The work of Peters (1999) has linked the rapid spread of Spiritualism to the development in technology of telegraphic communication and the formation of the penny press. In the 18th century publications were targeted at men in the upper classes or in influential positions. Newspapers were centered around politics and their contents focused on party advocacy. At this time, independent newspapers were rare (Baldasty, 1992). Newspapers were one of the only formats of mass communication and their price made the paper unaffordable to most of the population. In the 19th century, improved printing technology

broadened the consumer audience of newspaper publications as print materials could now be produced cheaply, making them more affordable to a large portion of the population.

The 1830's penny press greatly reduced the cost of print material and the production of books, magazines, and newspapers increased because of this improved printing technology. Small circulation daily and weekly papers could now be sold in shops and on street corners (Stanley, 2016). Prior to the penny press, newspapers were generally associated with political parties. By the 1870's, newspapers shifted from being politically driven to being commercially driven as advertising, and not political parties, became the main revenue driver (Baldasty, 1992). As papers shifted from being politically focused, they began to include stories that covered broader topics and audiences. This shift led to changes in the type of stories being published as the audience of newspapers expanded beyond voters to include all potential readers (Baldasty, 1992). Papers continued to include traditional feature stories and informative civic announcements, but they also published thrilling accounts of local crime and sensational stories of mediums and communication with the dead (Stanley, 2016). The *New York Herald* became one of the best-known early penny press papers and it covered stories on business, art, theatre, scandals, and scoop news. Ad space in these publications offered advertisers direct access to a wide and diverse audience they did not have access to before the emergence of the penny papers. The urbanization of the late 1800's and the advent of the penny press contributed to newspapers serving advertisers rather than political parties and expanding their audience beyond the male political world. The new practices that emerged in journalism with the advent of the penny press were not entirely apolitical, but politics was no longer at the centre of news content, as it had once been (Baldasty, 1992). The advent of the penny press propelled a shift from political journalism to a more partisan press that was reliant on running advertisements for revenue. Social trends, an increase in literacy, and the price reduction of a paper from six cents to a penny influenced these changes in the contents of the press (Baldasty, 1992).

In Britain, the papers began to mirror similar strategies as the American press. Taxes on newspaper ads were removed and the stamp duty on newspapers was repealed, making papers more affordable to a wider audience. Now, with an expansive audience base, the papers began to adopt a similar format and style as the American popular press and published daily news features next to stories of entertainment (Natale, 2016). Political news stories were now framed by product advertisements for all purpose medical remedies and with stories written for the sole purpose of entertaining the paper's readers (Weisberg, 2004). In both the United States and Britain, the popular press was filled with stories that either promoted Spiritualism or attempted to expose Spiritualist mediums as frauds.

In 1871, the American Bestsellers Guide reported that approximately 50,000 Spiritualist publications were sold every year (Natale, 2016). These publications included books, articles in weekly and monthly journals, news reports in the papers, and pamphlets. Spiritualist believers were encouraged to spread their beliefs by distributing these print materials wherever they went and to leave them behind in public areas to be later discovered and read by someone else (Natale, 2016). Spiritualists were able to connect to one another through print media. Believers across the world were able to feel unified through Spiritualist publications and established a sense of community even though they lived oceans and lands apart (Natale, 2016). The Spiritualist movement became widespread due to the invention of the penny press and mass media.

Spiritualist Entertainment

Entertainment in the 19th century featured attractions of stage magic, freak shows, and museums displaying exhibits of oddities. Shows featuring mediums performing séances became popular in this stage show and exhibit culture. P.T. Barnum, showman and founder of the Barnum & Bailey Circus, had perfected manipulating the popular press to promote his shows. Barnum would purposely spread false stories and propaganda about his own shows to create controversy that would then be featured in the press. Barnum would often reply to the controversies he originally crafted himself, which then created a second story to be published in the newspapers. These stories created buzz and interest about Barnum's shows among the public. Audiences enjoyed the frenzy of whether Barnum's shows were hoaxes or real, which increased attendance at the shows and therefore revenue (Natale, 2016; Peters, 1999).

As more mediums emerged after the popularity of the Fox sisters, and as the public's interest in attending séances grew, Spiritualists began to leverage the same advertising techniques as Barnum. Similar to Barnum's shows of curiosities, séances were carefully orchestrated performances presented as authentic instances of communication with the spirit world. Séances featured spirit communication through movements of the table at which the séance was being conducted, the writing and drawing of messages, the levitation of objects, and the presence of unexplainable sounds in the room. The séance was a form of entertainment (Peters, 1999).

Mediums did not shy away from media attention or from the controversies that erupted thanks to debates about whether communication with the dead was real or not. Instead, they leaned into the skepticism and welcomed those who had questions or who were known skeptics to their shows, even encouraging them to participate in séances. Famous medium Eusapia Palladio was known to encourage the controversy that surrounded her work because the reports in the press gained the attention of the public and this resulted in an increased attendance at her shows, bolstering her overall fame (Natale, 2016). The Fox sisters also used the popular press for advertising their spiritual shows by developing a close relationship with a journalist who would publicize their events in his paper, write articles about the controversy that surrounded their act, and respond directly in the sisters' defense to skeptical claims that their abilities were false (Natale, 2016).

Celebrity Culture and Credibility in Spiritualism

Controversy was present from the onset of Spiritualism. Since their first appearance in Rochester, news stories questioned the techniques used in the Fox sisters shows. Moreover, debates about their authenticity were commonly featured in press publications across the United States. The Victorian era was also a time of emerging science and the scientists of the day were influential with the public. British chemist and physicist Michael Faraday wrote articles in the press that attempted to logically explain the movements that occurred during medium shows and séances as unconscious muscular actions, while paper editor and founder of "news journalism", W.T. Stead, who was a believer and outspoken supporter of spiritualism (Natale, 2016), publicly argued the opposite. The press therefore fueled the public's interest in the Spiritualist movement with these publications. The public's piqued curiosity led to sold-out shows, bringing revenue to the performing mediums and to the press publishers from sales and advertisements.

Famous author Arthur Conan Doyle was also an outspoken Spiritualist believer. Doyle had lost his son during World War One and strongly believed in the ability to communicate with the dead who had passed on into a spirit world (Young, 2017). In 1920, Doyle famously published the Cottingley Fairy

photos in The Strand Magazine as evidence of otherworldly beings. The photos had been taken by two young cousins in Cottingley on the English countryside. In 1917, cousins 16-year-old Elsie and 9-year-old Frances took a series of photographs that depicted themselves in the woods surrounded by sprite figures. The issue of the magazine that featured Doyle's story about the fairies sold out within days, and the authenticity of the photos was hotly debated among the public. Some believed that the girls had captured proof of otherworldly beings, while others tried to detect evidence of fraud in the photographs. In was not until 1982 that the two cousins confessed and explained that they had created the fairy photos using cardboard cutouts. The images were fake and the entire ordeal turned into a hoax after Doyle published his article about the fairy images. The sisters had felt that, once a famous author publicly attested to his belief in the authenticity of their photos, they had no choice but to play along (Young, 2017).

Young girls playing with photography techniques were not the only example of alleged physical evidence of the spirit world. Mediums began to claim that famous deceased authors were contacting them and continuing to write works using them as a conduit. Mediums even published posthumous writings under famous writers' names, with one medium claiming they had been communicating with Oscar Wilde and publishing a book allegedly written by Wilde's spirit. Arthur Conan Doyle once again provided backing and merit to this physical evidence of the spirit world. He stated that the book was in the style of Wilde's writing and therefore should be accepted as his posthumous work (Natale, 2016). The mass media had given mediums a strong voice, while the backing of prominent followers like Doyle appeared to substantiate and lend credibility to the claims of the Spiritualist movement.

The Fraudulent Mediums Act

Spiritualist advertising was not only featured in the popular press, but was also present in books, magazines, pamphlets, and flyers that were widely distributed by believers as a method to spread the message of Spiritualism (Natale, 2016). The Spiritualist movement's rapid spread can be directly linked to the availability of these new mass media formats. The emergence of new photography techniques, including spirit photography, was another technological development which was used to spread the beliefs of Spiritualism. Spirit photography allegedly captured spiritual entities in photographs which provided visual proof of the spirit world. In the late Victorian era, photographers were experimenting with different photography techniques including double exposure which combined two separate exposures to create a single image. Some photographers saw these techniques as an opportunity to create photos that appeared to feature spirits. They convinced the public that they were able to capture ghosts and spirits on film and charged handsomely for these photos. In 1869, famous spirit photographer William Mumler was charged with fraud when some of the ghosts that had appeared in his spirit photos were discovered to be living in Boston. During his trial, P.T. Barnum testified and explained how Mumler altered his photos using the double exposure technique to convince his customers that he had captured a ghost on film (Young, 2017).

The borrowed advertising technique of Barnum to create and encourage controversy in the press was successful in arousing people's curiosity and increasing attendance at medium stage shows and séances. However, it also led to a public backlash. Spiritualism came under fire for the fees mediums charged their patrons to communicate with their deceased loved ones. During and after the First and Second World Wars, followers of Spiritualism increased greatly, yet others took notice of the profit being made and criticized the entire movement for taking advantage of people's mourning. In 1944, medium Helen Duncan was convicted under the 1735 Witchcraft Act after she conducted a séance that predicted the death of

a patron's son on a warship. The fear of undercover Nazis attending séances to obtain war secrets from dead soldiers was a real concern of the time, and when Helen's prediction proved to be true, she came under severe scrutiny and was charged under the Witchcraft Act (Walliss 2001). In 1951, the Witchcraft Act of 1735 was repealed and replaced with the Fraudulent Mediums Act of 1951, in an attempt to shift the Act's focus from the use of magic to the false representation of abilities for which mediums charged a fee (Monateri, 2015). Under the Fraudulent Mediums Act, mediums could be issued a fine for "purposefully deceiving a customer" (McGee, 2007). Even more recently, in 2008, the Fraudulent Mediums Act was repealed and replaced by the Consumer Protection Regulations which encompassed all unfair sales and marketing practices, not just mediums practicing with an intention to deceive (Monateri, 2015).

Barnum not only testified at Mumler's trial but was publicly outspoken about his opinion of mediums. He did not take issue with claims of communicating with spirits in a private setting but called the public shows hosted by mediums pretentious and ridiculous (Young, 2017). In the decades following the World Wars, the mourning and death culture subsided; legal acts were put in place that prohibited unlawful medium practices, and the following that Spiritualism once boasted faded.

The New Penny Press

Fraudulent news is not a recent phenomenon; it has existed throughout history, and examples of the creation and spread of misinformation can be found throughout human history. For instance, the sixth century historian of the ancient Greek colony Byzantium, Procopius of Caesarea, documented fake stories about Emperor Justinian after the emperor's death. Although Procopius had supported Justinian during his reign, his book Secret History discredited the emperor. Procopius likely wrote the accounts as a form of protection and self-preservation after Justinian's death ("History of Fake News", 2017).

Fake news stories have also been part of the mass media since its advent. Barnum and Spiritualist mediums crafted stories and encouraged controversy in order to be featured in newspapers and draw attendance to their shows. People attended these museums and shows to see for themselves whether or not what they read in the press was all a hoax. Likewise, during the era of mass media, fake news broadcasts became popular and featured stories about Communist attacks and even alien invasions. In 1926, Father Ronald Arbuthnott Knox broadcasted a story on the BBC radio describing an attack on London by Communists which caused a panic among the public in England. Similarly, Orson Welles' 1938 broadcast of War of the Worlds, which illustrated reports of aliens attacking the United States, caused a panic among the American public. In both of these cases, disclaimers stating these stories were not actual news stories were aired prior to the broadcasts, but these disclaimers were missed by many who tuned in to listen after the introduction. The intention of these broadcasts was not to spread fake news or to cause a panic among the listening audiences; however, for those who missed the disclaimer in the introduction, the stories seemed believable and caused the unintended consequence of public panic ("History of Fake News", 2017).

The existence of fake news persists today and the technology of the Internet has offered authors of fake news and misinformation an endless and unregulated platform through which to publish. The early years of the Internet saw the publication of websites that were created with the intent to mislead and misrepresent news and information. Partly in response to these sites, libraries began to provide instructional classes that taught Internet users how to identify a fake news website. A checklist of criteria was used to identify websites such as MartinLutherKing.org, a site created by a white supremacist group with the intention to mislead readers about the civil rights activist ("History of Fake News", 2017).

In 2018, the Pew Research Center conducted a survey which revealed that two-thirds of adults in the United States consumed at least some their news on social media (Shearer & Eva Matsa, 2018). On social media platforms, legitimate news stories are featured next to fake news posts that contain inaccurate, misrepresented, and sometimes made up information. This presentation of real news posted next to fake news has made it difficult for people to decipher whether the news they are consuming is accurate and from a reliable source. Revenue is often the incentive for the creation of fake news sites, as advertisers will pay the owner of a website to display their ads, similar to how advertisers pay to publish print ads in a newspaper. Websites with high traffic are attractive to advertisers because their ads will reach a large audience. As a result, entire websites have been built with the sole purpose of imitating legitimate news websites. The goal of these fake news websites is to appear as genuine as possible so readers cannot tell the difference between real and fake, accurate and inaccurate, and, therefore, believe the bogus stories they are reading and then continue to visit the imposter site, generating more ad revenue for the publishers.

One of the major issues with fake news websites is the way titles and page content are structured. Titles are vital to catching a reader's attention; they must be compelling enough for the reader to click on the story. These sensationalized titles have become known as clickbait. Clickbait is content that has been created with the sole intention of piquing readers' interest and encouraging them to click on the link to the publishing website. Once someone clicks on the link, they are directed to the publishing site and the site owners derive revenue from the ads featured on the website based on site traffic. The creator of The National Report, a fake news website, admitted that the writers of their stories only focused on drafting the first few paragraphs to sound believable and the rest of the story did not matter because people rarely read the entire article (BBC Trending, 2016). Snopes, the fact checking website, has identified some of the major issues with fake news on the internet, including clickbait titles which are often worded to play on public biases. People are more likely to click on a story with a title that confirms their existing thoughts, beliefs, and biases. This confirmation bias is dangerous because it falsely confirms people's prejudices (BBC Trending, 2016). Another major issue is that these fake stories are often picked up by other sites and are republished over and over so that the trail of where the story originated is lost. Journalists and legitimate news sources have even fallen victim to using these republished stories as a resource in their research, thus perpetuating the misinformation (BBC Trending, 2016).

Disregarding facts, making overstatements, and distorting an opponent's position is not new to the political game; however, in the 2016 United States presidential election, misinformation was presented as fact and created a polarization between the supporters of the two candidates, politician Hillary Clinton and businessperson and television personality Donald Trump. This fueled the rise and the spread of outright fake news (Drobnic Holan, 2016). Websites were created with the sole purpose of writing and publishing fake news stories about the two presidential candidates. The clickbait headlines of these stories would then be featured on social media sites like Facebook to drive traffic to the website to generate ad revenue. In 2016, BuzzFeed News conducted an analysis that revealed that fake news stories outperformed real news stories in audience engagement, including the number of clicks, likes, shares, and comments they received (Drobnic Holan, 2016; Silverman, 2016). A 2016 NPR interview with the owner of multiple fake news websites revealed that these sites can generate between $10,000 and $30,000 a month (Sydell, 2016). Similar to the goal of Spiritualist mediums encouraging scandalous stories in the newspaper to generate attendance at their séances, the owners and writers of fake news sites publish stories with salacious titles on social media to generate visits to their websites for ad revenue.

Fake News and Mass Media

Britain's Fraudulent Mediums Act was not alone in attempting to curb false advertising and misrepresentation. In the United States, the 1927 Radio Act and the 1934 Communications Act both mandated that broadcasters were responsible for providing a fair platform for the debate of public issues, as well as "equal opportunity." The "equal opportunity" obligation required that differing political views had to be covered on broadcast stations. If a political candidate was featured on a station, the broadcaster was required to provide the opportunity for all other candidates to be featured on the station for the same amount of airtime to ensure that a station was not favouring a single political perspective (Lefevre-Gonzalez, 2013). These acts were precursors to the 1949 Fairness Doctrine, which further outlined that broadcasters must adequately cover public issues by ensuring that they were presented in a fair manner that accurately reflected opposing views of the topic and did not only consider issues from a single viewpoint (Lefevre-Gonzalez, 2013).

In 1964, a station broadcaster aired a commentary which stated that writer Fred J. Cook was fired from his job at a newspaper for making false claims in his most recent publication. Cook contacted the broadcasters and requested airtime to be able to present his side of the story and defend himself against the claims. When the station refused, Cook took the case to the United States Federal Communications Commission (FCC), citing the station's failure to follow the Fairness Doctrine. The FCC ruled in Cook's favour because, according to the Doctrine, the station had failed to provide Cook the airtime to offer a differing opinion than the one offered in the original commentary (Lefevre-Gonzalez, 2013). The FCC's ruling was later upheld by the U.S. Supreme Court, which solidified the perspective that American broadcasters had an "obligation not only to air multiple perspectives but also to serve as advocates for social justice issues by permitting those views airtime" (Lefevre-Gonzalez, 2013). Broadcasters opposed the regulations of the Fairness Doctrine over the next few decades, and the Doctrine was eventually weakened by the FCC as the American government's interest in economic policy shifted and corporations were granted the same free speech protection as individuals. Social groups fought the deregulation of broadcasters because the Doctrine mandated that they be given equal opportunity to present their views on the air, which ensured the debate on public issues would be fair and presenting opposing rather than singular views. However, in 1987, American President Ronald Reagan upheld the decision to abandon the Fairness Doctrine (Lefevre-Gonzalez, 2013).

Today, in the era of the Internet and digital media, it is argued that some form of regulation is necessary to achieve diversity in broadcasting. Online news sources have been criticized for being unreliable and publishing unsourced stories. Traditional television news formats even recap social media feeds as news and have fallen into the habit of not always fact checking their sources. In the 2000's the New York Times was highly criticized after they fell into these practices. The Times began to take breaking news stories at face value instead of conducting their own research. For example, their coverage of the weapons of mass destruction issue began to repeat breaking stories reported by one journalist or a single news source, and then publish these "facts" without researching and confirming the reports (Young, 2017).

The focus of the newsroom had become quantity over quality. Journalism has shifted toward producing multiple breaking news stories rather than taking the time to fact check before publishing. Some online news stories began to be published without publishers even attempting to report on the truth, as the Times thought it had been. Instead, publishers have knowingly published false stories with the goal of piquing reader interest to increase the number of clicks and reads the story received. Online fake news publications usually address topics related to celebrities, public figures, and controversial current events

in their stories, in order to increase the likelihood that the publication will go viral. These stories are then featured on social media platforms which link to the website that is hosting the story. Once someone clicks on the story, they are directed to the hosting website which has promotional ads that generate revenue from the web traffic. As noted in a 2016 NPR interview, traffic and resulting ad revenue can earn thousands of dollars for the website owner (Klein & Wueller, 2017).

The Internet and social media share many similarities with the penny press that propelled the Spiritualist movement of the nineteenth century. At that time, the new affordability of print media permitted an influx of publications that had never existed before the penny press into the market. As in the era of the penny press, the Internet and social media have contributed to an exponential increase in information creation and distribution. 19th century advertisers leveraged printing technology to run their ads next to news stories, and cunning minds like Barnum created entertainment-driven news. Today, in something of a parallel, social media platforms feature news stories next to public opinion and commentary, ads, and clickbait titles.

Young (2017) argues that a hoax culture has become a part of our current news, politics, and science. The trustworthiness of what we are consuming can no longer be taken at face value. The current anti-vaccination movement has been traced back to a medical article that proposed a link between the measles vaccines and autism. The article was published on a CNN website that permits anyone to contribute articles. Once the article was shared from a CNN website, it appeared to be from a reputable source and the story went viral and later gained influence due to celebrity backing. The story that did not go viral was that the article's author had had their medical license revoked when it was discovered they were in the process of filing a patent for another measles vaccine (Affelt, 2019).

In the era of the Trump administration, public perceptions of facts, misinformation, and truth have been greatly altered. The American president openly claims that current issues such as climate change are nothing more than hoaxes by the Chinese. Originally, when Trump began his run for political office no one took him seriously as a candidate, but like, Barnum, Trump leveraged his celebrity and media reports to gain attention and a following. He made grandiose claims, shrewdly spoke out against his opponents, and even banned the press from his rallies, which only increased news coverage. Barnum's technique of crafting hoax stories to create controversies in the press have echoes in Trump's techniques today (Young, 2017).

Fake News Laws

In 1974, Paul G. Zurkowski coined the term "information literacy" in a report to the National Commission on Libraries and Information Science. He developed the term as a way to discuss the needs of the emerging information age, as he recognized the increased prevalence of information seeking and consumption behaviours (Badke, 2010). In the era of the Spiritualist movement, the public eventually became frustrated with the claims of charlatans such as William Mumler and his ghost photography and the Fraudulent Mediums Act was created in response to the public's frustration. Today, a combination of laws and information and media literacy education programs are being developed in response to the fake news and misinformation epidemic. The International Federation of Library Associations and Institutions has called fake news publishers "charlatans, liars, and forgers". In the United States, libraries have begun to take action on educating the public on media literacy through infographics featuring examples of how to evaluate sources and identify fake news (Klein & Wueller, 2017). However, American laws focused on media literacy education have only been passed on a state by state basis.

The Poynter Institute website, which provides resources for journalists, features a guide to anti-misinformation laws and programs being developed and enacted around the world. In Australia, the government has created a security task force to prevent cyber-attacks and interference in elections (Ziebell, 2018). Political ads must make the author and funder of the ads known, and large social platforms such as Twitter and Facebook must comply with notifications of illegal ads featured on their sites. The government has also launched a media literacy campaign titled "Stop and Consider" which educates voters on the importance of knowing the sources of the information they consume (Flamini & Funke, 2019). The United Kingdom (UK) has also focused on misinformation education. In July 2019, the UK announced it would be adding curriculum to its education system that would teach students how to identify online misinformation (Dathan, 2019). In Italy, laws against misinformation and fake reviews led to a man being sentenced to a prison term of nine months after he was convicted of selling fraudulent TripAdvisor reviews to restaurants and hotels (Flamini & Funke, 2019). Misinformation initiatives have also been developed in Denmark, Belgium, France, Indonesia, Brazil, the Democratic Republic of Congo, Pakistan, and many other countries.

Similarly, Canada has also launched a government task force and media literacy campaign. Canada's Digital Charter was announced in May 2019 and features ten principles, including the insurance that Canadians have control over their personal data and that the government will "defend freedom of expression and protect against online threats and disinformation designed to undermine the integrity of elections and democratic institutions" (Government of Canada, 2019). Since the 1990's, Canada's MediaSmarts organization has been developing digital and media literacy programs and resources. The organization's mission is to ensure that Canadian children and youth to "have the critical thinking skills to engage with media as active and informed digital citizens" (MediaSmarts, n.d.). In 2019, MediaSmarts relaunched its twenty-year-old "Break the Fake" campaign to reignite its education resources about the importance of thinking critically while consuming digital media. The campaign features short videos about the elusive house hippo and depicts the secret lives of miniature hippos that live in every Canadian home. The goal of the campaign is to illustrate that although the videos of the house hippo appear to be real, in the digital age, it can be easy to be fooled by what we see. The video's message emphasizes the importance of fact checking what we see on the Internet by exercising four fact checking skills to determine if what has been posted online is true. First, it teaches audiences to use fact checking tools such as Snopes.com. Second, it encourages audiences to find the original source. Third, and relatedly, it encourages audiences to verify that source. Finally, it also encourages audiences to cross check what they see with other sources.

The overall motivation behind these initiatives is to increase public awareness and teach media literacy skills to identify fake news stories. Literacy skills need to be fostered among both the general public and news journalists. Adornato's (2016) study of social media's influence in the newsroom identified that journalists rely on social media content as a resource and found that a third of the study's respondents revealed they had included information from social media sources only to discover afterwards that the information was false. Based on these results, Adornato argues that the current policies on using social media as a primary resource for news research have "not caught up with practice". Policies, training, and procedures are needed to check today's troubling trend toward quantity over quality reporting. Journalists are focused on releasing a high volume of news as fast as possible to avoid missing out on reporting breaking news. The tradeoff is that sources, now often from social media, are not adequately fact checked and verified. Likewise, the public needs education initiatives like the infographics campaign in the United State that teaches how to evaluate sources and identify fake news. School curriculums need to

include critical thinking programs which teach their students the importance of research, fact checking, and reading multiple sources, so they are equipped to identify real versus fake news.

The fraud of Spiritualist mediums separated believers from their money and eventually required laws to protect the public from these false claims. The fraud of fake news stories today has led to the spread of medical misperceptions and disrupted elections. The stakes are significantly higher than they were in the nineteenth century, and laws to protect the public are only in their infancy. Today's penny press, the Internet and social media, enable false news to be shared within minutes. In the digital age no one has to wait for the six o'clock news to receive the headlines of the day. News updates can be consumed immediately as they are published in online news platforms, or shared on Facebook, or posted on a Twitter feed. As technology continues to advance, new software can create videos of events that never happened by superimposing frames from one video onto another. New 'deepfake' videos and existing fake news highlight the importance of developing policies and education to combat these challenges.

CONCLUSION

In 1888, the Spiritualist movement took a severe blow when Fox sister Maggie participated in an interview where she revealed that her and her sister's communication with the dead was an act. Maggie explained that the rapping noises had been produced by knuckle and joint cracking and not by spirits. Despite the confession and the constant scrutiny of skeptics, the Spiritualist movement survived for decades before anti-fraud legislation caught up and began to be enacted. Spiritualist mediums tapped into the fear and trauma of death people experienced during the Victoria era and the early 20th century. Multiple wars and high death rates affected everyone and the hope of being able to contact a deceased loved one provided many with faith and comfort. Today, fake news and misinformation continue to prey on the fears and hopes of the public. The current anti-vaccination movement began because fear of vaccines causing autism took root after a fraudulent medical article became viral online news. Similar to Maggie Fox's admission of fraud, even when the doctor who published that article was stripped of their medical license, the public continued to believe the misinformation.

There are many parallels between the hoaxes of the Spiritualist movement and the fake news of today. The penny press was a technology that spurred the creation of mass media, as the Internet and social media are modern technologies that have significantly propelled mass information sharing. False and exaggerated news stories were used to increase public attendance at performances and seances. Now, false news is used as a tactic to spread misinformation to sway the public's opinion in elections and/or to enrich publishers and advertisers. Nineteenth century trick photography was used to produce fake spirit photography, as today's video splicing technology can be used to create deepfake videos. Celebrity influence bolstered the nineteenth century public's beliefs in hoaxes, and continues to be influential in legitimizing hoaxes today. Laws were enacted to curb mediums from knowingly misrepresenting their services. Today, laws are being created to prevent the spread of false information in online platforms. Fake news and hoaxes also continue to gain momentum by playing on the public's fears. These common threads run through the Spiritualist movement of the nineteenth century and the era of fake news today.

Looking back at the Spiritualist movement's séances, ghostly messages, and other gimmicks, it can be easy to judge the Spiritualist belief system and question how anyone could have paid to participate in a movement later revealed as a hoax by one of its own founders. However, it is important to acknowledge that the stage show culture of the Victorian era encouraged people to actively participate in all of the

hoax news and entertainment. After reading false or exaggerated news stories about mediums' shows, and séances, people then attended these activities en masse and took the time to investigate what they had read and to consider whether the articles they read prior to the show were accurate or not. Today, people often simply read a clickbait headline or only read the first few lines of the linked story and then move on without thinking critically about the article they have read.

The American government attempted to place parameters upon how news should be published by requiring that different perspectives be presented by broadcasters; however, this initiative did not survive the political and economic changes of the later 20th century. Other countries are currently in the process of developing laws. Some have already enacted laws to prevent fake news, such as Italy, where there has been at least one conviction under its misinformation law. Policies and laws addressing fake news and misinformation are an important part of curbing fake news; however, they must be complemented by education programs. Media literacy has never been as critical a skill as it is today. Information evaluation skills can be taught to the public through public services such as libraries as well as integrated in school curriculums to educate all possible consumers of fake news. A skill set of source checking, authorship consideration, and recognizing personal biases can provide the public with the capability to differentiate between the real and the fake.

REFERENCES

Adornato, A. C. (2016). Forces at the gate: Social media's influence on editorial and production decisions in local television newsrooms. *Electronic News*, *10*(2), 87–104. doi:10.1177/1931243116647768

Affelt, A. (2019). Creating a playbook to Combat: Fake news. *Online Searcher*. Retrieved from: http://www.infotoday.com/OnlineSearcher/Articles/Features/Creating-a-Playbook-to-Combat-Fake-News-132864.shtml

Badke, W. (2010). Foundations of information literacy: Learning from Paul Zurkowski. *Online (Bergheim)*, *34*(1), 48–50.

Baldasty, G. J. (1992). *The Commercialization of news in the nineteenth century*. Madison, WI: University of Wisconsin Press.

BBC Trending. (2016, November 6). The rise and rise of fake news. *BBC*. Retrieved from https://www.bbc.com/news/blogs-trending-37846860

Chapter 1 History of Fake News. (2017). *Library Technology Reports, 53*(8). Retrieved from https://link-gale-com.ezproxy.biblioottawalibrary.ca/apps/doc/A521876900/AONE?u=otta35732&sid=AONE&xid=31c98c1b

Dathan, M. (2019, July 14). Schools to teach students how to spot fake news under new government plans. *The Sun*. Retrieved from https://www.thesun.co.uk/news/9506818/schools-fake-news-government-plans-matt-hancock-damian-hinds/

Drobnic Holan, A. (2016, December 13). 2016 Lie of the Year: Fake news. *Politifact*. Retrieved from https://www.politifact.com/truth-o-meter/article/2016/dec/13/2016-lie-year-fake-news. /

Flamini, D., & Funke, D. (2019). *A guide to the anti-misinformation actions around the world*. Retrieved from https://www.poynter.org/ifcn/anti-misinformation-actions/

Government of Canada. (2019). *Canada's Digital Charter: Trust in a digital world*. Retrieved from https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00108.html

Klein, D., & Wueller, J. (2017). Fake news: A legal perspective. *Journal of Internet Law, 20*(10). Retrieved from https://ssrn.com/abstract=2958790

Lefevre-Gonzalez, C. (2013). Restoring historical understandings of the "public interest" standard of American broadcasting: An exploration of the Fairness Doctrine. *International Journal of Communication*, *7*, 89–109.

McGee, L. (2007). Participation, identity, and social support in a spiritual community. *University of Texas at Arlington*. Retrieved from http://hdl.handle.net/10106/473

MediaSmarts. (n.d.). *Our mission & beliefs*. Retrieved from https://mediasmarts.ca/about-us/our-mission-beliefs

Monateri, P. G. (2015). *Political sublime. Heterodoxy and jurisdiction at the origin of modernity*. Retrieved from. https://ssrn.com/abstract=266328. 4

Natale, S. (2016). *Supernatural entertainments: Victorian spiritualism and the rise of modern media culture*. University Park, PA: Pennsylvania State University Press.

Peters, J. D. (1999). *Speaking into the air: A history of the idea of communication*. Chicago, IL: University of Chicago Press. doi:10.7208/chicago/9780226922638.001.0001

Shearer, E., & Eva Matsa, K. (2018). *News use across social media platforms 2018*. Retrieved from https://www.journalism.org/2018/09/10/news-use-across-social-media-platforms-2018/

Silverman, C. (2016, November 16). This Analysis Shows How Viral Fake Election News Stories Outperformed Real News On Facebook. *BuzzFeed News*. Retrieved from https://www.buzzfeednews.com/article/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook#.fvLPVppXj

Stanley, J. P. (2016). *How spiritualism spread*. Retrieved from https://www.publicbooks.org/how-spiritualism-spread/#fn-1493-4

Sydell, L. (2016, November 23). We Tracked Down A Fake-News Creator In The Suburbs. Here's What We Learned. *NPR*. Retrieved from https://www.npr.org/sections/alltechconsidered/2016/11/23/503146770/npr-finds-the-head-of-a-covert-fake-news-operation-in-the-suburbs

Walliss, J. (2001). Continuing bonds: Relationships between the living and the dead within contemporary Spiritualism. *Mortality*, *6*(2), 127–145. doi:10.1080/13576270120051811

Weisberg, B. (2004). *Talking to the dead: Kate and Maggie Fox and the rise of spiritualism*. New York: HarperCollins Publishers Inc.

Young, K. (2017). *Bunk. The rise of hoaxes, humbug, plagiarists, phonies, post-facts, and fake news*. Minneapolis, MN: Graywolf Press.

Ziebell, W. (2018, June 9). Australia forms task force to guard elections from cyber attacks. *Reuters*. Retrieved from https://www.reuters.com/article/us-australia-security-elections/australia-forms-task-force-to-guard-elections-from-cyber-attacks-idUSKCN1J506D

ADDITIONAL READING

Baldasty, G. J. (1992). *The Commercialization of News in the Nineteenth Century*. Madison: University of Wisconsin Press.

Curl, J. S. (2000). *The Victorian Celebration of Death*. Sutton Publishing Inc.

Flamini, D., & Funke, D. (2019). A guide to the anti-misinformation actions around the world. Retrieved from https://www.poynter.org/ifcn/anti-misinformation-actions/

Keiser, B. E. (2019). The Truth, the Whole Truth, and Nothing But the Truth in a Post-Truth World. Online Searcher, Sept-Oct. 2019, p. 26+.

Leaning, M. (2019). An Approach to Digital Literacy through the Integration of Media and Information Literacy. *Media and Communication*, 7(2), 4. doi:10.17645/mac.v7i2.1931

Natale, S. (2016). *Supernatural entertainments: Victorian spiritualism and the rise of modern media culture*. University Park: Pennsylvania State University Press.

Peters, J. D. (1999). *Speaking into the air: A history of the idea of communication*. Chicago, Illinois: University of Chicago Press. doi:10.7208/chicago/9780226922638.001.0001

Stuff Media, L. L. C. (2011, October 12). *The Sisters Fox: They Talked to Dead People* [Audio podcast]. Retrieved from https://www.missedinhistory.com/podcasts/the-sisters-fox-they-talked-to-dead-people.htm

Stuff Media, L. L. C. (2012, May 16). *The Prince of Humbug: P.T. Barnum* [Audio podcast]. Retrieved from https://www.missedinhistory.com/podcasts/the-prince-of-humbug-p-t-barnum.htm

Stuff Media, L. L. C. (2019, July 4). *How the Fairness Doctrine Worked* [Audio podcast]. Retrieved from https://www.stuffyoushouldknow.com/podcasts/how-the-fairness-doctrine-worked.htm

Weisberg, B. (2004). *Talking to the Dead: Kate and Maggie Fox and the Rise of Spiritualism*. New York, New York: HarperCollins Publishers Inc.

KEY TERMS AND DEFINITIONS

Clickbait: Content on the internet that is published with the intention to pique readers interest and encourage them to click on the link of the publishing website.

Deepfake: A video of events that never occurred, created through artificial intelligent programs by superimposing frames from one video onto another.

Fake News: Propaganda and false statements represented as fact that are knowingly fabricated to misinform the reader and is spread through traditional news formats or social media.

Mass Media: Forms of communication that reach large numbers of people.

Medium: A person who claims to have the ability to make contact with the spirits of the dead and can facilitate communication between these departed spirits and the living.

Penny Press: Cheap and mass-produced newspapers that were named for its original cost of one cent per paper.

Séance: A gathering of a group or people who attempt to make contact and communicate with the dead through a medium.

Social Media: Internet-based platforms that allow its users to interact online with one and other and offers the ability for its users to create and share content.

Chapter 11
Populism, Fake News, and the Flight From Democracy

Greg Nielsen
Concordia University, Canada

ABSTRACT

Fake news and populist movements that appear to hold the fate of democracy hostage are urgent concerns around the world. The flight from liberal democracy toward oligarchy has spread out from the unexpected results of the 2016 American presidential elections bringing in a wave of reactionary populism and the beginning of a left populist counter movement. The phenomenon of fake news is often explained in terms of opposition public relations strategies and geopolitics that shift audiences toward a regime of post-truth where emotion is said to triumphs over reason, computational propaganda over common sense, or sheer power over knowledge. In this chapter, the authors propose something different in order to theorize the imaginary audience(s) and conditions of reception for fake news treated as both a symptom (often of injury) and a cause (at times a danger to democracy). This leads them to evaluate the role it plays in defining what the fields of journalism, politics, and social science are becoming and what it means for democracy to come.

INTRODUCTION

"Our Ukraine policy has been thrown into disarray, and shady interests the world over have learned how little it takes to remove an American Ambassador who does not give them what they want." (Ambassador Marie Yovanovitch)

A whisper in the president's ear and a tweet later, U.S. troops withdraw from Syria, leaving allied Kurdish fighters exposed. A little while later in the U.S. Congress impeachment inquiry, Ukrainian Ambassador Yovanovitch is asking how it could come to the point where a key official, brokering a conflict in another war zone, could be so easily removed by such "shady interests." Both of these stories are widely reported in the press, and yet, what is true and what is false about them is in dispute. In this chapter, we ask how populism and fake news are bypassing mainstream journalism, democratic politics, and critical social

science, so that seemingly every truth claim can be parcelled, distorted or denied. How has it come to this, and where might we hope to go from here?

Politicians, journalists and social scientists play different though often overlapping roles in the production of the relation between truth and democracy. Agents in each of these fields are first- level observers of events and each has a different approach to their sources, constituents, and/or actors, as well as to the relations among fact, opinion, and truth. Agents in each field are being assaulted by right populist media and Republican politicians, and each are responding to the attacks in kind. Right populism and fake news, as we argue below, are putting democracy (rule by the people) in a flight toward oligarchy (rule by few), away from what de Tocqueville (1988/1850) called an American "love for the condition of equality" (pp. 504) toward a wildly libertarian version of freedom, haunted by the spectre of racism and sexism. We explore how this shift is in part due to the way strengths in these three fields may have given way to their weaknesses.

FAKE NEWS

The phenomenon of fake news is often explained in terms of the opposition's public relations strategies and geopolitics that shift audiences toward an "epistemic (or truth) crisis." Emotion is said to triumph over reason, computational propaganda over common sense, or sheer power over knowledge (Peters, et al. 2018). For some, "the crisis is more institutional than technological" (Benkler et al., 2018, pp. 20). For others, fake news is more importantly understood as a state-sponsored conspiracy (for example, from Russia or Ukraine, depending on one's political affiliation; Howard et al, 2019) or technologically determined via patented algorithms and feedback loops rather than as a development in the political economy of the media ecosystem (Benkler et al., 2018). Social media has proven that there are multiple ways of taking advantage of long simmering and often highly volatile controversies over race, sexuality, class and other topics (ripe for dog whistles) that seem to always lie on the fringes of what can be said or even thought and what cannot be in polite society. Crossing the line between the two is culturally discouraged and to some extent illegal (libel laws), but it is also allowed under the umbrella of rights related to freedom of association and speech/communication. Destabilizing the category of truth in a democracy for geopolitical gain (Mueller, 2019), in our view, becomes possible because democracy as a regime of truth allows for a great variety of controversial discourse.

Spreading outrageous and distorted information to discredit opposition or create divisiveness between opposing groups is not a new method in the history of propaganda. The Nazi used the term "Lügenpresse", the "lying press" (New York Times, 2019). However, the growth in types of fake news and the volume that has been disseminated since 2016 is unprecedented. This has been documented in a variety of official reports (House of Commons (U.K.), 2019; U.S. Congress, 2019; DiResta, 2018) that also shed light on the dangers posed by social media monopolies. We have witnessed officials in televised hearings struggling to comprehend the stakes at play in questioning social media executives. There are also reports from several large-scale research projects that focus on the opportunist and predatory usage of technology and social media techniques ("computational propaganda" via bots or automated messages and other means) in local and global communications systems (Wooley & Howard, 2018). Finally, the history of disinformation and propaganda, as well as suggestions for policies that would prevent fake news and curb its damaging effects, are cited as key research areas for protecting democratic practices in the future (Canada, House of Commons, 2019; Sauvageau et als.2018).

In this chapter, we propose something different from these large-scale empirical investigations and official reports in order to theorize the audience(s) that authors of fake news imagine and the conditions of reception. We shift the discussion away from the investigation of the number, legality, complexity, and performance of fake news toward a theory of the imaginary audience and its flight from democracy. There is very important and rich research on each of these types of investigation, but very few attempts to provide a general theory of knowledge production and of the depth of the interpretive division that defines our moment. We explore the relation between populism and fake news and how that relation impacts current regimes of truth and democracy, more specifically through the fields of politics, journalism and social science that help produce them. Our main question is, how have we embarked on such a perilous flight and what is to come? What has happened to the understanding that journalism, politics, and social science are producers of knowledge and truth? This leads us to re-evaluate the effect fake news plays in exploiting the weaknesses in each field and what it means for democracy to come. After further introducing the argument below, each field is presented in a separate section, while keeping in mind the relations between each: 1. Journalism: Seen from the right and the left; 2. The Political: Lies Politicians Tell; and 3. Can sociology come to the rescue?

Populist Right

Three types of background assumptions from the populist alt-right media (the terms right populist and alt-right are used interchangeably) can be postulated as a way of understanding the way audiences are imagined for fake news under the value of liberty and that also show a clear symbolic split from the democratic value of equality. The first postulate is that the political field is weakened beyond repair by special interests and endless spin that cannot provide liberty or security for the individual. All politicians who do not oppose globalists (those in favor of globalization through free trade, for example) responsible for offshoring the manufacturing base and who have allowed the waves of illegal immigration are branded as creatures of the "swamp." This assumption combines elements from classic reactionary nationalism and the libertarian ideal of freedom as being eroded by proponents or strategies that promote any kind of global civic equity. Second, legacy journalism like science and politics are assumed covers for the interests of the most well-off globalists, liberals, or other equally conflicted elites against the liberty of "normal" middle- or working-class individuals. Opposition is seen most concretely here in the assumptions right wing media make, covering climate change and the advocacy for deregulating the fossil fuel industries and environmental protections. Climate change denial is widespread and often assumed to be a made-up excuse to block a way of life that has been left behind. Such an emotional denial of science moves beyond the neoliberal and conservative impulse toward favoring less government regulation for markets, and then into a deep nostalgia for individual liberty and the loss of a particular community. Thirdly, social science `thinkers` are also assumed to be compromised by alt-right pundits, who claim universities have turned toward "cultural Marxism," and have contributed to elitist political correctness. The term assumes anger against systems of left-leaning ideas that embrace diversity, feminism, and freedom of religion. It can also be used against those who do not agree with white supremacy. This is seen in multiple incidents in universities, where students and faculty have been chastised for protesting against alt-right speakers or in violent clashes that pit antifa against neo-fascist white nationalists in demonstrations. It is broadly assumed that these same elites have corrupted individual meritocratic measures in favor of liberal affirmative action or movements for reparation in the name of equality.

Each of these assumptions and interpretations can be seen in everyday reports across the spectrum of alt-right media, which now constitutes roughly one third of U.S. outlets (Benkler et al., 2018). There are very stubborn truth claims being made that need to be taken into consideration when theorizing how audiences interpret these assumptions and how the authors of fake news imagine them. We will explore some of these claims in due time, but first we need to further deduce some of the ways fake news imagines its audience. While state-organized practices are reported to call out the most potential violent opposing groups in order to provoke division, more local cynically calculating authors assume that the (click) audience already denies, ignores, or suspends the social facts that journalists, politicians and social scientists are expected to trust in order to help create democracy. The alt-right ideologues are simply looking to convince audiences of their belief in the damage that liberals inflict or the threats they pose to their lifestyles, religious beliefs, or perceived privileges. Fake news is not a symmetrical phenomenon. It is not used equally by both the left and the right, despite what the alt-right assumes and what politicians claim. Fake news has evolved within a one-sided closed loop that includes both a variety of social media carriers and a mainstream broadcaster, Fox News. This media sector regularly attracts some of the largest numbers of U.S. media consumers, an audience that mostly does not consider other sources (Benkler et al., 2018). Could we have this way of imagining the audience if the fields of politics and social science did not have blind spots, such that they could not see or anticipate the rise of right populism or the eventual polarity of media systems and monopolies? Alternatively, are these fields so well aligned in the current post truth configuration that their voices are simply more chatter? To again quote Ambassador Yovanovitch, "how little it takes" to erase these fields. How can we asses so many untrue interpretations and convictions as the strengths in social science, politics, and journalism are so easily exploited, name-called, and dismissed? Below, we consider in more detail the contradictory claims from left and right populists, from the context of each field that reveals the extent to which fake news has sent the symbolic regime of democracy into flight.

Journalism: Seen From the Right and the Left

As we have discussed so far, for right populists, professional journalism, defined as a gatekeeper of democratic values, is simply a cover for the interests of elites and conflicted liberals. Put simply, the 'real' democratic values are expressed by those media that speak to the people's (MAGA or BREXIT) reality. Conservative charges against liberal media and liberal charges against conservative bias date back almost to the origins of broadcasting. The Fairness Doctrine, administered by the Federal Communications Commission, was introduced in 1949 to ensure that controversies of public interest would be aired and that one-sided political opinions would require media outlets to provide equal free time for the other side to respond. By the time a rapid expansion occurred in the cable television industry, the withdrawal of the Fairness Doctrine under the Reagan administration (lobbied by the now disgraced founder of Fox News, Roger Ailes) in 1987 meant the requirement for making sure that controversial political issues were presented in a balanced way was suspended. In turn, this opened the way for one-sided partisan journalism to flourish and the birth of a new wave of right-wing media began: right-wing radio talk show hosts, Fox News commentators, and later, extremist right or alt-right digital outlets Dailywire, Western Journal, and Breibart -- the top three with 300,000 combined subscriptions. In total, *Newswhip* (2019) counts four times more right-wing (373) than left-wing digital outlets (87) (pp.11). One estimate claims that last year Western Journal alone received 750,000,000 Facebook likes and comments, "almost as

many as the combined tally of 10 leading American news organizations that together employ thousands of reporters and editors" (Confessore & Bank, 2019).

Commentators from the later media frequently call all other self-defined professional (nonpartisan) legacy newspapers, television networks and public broadcasters, as well as mainstream media outlets, fake news (Polletta & Callahan, 2018). This later definition, first weaponized by the U.S. President (repeated over 600 times since 2017) and whose usage has spread globally across more than forty governments, has come to mean any news, including factual news, that contradicts the movement (New York Times, 2019). Organized partisan or fake news of the geopolitical type that is addressed to right populists or simply to divide the left from the right is meant to excite the audience by putting the adversary in moral or political jeopardy. For fake news from the right populists, it becomes believable and even legitimate (often even if it is known not to be true) in part because it opposes institutions that support the elites, but more importantly because it tells stories people want to hear or that simply entertain them.

For the populist left, good journalism has long been defined as speaking truth to power, while bad journalism is about manufacturing consent (Herman & Chomsky, 2002), or trading truth for access to power elites (Goodman & Goodman, 2006). For the left, the professional culture of mainstream journalism is corrupted economically (its corporate structure), morally (its greed), and politically (for the 1%). Something quite new is occurring, however, in the current context of fake news as the populist left is put in the position of defending "elite" journalists (as part of a resistance) in non-right legacy organizations, who have traditionally been seen as part of the problem. The reverse is not the case. Unlike the alternative left outlets like Democracy Now, Intercept, or The Nation, there is a sense in which the historical argument for the "condition of equality" along with the freedom of the press holds the stronger side of the democratic binary between equality and liberty.

To sketch out how such an interpretive division could occur, we need to further locate the conditions that made fake news possible, i.e., fake news in the sense of actors faking stories to help the most divisive right populists come to power, and not in the sense of banishing any journalism that does not support your worldview as fake. In the Western European context of the 1980s, Pierre Bourdieu observed that journalism is both a weak and strong autonomous field. As a strong field, it has professional ideals that place high value on autonomy, accuracy, reliability, and truth. The field of journalism dominates over access, framing, and the tone it sets for audiences, but its strength is in turn contingent on trust that it tells the truth. Journalism is also a weak field in that it relies on the market to sustain its institution, and on other fields to provide stories. There is growing consensus that the field of journalism is becoming weaker as the digital economy advances. In spite of the post-truth dimension of current public culture, all kinds of studies of journalists suggest they continue to see themselves as responsible for telling the truth, maintaining autonomy, performing the craft, reproducing its codes, methods and techniques, and legitimizing the ideals. Journalists are also aware they cannot act without the organizational and technological infrastructures and the needed complex labor, capital, and state relations (Ryfe, 2012; 2017).

The outpaced transformation of the organizational side of the institution (its economic and administrative crises) is putting pressure on the craft in a variety of ways. These pressures differ greatly across regions, types of ownership, and range from deregulation and increased corporate concentration to overt intervention, intimidation, and censorship in more authoritarian contexts (Halin & Mancini, 2012). Restructuring ownership from family-run firms to corporate hedge funds, collapsing advertising revenue streams, changing technology due to innovation, and increasing audience fragmentation and infotainment, along with massive layoffs, continue to drive media platform convergence and the loss of local news outlets.

Fake news is not only happening because it is technologically possible to share any story instantly with large audiences but also because of the current transformation of the news industry, the creation of new publics, and the complex impact on politics. The emerging context leaves enormous room for completely new forms of everyday knowledge production, pitting social media algorithms against journalism's editorial gatekeepers, the verification of facts before publication against posting stories to see what happens, and governance by clicks against professional codes and ethics councils (The Public Policy Forum, 2017). In this still emerging context, the chance of circulating false news is greatly enhanced, and so are the opportunities to manipulate populations with fake news.

We do not need to look far to discover negative influences that appear to have weakened a century's worth of values committed to autonomous, balanced, fact-based, and verified reporting by the institutions of "quality" or "good" journalism. In this new context, the strength in the professional culture is precisely what is most under attack. Most infamous and well-known examples of the new computational propaganda model are seen in the techniques used by Aggregate IQ from Victoria Canada and Cambridge Analytics from the U.K., paid for by the multi-millionaire Robert Mercer and brokered by Steve Bannon, adviser to multiple right populist politicians (Alexander, 2018). It remains untested as to whether the application of social science and psychological operation methods by these firms determined voter outcomes in the Brexit referendum and the 2016 American election. The evidence of fake news interference and voter manipulation is overwhelming, as seen in recent Washington hearings into social media ownership and privacy security. At the same time as reports on massive amounts of false information were being spread, truth organizations, such as Freedom House, Centre for Media Freedom and Responsibility, First Draft, and the Reuters Institute, determined that fake news was used to discredit unfavorable reports and to help the growing number of authoritarian right populists in power to define the media as the opposition to the state (Magoto, 2017).

Bourdieu's (1996) prediction that neoliberalism, already very observable in the French media landscape at the time he wrote on television journalism, would be a primary threat to the autonomy of both the academic and political fields continues to resonate. However, the idea that television would come to be the dominant model for social science and politics needs a revision. Bourdieu's 1996 book *On Television* was written at the height of the privatisation of public media organizations in Europe. While insisting the medium had enormous potential for provoking productive mass dialogue, bringing social scientists together with politicians for a better-informed public, he concludes that the potential strength of the medium was ultimately zapped by the economic imperatives of audience ratings and the subsequent mode of spectacle vs information/analysis production. The medium creates a dumbed down fast-paced journalism and "a circular circulation of information" among small numbers of academics, who cash in on celebrity (Bourdieu, 1996, pp. 23).

A little more than two decades later, and while the rise of social media initially showed much emancipatory potential, it is now clear that the digital ecosystem has also led to the return of destructive forms of muckraking. The volume of yellow journalism and fake news alone is on such a scandalous scale that social media itself has become a central story in the division-- which begs the questions: "Where does news come from? What is true? What isn't? What's the agenda, if there is one, of the publisher?" (Doctor, 2016, pp. 1). Briefly, the television model of spectacle has given way to social media, and, in turn, social media has led politics back to reality TV. It is hard to see how the autonomy of journalism, politics and social science will adapt in the next Internet that combines cloud technology with Big Data analytics and the Internet of things.

For Vincent Mosco, we have already seen a vampire version of economics, where the top American based corporations in the world have redistributed journalism content without paying for its production, and at the same time siphoned off most of the advertising revenues that have supported bona fide news agencies over the last century. When we consider the results of research showing that most people get their news from social media, we should emphasize that most of that news, if it is news, has been copied from newspaper organisations and/or television (Pew, 2010; 2019). The big five social media companies have collected, manipulated, leaked, or sold massive amounts of private data, and created ever newer technologies for data gathering and distributing, hence putting greater stress on the private sphere, while promising greater freedom and deceiving the public while promising greater democracy. When confronted by politicians for having contributed to massive intrusions into privacy and election fraud, corporate heads, as Mosco (2017) puts it, have claimed the Frankenstein defence-- we didn't know we created a monster, and we promise to fix it (eventually).

The Political: Are Lies Politicians Tell Fake News?

To recap the look of the political landscape since 2016: The flight from liberal democracy toward oligarchy has spread out from the unexpected results of the 2016 American presidential elections, bringing in a wave of reactionary populism, climate-change denial, anti-"globalism," Islamophobia, an opening to white supremacy, anti-immigrant, anti-refugee, anti..., the non-documented, DACA, LGBTI, and many other vulnerable communities. Questions need to be raised as to what role fake news plays in this and how much of this flight is about right populism, what kind, and how much of it is baked into white nationalism, a 1930's style racism, or a reaction to decades long expansion of inequality in the West. But if this is not a flight from democracy toward oligarchy, then it is, at the very least, a distinct erosion of its principles (separation of powers, rule of law, fair elections, a free press) and a freezing out of its preferred legitimation operations through deliberation. Voter suppression and the crises around gridlock in the U.S. Congress and in the Brexit referendum definitely contribute to the flight from democracy. But, at the same time, there has been a parallel rise of numerous strong men authoritarian politicians, the globally publicized impeachment ("constitutional coup") of the President of Brazil Dilma Rousseff, followed by perhaps the most spectacular election built on fake news of one more of the world's most extremist politicians in Brazil (Scarabelli, 2019). All of this occurs as large swathes of children from the failing part of the triangle in Central America are joining caravans to nowhere, and other American iron cages.

A definition of what we mean by democracy as a regime helps explain how the political field has become divided. Two approaches can be seen in opposition, but also as mutually reinforcing, when theorizing democracy as a political regime. Claude Lefort (1988) argues democracy is a form of society where the people (*demos*) rule (*kratos*) themselves, but that the *demos* is a symbolic form that makes the "locus of power (a bodiless) empty space, it cannot be occupied…it is such that no individual …can be consubstantial with it, and it cannot be represented" (pp. 17). In other words, there is enormous room for disassociation in how democracy can work and the kinds of struggles for truth and power that might occur. While populism is a threat to democracy, especially in the despotic form that denies contingency, it has also been a force in democracy-- such as Russian peasant coups before the revolution or the agrarian movements in the American and Canadian Midwest in the last century (Riley, 2018; Laclau, 2005). Fake news works as a supportive discourse for the authoritarian variety of the current right populist moment. But is this a sustainable politics?

Following and improvising from Lefort, Ernesto Laclau and Chantal Mouffe (2000, 1980) see the rise of a populist right as predictable, given how the empty space of the political is filled with all kind of differences that pit regimes of truth against one another. Without discursive conflict, there is no political field, in their view. Mouffe (2018) argues that since the 1980s both the left and the right have been gradually forced to the center, thereby short-circuiting the antagonisms needed for politics. The center is disciplined by a neoliberal consensus that takes politics out of the hands of the people, and so no longer offers believable alternatives. The current right populist moment is a sign of the return of the political. She argues against a return to the center as a correction, but rather in favor of a left populism to counter the authoritarian version. A radicalization of a pluralist democracy would seek out equivalences between emerging (intersectional) identities and a deepening of the traditional critique of the labor capital relation without making it the determinism "in the last instance." The point is to directly combat the rise of the authoritarian right populism that promotes freedom at the expense of equality.

For the more associative approach to politics, John Rawls (2001) and Jürgen Habermas (1996) see democracy as a system of justice as fairness, and propose a discourse theory of democracy that draws on both liberal and republican traditions. The democratic form of society is founded on the rule of law, out of an original agreement, or one that has come about through a long process of reasoned deliberation. The process results in a separation of powers, a set of rights, a market, an autonomous media, civil society, and a public sphere that help check and balance insurmountable differences and that enable the transfer of lifeworlds from one generation to another. In contrast to Laclau and Mouffe, Habermas's discourse theory of democracy depends on the institutionalization of deliberative procedures and not on a collectively acting citizenry. For Laclau and Mouffe, the state does not provide a neutral arbiter but is itself composed of struggle among a plurality of conflicting antagonisms.

Both the associative liberal and post-Marxist approaches are needed to think through a much larger project that I cannot elaborate on here but that would be necessary to capture the full complexity of our present state of affairs. I focus instead in this section on theorizing how interpretive antagonisms in the form of lies and distorted communication work alongside fake news and have a significant impact on the way left and right populists imagine each other now.

If the political can be defined as the institutionalization of antagonisms that populate empty space, then politics might best be defined as turning the impossible into the possible. This means that a part of the politician's role in a democracy has to lie somewhere between telling the truth and wagering what constituents are predisposed to hear. Politicians are in a strong position to provide journalism with content but are weakened at times to the point of absurdity by a dependence on spinning the truth in the service of party interests, but also in ways that do not contradict their constituents. Canadian journalist Daniel Dale (2017) reported in December 2017 that the American president made 1,064 false or misleading claims in his first year of office. Today, that number is reported to exceed 12,000 instances and growing (Kessler, Rizzo, & Kelly, 2019). According to one poll, 75% of republicans believe Trump over mainstream news media reports (Quinnipiac, 2018). Most discussions about fake news focus on its theatrics and capacity to manipulate public opinion. Lies told by politicians are not necessarily filed under the category of fake news. Only lies told by those pretending to be journalists or citizen journalists are understood as fake news. For the right populists, this is just part of the game to get back at the wrongs that have been done for so long. For the emerging populist left, the lies politicians tell are daily proof of corruption and greed in the name of freedom vs equality.

A lie is the opposite of a truth and is meant to deceive. It implies intention, so that when the interlocutor is confused or believes the truth is not distorted, it is not quite a lie. While all fake news is in some

sense a lie, not all lies politicians tell are fake news. If only one third of the time the President's claims were simply made in a confused or simply misspoken mode, we could still say there are an average of 16.4 lies a day over 928 days, often disseminated from what might be the most centralized political communication medium in the history of the world ---The President's tweets (Kessler et al., 2019). In any case, even a couple of lies a day, along with a misspoken or misleading claim, and just for good measure, a conspiracy theory every couple of weeks, is a lot of misinformation by any standard. The point about politics is not that the progressives or the reactionary forces do not care or cannot see the misdirection; it is rather that the interpretive lifeworlds are so deeply convinced the other side has been out-manipulating their side for so long that the motivation to hear the other has disappeared.

Lies are not new to politics but they are antinomies to 'good' journalism and social science. The relation between politics and truth has a long and complicated history, in which the one needs to contradict the other. Hannah Arendt (1956) goes so far as to argue that lies are necessary for the politician and not just political demagogues but the statesman as well. To grasp the significance of this, the domains of truth and politics need to be separated out only to come back to how they need to be joined in conflict. As she puts it, "Is not impotent truth just as despicable as power that gives no heed to truth?'' Both truth and politics are invested in the interpretation of facts. What appears to be extraordinarily divisive in the current interpretive contradiction is the extent of disagreement that is possible regarding facts. Intentional lies spoken by a politician are measured against facts, which in turn are interpreted and put in the form of opinions for public deliberation. "When the liar, lacking the power to make his falsehood stick, does not insist on the gospel truth of his statement but pretends that it is his opinion, the resulting confusion can be considerable." For Arendt (1956), factual truth has no antagonism to opinion, but truths are "opposed to opinion in their mode of asserting validity." In this sense, "truth carries within itself an element of coercion" (pp. 249-250). Direct lies, on the other hand, contradict facts altogether and leave opinions isolated from any common reference. In politics, lies get increasingly organized when politicians seek greater authority in government, to encourage bigger big business profits and to create scapegoats, all in order to consolidate power.

Both right and left populists make the claim in different ways that the political field is weakened by both corrupt elites and their usage of endless spin/lies. The populist left makes its claim from the perspective of intersectional minorities or, more classically, from labor organizing, while the right looks to recover its majority white hegemony or, more classically, a national ethnic identity. Echoing Mouffe's analysis of how the left in Europe moved to the center, Nancy Fraser (2017) argues that the division in the U.S. spread out from what she calls the progressive neoliberals stretching from Clinton to Obama to Clinton and the absence of an organized left, on one side, to the emergence of reactionary populism on the other. While progressive neoliberals adopted the progressive language on equality, anti-racism, and feminism over decades, economic policies did not reduce the rate of inequality that continued to expand, creating an ideological backlash. As if in step with the 2016 rise of right populism, a left populism emerged with an anti-neoliberal, anti-free trade Sanders-style socialism in the U.S. At the same time, you can see the return of left populism in the U.K. labor party under Corbyn growing to more than 600,000 members, the largest in Europe (Mouffe, 2018). A variety of marginal ethnic nationalisms and strong man type despots that came to power in Eastern Europe and elsewhere have contributed to the epistemic division between us and them in the post-Brexit post-Trump context. With the ongoing trade war with China in particular and the withdrawal of the U.S. from the world's international agreements like the Paris Accord, the Iran Agreement, and the Intermediate-range Nuclear Forces (INF) treaty with

Russia, there is now a large spread official renewal of the cold war, the official denial of the cause of climate change, and a renewed nuclear arms race.

The current legitimation and motivation deficits are explained by the left as symptoms of the ongoing break down of neoliberal forms of capitalism and by the right as a pent-up resentment stemming from years of stagnated wages, exported jobs, and exclusions left behind in the long shift to post-industrial economies. Wendy Brown (2019) argues that most left explanations do not recognize "the disintegration of society and the discrediting of public good by neoliberal reason as tilling the ground for the so-called tribalisms emerging as identities and political forces in recent years…It does not explain how the attack on equality……could turn up the heat on long simmering racisms" (pp.7).

On one side are progressive social policies that embrace and advocate globalism, an improved or socialist welfare state, a green plan to stem the crisis in climate change, multicultural diversity, affirmative action, and gender equality, and progressive social movements (pro-choice, gun control, Black Lives matter, #metoo). The populist left is also critical of the neoliberal progressives, who used the language of social movements but also deported masses of undocumented immigrants (400,000 a year under Obama), and, especially, have bailed out the global financial institutions with massive amounts of public money and the continuation of previous neoliberal economic policy favoring Wall Street. On the other side, the right populists promote climate change denial, deregulation, anti- globalism, anti-immigration, pro-life, pro-gun and anti- political correctness –in the social movements especially. It is striking, as Fraser points out, how labor unions as a social force are left out of both sides of the divide. For Mouffe, it is imperative that left populists find a new narrative to recover the imagination of workers and find a language that equivocates with intersectional identities, in favor of arguments for equality.

These kinds of diagnoses give us a central but still partial sense of the interpretive division, and not the full sense of a motivation crisis driving progressive neoliberals (the centrists in the new political landscape) and left and right populists that are able to negate each other's truth claims with such immunity and help set the scene for fake news. Any discovery of a new narrative that could bridge the left and right populists into a common political narrative needs to first recognize the blind spots that led to the impasse in the first place.

Can Sociology Come to the Rescue?

In this section, we briefly review three competing approaches in media sociology and journalism studies that address the crisis in motivation and the broader conditions which have allowed the phenomenon of contemporary genres of fake news. Clearly, the theories of knowledge that media sociology are working from stand for a particular type of social science, but they also draw on a variety of political, economic, and cultural analyses that speak well to the disciplines normally affiliated with this faculty of research. If media and politics are in effect a big part of the problem, we are hard pressed to point out how social science "thinkers" have contributed to bridging the divide. A survey of the different media sociology epistemologies here is meant to be more exemplary than representative as a means to demonstrate this point.

Our first point is that slow-moving social science most often arrives after the scene has already been set, but also is delayed due to long divisive debates over the relations between knowledge, truth, and power. To put it crudely, on one side, those who work from a critique of the fusion of power/knowledge/ truth (Marx, Foucault) make it difficult to see the actors' point of view, discourse, or consciousness as valid. On the other side, those who seek to understand and explain the separation of facts from values in

the actor's situation make it difficult to posit truth claims that might transcend the actor or their type of situation (Weber, Goffman). For positivist social science and objective (stenographic) journalists, "the mere telling of facts leads to no action whatever; it even tends, under normal circumstances, toward the acceptance of things as they are" (Arendt, 1956, pp. 251). Like politicians, social scientists are in a strong position to provide content for journalism and, because of their autonomy from spin and the market, they are expected to tell the truth with some measure of validity.

For right populists, the social science "thinkers" are caught in their own debates that lead into the traps of cultural Marxism (political correctness) and globalism. Some social science also provides a positive critique of the power elites through biographies of damage done to the ethnic nation (Cramer, 2016, Vance, 2016; Hochschild, 2016). Both the left and the right refer to the existential wounds that power inflicts. The left populists see knowledge production through intersectionality as a metaphor of oppression, in which each oppression is a vector, whose origins are postulated in advance and experienced painfully by the individual's race, ethnicity, gender, sexual orientation, class, ability, and/or appearance. However, for some neo-Marxists, class is not a collection of hardships, nor is race or gender for that matter. Class is a position within a system of production and reproduction. Race is a relation of colonial exploitation. As Holly Lewis (2016) puts it, "Class is not another vector of oppression; it is the mystification of all social relations in the service of production of surplus value" (pp. 274). Identity politics for left populists can tend to focus on the critique of oppression and argue for the injured and subaltern, while eschewing a rigorous analysis of exploitation. For post-Marxism, however, overcoming the impulse to explain identity politics through a reduction to economic categories is a challenge that has to be met.

For critical social science, theorizing the cultural power of the fields of politics and journalism, their professional ethics and relative autonomy from economic forces and from each other, means explaining what makes each a distinct field with a competing position, logic, and structure that reproduces itself, that can shape symbols of collective representation from the performances of actors/subjects. What is easily missed in approaches as varied as the field theory we have been loosely following (Bourdieu, 2005; Benson, 2013; Ryfe, 2017), and competing approaches of cultural sociology (Alexander, 2015; 2003) and Actor Network Theory (Latour, 20067; Primo & Zago, 2015), are the interpretive contradictions between the subjects of news reports or the subjects of policies and the imagined demos or "normal people" that are addressed. Fake news like 'The Pope supports Donald Trump, Yoko Ono had a lesbian relationship with Hillary Clinton'; or, 'A city in Texas is evacuated because of a reported Ebola outbreak' are not speaking to the Pope, to Yoko Ono, or to Texans, but to a third imaginary audience. Examples of this "super addressee" might range from a race of people, to a region, to a neighborhood, or to a broadly implied urban, national, or even global publics.

This internal dialogue between the author and the imagined audience is not limited to a conventional exchange of ideas, as in a conversation between two speakers that can be decoded according to linguistic rules. It is understood rather as the process that takes place in the imagination of the author and the idea, however distant or intimate, of the audience. The approach to the addressee demonstrates how both real and fake news contribute to the paradox of public culture, in which the voices of those being discussed are mostly absent. If it is true, for example, that journalism and fake news mostly speak about immigrants or the undocumented in the third person, it is usually about them and not with them, and so it is clear that the subjects of these reports are not the audience the author imagines. (Nielsen, 2009; 2016; Jackson, Nielsen, & Hsu, 2011)

We have a good idea of how politicians imagine their address to their own parties and to constituents, and of how social scientists line up potential truth tellers and fact producers in theoretical debates.

However, media sociologies of journalism and politics have not yet fully problematized the way in which their discourse is able to imagine its audience without addressing itself to the subjects being considered. Bourdieu's field analysis locates what we might call the third- person narrative 'positioning' of a given actor (journalist or politician), and the logic inside a given story in a way that is already framed in advance by the structure of the field in relation to other fields. In other words, journalism speaks about and not with the subjects of reports. Any reduction of fake news to a structural or organizational explanation of the position and discursive logic, though, assumes a settledness that can count on a common interpretation of the facts (Benson, 2014). If we are in a period of motivation crisis in which at least one part of the audience has lost the ability to hear the other's word as partially his or her own, if there is no ability to accept each other's validity claims, if emotion and opinion get separated from facts and truth, it seems we are outside the possibility of a settled legitimacy and even outside the ability to control the dissemination of fake news.

Jeffery Alexander probes this paradox by challenging the reductionist tendency in field theory and various sociologies of culture that would explain fake news as an expression of economic or political interest. His strong cultural sociology would look first at the actor's horizons of meaning and affect through thick description of narrative performances in order to uncover the effect culture has on structure (Alexander, 2003; 2015). The idea that right populists are simply interpolated by fake news and alt-right media is put into question. The story that people embrace most expresses a deep sense of personal injury and is already in place as fake news and the alt-right media emerge. As Francesca Polletta and Jessica Callahan (2018) suggest, these are the "stories (already) told by friends and acquaintances, stories that substitute memory for history, stories that make the experience of others seem as if it is their own, and stories whose truth is relatively unimportant to their value" (pp. 56).

Fake news is organized around narratives of imaginary inclusion that are already present and exclusions from "the community," thereby creating domains of "We-dom" (the normal people, real Americans/ British, the Christians, the whites) and "They-dom" (the elites, illegals, Muslims, non-whites, uncivilized) (Hartley, 1992; Alexander, 2018). The boundaries of We-dom and They-dom are not always coterminous with a unified political boundary and can be drawn from a specific set of well-known normative binaries. Fake news helps constitute communities, but the problem with community is that it also divides domains of 'us' and 'them.'

At the same time, cultural sociology takes into account how the meaning and affect in narrative also impact the institutional structure. In our case, it takes into account how much fake news upsets the journalist's 'sacred' sense of autonomy (from markets and sources) and the larger professional culture (autonomy, verification, balance, objectivity, accuracy) (Alexander, 2015). As seen in the case of Cambridge Analytica, fake news does an end run around journalism and goes straight to the consumer. As Jacob (2018) puts it, "fake news is the new public relations" (pp. 79). It is not merely that pollsters misdiagnose the U.S. elections and the Brexit referendum, or that journalists underestimate the significant role of social media, but journalism misses the story that is already circulating in the population coming to vote.

Bruno Latour's version of actor network theory applied to journalism studies moves in the opposite direction from both critical sociology à la Bourdieu and the strong cultural sociology under the somewhat dubious assumption that social structures themselves are simply the invention of the analyst. To grasp the meaning of politics, actor network theory simply follows the actors, looks for group formation through controversies, and discovers rather than advises the processes of change. There are no predetermined structures that a specialized discipline can uncover and then instruct the actors in per se,

only associations and group formations. The ontological turn wants us to record the traces between the actors and material objects, whether they are active or passive agents. The association between material and human produces a hybrid of actants, which are the source of agency in terms of intermediators creating change, or mediators that simply maintain the association. On the one hand, Rodney Benson (2014) points out, A.N.T is a useful descriptive approach, especially in unstable periods. On the other hand, 'real' patterns of inequality are empirically observable as structures and, as such, can be said to exist prior to their observation.

The advantage for studying journalism and fake news in this approach is the focus it puts on what journalism is becoming rather than what it is, or what it should be. It looks to understand the traces and associations in the next Internet, and how the hybrid of human and non-human actants is being formed (Primo & Zago, 2015). While the approach might contribute to addressing previously uncovered parts of the crisis journalism and politics are undergoing, the urgency, which the two sides in the motivation crisis are expressing, suggests that the mutations may have already happened by the time A.N.T. researchers get to the field.

For Latour though, the idea of arriving late to the scene is not an impediment; it just means you start from where you are. For example, Latour, a founder of science and technology studies, now withdraws (at least shortly) from his approach to natural science as a social construction. He now calls for a robust defence of climate science against fake news, and so embraces a realist epistemology (the idea that the real exists independent of our concept of it). While he spent much of his career developing an anthropological critique of the scientific method, he now argues that the consequence of fake news on the issue of climate is today's greatest threat to democracy. For Latour, the conditions that have made fake news possible are defined by three phenomena that "commentators have often noted but failed to see their connections": deregulation, the loss of faith in globalization, and climate change denial. The U.S. election, Brexit, and the rise of right populism all come from the same matrix. Latour (2018) thanks the right populists for a denial that creates clarity that "the climate question is at the heart of all geopolitical issues and that it is directly tied to questions of injustice and inequality" (pp.3).

Our question returns for each of the three approaches as to how to explain the gap in third-person narratives between the subjects of reports/tweets/images and the implied or imagined audience, and how the subjects themselves are generally excluded as addressees. This is a deeply inherent form of address in acts of journalism, politics, and most social science. For journalism, there is little reason to think it is likely to change, despite the innovations and integration of social media into the news room, however decentralized they might be (come) (Deuze & Witschge, 2018).

Where can we go from here? The larger and more difficult question is what might happen if each of the three fields began to address the subjects of their reports in a first-person I-you narrative, as if they were the imagined addressee in a public dialogue? Could it be done in a way that undoes the professional commitment to neutrality, objectivity, or balance in the third-person 'he, she, they' narrative? Does putting the journalist, sociologist, or politician into the story and addressing the story back to the subject of the story reduce the field to the status of activism? What are the implications for a direct radical pluralist politics, if it were to include the political subjects being addressees as the imaginary audience? What if left populists spoke directly to right populists (or the reverse) rather than about them? Or does moving from the pragmatic to the possible, or from balance to greater commitment to the interpretation mean endless adversarial antagonism? Or are all these things already moving back to the center in ways that are almost unnoticed?

CONCLUSION

We have raised more questions than we can provide answers for and have only begun to sketch out a general theory to help explain what we can hope for, once social facts give way to ever more intense emotional reactions as the new political norm takes hold. I have drawn more on the U.S. case --though it is broadly linked to Brexit and the global context-- and have loosely revised and updated a reflection from Bourdieu's earlier theory of how these three fields work with and against one another, in order to get a fresh look at the "what is" question regarding the effect of fake news on the two sides that have come to define our political moment.

Fake news and right-wing populist movements that appear to hold the fate of democracy hostage are urgent concerns around the world. A political and media storm has social scientists and pundits perplexed as to how to explain the tenacity of deeply opposing legitimation views and truth claims currently threatening the stability of liberal democracies and beyond. The present legitimation crisis, to borrow from Habermas (1975), has been sustained long enough to enter the phase of a motivation crisis in the sense that the deep interpretive divisions, as we have shown across the chapter, means that left and right populists as well as centrist conservatives and progressives have little to no inclination to even consider truth claims about all kinds of social facts from their adversaries, putting democracy in a flight toward an authoritarian form of oligarchy. We conclude that the political and media storm around fake news has occurred in part because the strengths in each of the three fields under discussion have given way to their respective weaknesses. As fake news threatens the legitimacy of each of the three fields, there are nonetheless signs this is turning around (Langlois et al,2019).

While it seems that journalism is continuing its downward spiral as an industry, as a craft it is also attacked on a continual basis. Caught in the motivation crisis and outflanked by its adversaries, the professional culture appears to be working vigorously not so much for a return but for a way forward to a deliberative democracy that feels lost in flight. The return of the political is not necessarily about going back to the centre either but about moving the field forward in some new, bold direction. Responding to a professional calling and acting as watchdog on powerful institutions do not make journalism or social science an opposition to the government, and yet, in these very peculiar circumstances, they cannot help but become part of the resistance, despite some denial of the gatekeepers who remain determined to remain objective, detached, or non-partisan. Ironically, the more journalism is accused by right populists of being fake, the more it recovers trust.

Big questions remain unresolved for where we can go from here: Can politics resolve the divide that fake news and the coming communications context have already helped produce? Can slow-paced social science research catch up, provide analysis, and renew trust in social facts for whatever side negates them? Will journalism be able to shape the next Internet to fit its autonomous professional culture, which in turn seems to have already been both destroyed and revived by it? It appears we will not have to wait much longer to find out.

REFERENCES

Alexander, J. C. (2003). The strong program in cultural sociology: Elements of a structural linguistics (with Philip Smith). In *The meaning of social life* (pp. 11–26). New York, NY: Oxford University Press. doi:10.1093/acprof:oso/9780195160840.003.0011

Alexander, J. C. (2015). The crisis of journalism reconsidered: Cultural power. *Fudan Journal of the Humanities and Social Sciences*, *8*(1), 9–31. doi:10.100740647-014-0056-5

Alexander, J. C. (2018). Raging against the enlightenment: The ideology of Steven Bannon. In J. Mast & J. Alexander (Eds.), *Politics of meaning/Meaning of politics: Cultural sociology of the 2016 U.S. presidential election* (pp. 37–48). London, UK: Palgrave Macmillan.

Arendt, H. (1956). Truth and politics. In *Between past and future: Eight exercises in political thought* (pp. 227–264). Penguin Books.

Benkler, Y., Faris, R., & Roberts, H. (2018). *Network Propaganda. Manipulation, Disinformation, and Radicalisation in American Politics*. Oxford U. Press.

Benson, R. (2013). *Shaping immigration news: A French-American comparison*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9781139034326

Benson, R. (2014). *Challenging the 'new descriptivism' –talk from QualPolComm preconference*. Retrieved from: https://qualpolicomm.wordpress.com/2014/06/05/challenging-the-new-descriptivism-rod-bensons-talk-from-qualpolcomm-preconference/

Bourdieu, P. (1996/1998). *On Television*. New York, NY: New Press.

Bourdieu, P. (2005). The political field, the social science field, and the journalistic field. In R. Benson & E. Neveu (Eds.), *Bourdieu and the journalistic field* (pp. 29–48). Cambridge, UK: Polity Press.

Brown, W. (2019). *In the ruins of neoliberalism: The rise of antidemocratic politics in the West*. New York, NY: Columbia University Press. doi:10.7312/brow19384

Canada, House of Commons. (2019). *International committee on big data, privacy, and democracy*. Report of the Standing Committee on Access to Information, Privacy and Ethics. Retrieved from: https://www.ourcommons.ca/DocumentViewer/en/42-1/ETHI/report-20/page-5

Confessore, N., & Bank, J. (2019, August 21). Big tech, a conservative provocateur and the fight over disinformation. *The New York Times*. Retrieved from: https://www.nytimes.com/2019/08/21/us/facebook-disinformation-floyd-brown.html?action=click&module=Top%20Stories&pgtype=Homepage

Cramer, K. J. (2016). *The politics of resentment: Rural consciousness in Wisconsin and the rise of Scott Walker*. Chicago, IL: University of Chicago Press. doi:10.7208/chicago/9780226349251.001.0001

Dale, D. (2017, December 22). Donald Trump has spent a year lying shamelessly. It hasn't worked. *The Toronto Star*.

de Tocqueville, A. (1988). *Democracy in America.* Harper and Row. (Original work published 1850)

Deuze, M., & Witschge, T. (2018). Beyond journalism: Theorizing the transformation of journalism. *Journalism*, *19*(1), 165–181. doi:10.1177/1464884916688550 PMID:29417952

DiResta, R. (2018). *The tactics and tropes of the Internet Research Agency*. New Knowledge (Organization), United States. Congress. Senate. Select Committee on Intelligence.

Doctor, K. (2016, November 16). The fake news wars go viral with Melissa's List. *NiemanLab*. Retrieved from: https://www.niemanlab.org/2016/11/the-fake-news-wars-go-viral-with-melissas-list/?utm_source=Daily+Lab+email+list&utm_campaign=6dfc9c5984-dailylabemail3&utm_medium=email&utm_term=0_d68264fd5e-6dfc9c5984-395961829

Fraser, N. (2017, May 4). Progressive neoliberalism vs. reactionary populism: A Hobson's choice. *The Great Regression*. Retrieved from: http://www.thegreatregression.eu/progressive-neoliberalism-versus-reactionary-populism-a-hobsons-choice/

Goodman, A., & Goodman, D. (2006). *Static: Government liars, media cheerleaders and the people who fight back*. Hachette Books.

Habermas, J. (1975). *Legitimation crisis*. Boston, MA: Beacon Press.

Habermas, J. (1996). Three normative theories of democracy. In S. Benhabib (Ed.), *Democracy and difference: Contesting the boundaries of the political*. Princeton, NJ: Princeton University Press.

Hallin, D., & Mancini, P. (Eds.). (2012). *Comparing Media Systems beyond the Western World*. New York: Cambridge University Press.

Hartley, J. (1992). *The politics of pictures: The creation of the public in the age of popular media*. New York, NY: Routledge.

Herman, E. S., & Chomsky, N. (2002). *Manufacturing Consent: The Political Economy of Mass Media*. Penguin Books.

Hochschild, A. R. (2016). *Strangers in their own land: Anger and mourning on the American right*. New York, NY: New Press.

House of Commons (U.K.). (2019). *Disinformation and 'fake news': Final report of the Digital, Culture, Media and Sport Committee*. Retrieved from: https://www.parliament.uk/business/committees/committees-a-z/commons-select/digital-culture-media-and-sport-committee/news/fake-news-report-published-17-19/

Howard, P. N., Ganesh, B., & Liotsiou, D. (2019). *The IRA, social media and political polarization in the United States, 2012-2018. Report from the Computational Propaganda Research Project*.

Jackson, J. D., Nielsen, G., & Hsu, Y. (2011). *Mediated society: A critical sociology of media*. Don Mills, Ontario: Oxford University Press.

Jacobs, R. N. (2018). Journalism After Trump. In Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election. London, UK: Palgrave Macmillan.

Kessler, G., Rizzo, S., & Kelly, M. (2019, August 12). President Trump has made 12,019 false or misleading claims over 928 days. *The Washington Post*. Retrieved from: https://www.washingtonpost.com/politics/2019/08/12/president-trump-has-made-false-or-misleading-claims-over-days/

Laclau, E. (2005). *On populist reason*. Verso.

Laclau, E., & Mouffe, C. (2000). Hegemony and socialist strategy: Towards a radical democratic politics. Verso.

Langlois, S., Sauvageau, F., & Proulx, S. (2019, November 14). Les journalistes, des alliés du peuple. *Le Devoir*. Retrieved from: https://www.ledevoir.com/opinion/idees/566960/medias-les-allies-du-peuple

Latour, B. (2007). *Reassembling the social: Introduction to actor network theory*. Oxford University Press.

Latour, B. (2018). Down to earth: Politics in the new climate regime. *Polity*.

Lefort, C. (1988). *Democracy and political theory* (D. Macey, Trans.). Polity in association with Basil Blackwell.

Levtisky, S., & Ziblat, D. (2018). *How democracies die*. Random House.

Lewis, H. (2016). *The Politics of Everybody: Feminism, Queer Theory and Marxism at the Intersection*. London: Zed Books.

Magoto, M. (2017, December 4). *Journalism under attack: the phenomenon of fake news and challenges of accountability in the new media*. Talk given to the speaker series *Truth and Democracy: Journalism, Politics and Social Science*. Concordia Center for Broadcasting and Journalism Studies. Concordia University.

Mast, J., & Alexander, J. (Eds.). (2018). *Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election*. London, UK: Palgrave Macmillan.

Mosco, V. (2017). *Becoming digital: Toward a post-Internet society*. Bingley, UK: Emerald Publishers. doi:10.1108/9781787432956

Mouffe, C. (2018). *For a left populism*. Verso.

Mueller, R. (2019). *Report On the investigation into Russian interference in the 2016 presidential election* (Vols. 1-2). Washington, DC: Academic Press.

New York Times. (2019). Who Will Tell the Truth about The Free Press. *Editorial Board*. Retrieved from: https://www.nytimes.com/interactive/2019/11/30/opinion/editorials/fake-news.html?action=click&module=Opinion&pgtype=Homepage

Newswhip. (2019). *Partisan publishers and political content*. Retrieved from: http://go.newswhip.com/rs/647-QQK-704/images/Hyper-Partisan%20Final.pdf

Nielsen, G. M. (2009). Framing immigration in the New York Times. *Aether: The Journal of Media Geography*. *4,* 37-57.

Nielsen, G. M. (2016). Critical theory and journalism: Expanding the implied audience. In M. Gasher, C. Brin, C. Crowther, G. King, E. Salamon, & S. Thibault (Eds.), *Journalism in Crisis: Bridging Theory and Practice for Democratic Media Strategies in Canada*. Toronto, Ontario: University of Toronto Press. doi:10.3138/9781442625198-006

Peters, M. A., Rider, S., Hyvönen, M., & Besley, T. (Eds.). (2018). *Post truth, fake news: Viral modernity and higher education*. Singapore: Springer. doi:10.1007/978-981-10-8013-5

Pew Research Center. (2010). *How news happens: A study of the news ecosystem of one American city*. Retrieved from: https://www.journalism.org/2010/01/11/how-news-happens/

Pew Research Center. (2019). *For local news, Americans embrace digital but still want strong community connection.* Retrieved from: https://www.journalism.org/2019/03/26/for-local-news-americans-embrace-digital-but-still-want-strong-community-connection/

Polletta, F., & Callahan, J. (2018). Deep stories, nostalgia narratives, and fake news: Storytelling in the Trump Era. In J. Mast & J. Alexander (Eds.), *Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election* (pp. 55–75). London, UK: Palgrave Macmillan.

Primo, A., & Zago, G. (2015). Who and what do journalism? *Digital Journalism*, *3*(1), 38–52. doi:10.1080/21670811.2014.927987

Public Policy Forum. (2017). *The Shattered Mirror – News, Democracy and Trust in the Digital Age*. Retrieved from: https://shatteredmirror.ca/

Quinnipiac/poll. (2018). *Women drive dems to 12-pt. lead in u.s. house races, Quinnipiac University national poll finds; voters split on confirming Kavanaugh*. Retrieved from: https://poll.qu.edu/images/polling/us/us07252018_uytw29.pdf/

Rawls, J. (2001). *Justice as fairness: A restatement* (E. Kelly, Ed.). Harvard University Press.

Riley, D. (2018). What is Trump? *New Left Review*, *114*, 5–31.

Ryfe, D. (2012). *Can journalism survive? An inside look at American newsrooms*. London, UK: Polity.

Ryfe, D. (2017). Journalism and the public. *Polity*.

Sauvegeau, F., Thibault, S., & Trudel, P. (Eds.). (2018). Les fausses nouvelles, nouveau visages, nouveau défis: Comment détrerminer la valeur de l'information dans les sociétés démocratiques? Québec: Presse de l'université de Laval.

Scarabelli, A. C. P. (2019, November 2). How did fake news run voters' opinions in the Brazilian elections? *Digitt Magazine*. Retrieved from: https://www.diggitmagazine.com/articles/fake-news-brazilian-elections

Vance, J. D. (2016). *Hillbilly elegy: A memoir of a family and culture in crisis*. Harper Collins.

Woolley, S. C., & Howard, P. N. (2018). *Computational propaganda worldwide: Executive summary* (Working Paper No. 2017.11). University of Oxford Computational Propaganda Project. Retrieved from USAToday website: https://www.usatoday.com/story/news/politics/2019/11/15/impeachment-full-text-marie-yovanovitchs-opening-statement/4202648002/

ADDITIONAL READING

Boltanski, L. (2011). On Critique: A Sociology of Emancipation. *Polity*.

Foucault, Michel (1997). *The Politics of Truth*. Semiotext(e).

Frakas, J. & Schou, J. (2019). *Post-Truth, Fake News and Democracy: Mapping the Politics of Falsehood*. Routledge.

Levtisky, S., & Ziblat, D. (2018). *How democracies die*. Random House.

Mast, J., & Alexander, J. (Eds.). (2018). *Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election*. London, England: Palgrave Macmillan.

V-Dem Institute. (2019). Democracy Facing Global Challenges: V-Dem Annual Democracy Report 2019. https://www.v-dem.net/media/filer_public/99/de/99dedd73-f8bc-484c-8b91-44ba601b6e6b/v-dem_democracy_report_2019.pdf

KEY TERMS AND DEFINITIONS

Actor Network Theory: This is the study of the cultural traces that the material objects and human actors leave in the process of forming groups. Human and non-human actants are relative and none is more important than the other. Technological and human actants form a hybrid that can transform group formations or maintain them. The task of A.N.T. is to describe the process of group assemblages and not to advise them. New technologies like social media that propagate fake news are an example of the technology-human hybrid that serve as mediators. Print-journalism is caught flat footed in the shift to digital production and can be seen as an intermediator that helps maintain previous group formations.

Alt Right: The term is short for the alternative right. It contradicts the former neo-conservative movement that emerged in the 1980's as a strategy to gain electoral support from minorities while harboring traditional trickle-down economic policies like lower taxes for the wealthy and free trade. The alt right seeks a global movement that would reverse the effects of globalisation that left industrial labor behind in the shifts to the service and digital economies. The term alt right also describes groups associated with white nationalists, anti-Semitism, anti-immigrant, and/or climate change deniers as well as a number of charismatic intellectuals and media personalities who attack contemporary values of diversity.

Critical Sociology: Culture is a practice that is both a creative process and a structure of constraints. The goal of critical sociology is to understand and explain enduring structures of domination that constrain actors. It requires a first level reading of meaning from the actors but moves to a second level that explains the meaning in terms of larger forces that structure them. Fake news needs to be understood as a form of propaganda that developed over long periods of time in larger political and economic forces.

Cultural Sociology: This approach argues that culture is a form of autonomous power and that every action has a horizon of meaning and affect that needs to be understood in itself. It requires an immanent reading of the actor's performance and that is not explained in terms of some other economic, technological, or political structure. Once meaning and affect are grasped on their own terms, the power of culture can then be seen to act on structures. Fake news needs to be understood in terms of the meaning and effect of stories already being told by actors in their own contexts. Only then can the power of culture be discerned.

Democracy: It means rule by the people. Direct democracy requires a deliberation by the people that lead to decisions for the common good. In more complex contexts like mass society a representative form is more practical. Elected representatives are sent to legislate in the name of their constituents. In liberal and republican democracy, the rule of law, the separation of legislative, judiciary, and executive power, along with a constitution that quarantines a basic set of rights for all, a market, and a civil society—are all said to guide the representative process.

Fake News: The term was first used by two reporters from Buzzfeed Craig Silverman and Lawrence Alexander following their discovery of a large number of intentional false reporting of pro-Trump stories in the 2016 U.S. election. The stories came mainly from alt right wing U.S. sources. The term fake news grew quickly as regular news stories picked up multiple examples of news intentionally meant to deceive readers/viewers. Its meaning was reversed by the President shortly after his election when he began to call all news and news organizations fake when it contradicted his agenda.

Populism: A political movement that can be defined as the rising up of "the people" against elites. Cutting across class and regional territories it builds forces that challenge existing regimes. It can be called right wing when coupled with conservative nationalism but can also engage a left-wing liberalism or socialism when in struggle against conservative forces. Both left and right tend to argue that the will of the people triumphs over any other measure.

Section 4

New Tools and Technologies to Help in the Fight Against Fake News, Alternate Facts, and Misinformation

Chapter 12

Cognitive Authority, Accountability, and the Anatomy of Lies:
Experiments to Detect Fake News in Digital Environments

Maria Aparecida Moura
https://orcid.org/0000-0003-2670-923X
Federal University of Minas Gerais, Brazil

Lorena Tavares de Paula
https://orcid.org/0000-0002-1286-5648
Federal University of Minas Gerais, Brazil

ABSTRACT

This chapter proposes an environment for the discovery of fake news and the orientation of information users in digital environments that correlates the cognitive authorities and the digital structures left as a trace. Such traces can promote the construction of a symbolic index that materializes the anatomy of lies. The model reached in this methodological process may function as a support for informational literacy in the post truth scene, as a space for fostering the informational culture in a network.

INTRODUCTION

The circulation, sharing and consumption of information in digital environments have diversified the forms of production and qualification of information and broadened the network of subjects that can act in the information production chain. However, the intensification of these processes and the diversity of actors involved in the production of information does not necessarily imply an improvement in their quality.

Today it is technically very simple to disseminate informational content in digital environments in real time and to large audiences. In this context, verifying information quality, formerly the responsibility of mainstream media institutions, has become increasingly diffused and / or specialized.

In the face of the problems that false news can pose to society, specialized services have been created to monitor fake news in different contexts. These services are offered by fact-checking agencies that seek to understand, verify, and support the fight against its circulation in different domains.

Due to the complexity of dealing with this social problem, it has also become essential to invest in educational processes and in the development of support structures for content checking so that information users can become aware of the process complexity so as to avoid consuming and spreading fake news.

This chapter addresses the issue of fake news diffusion in the health field. Therefore, the concepts of cognitive authority, accountability, semiosis and declarative traces are presented as elements necessary for understanding and identifying the evidence of lies in digital environments. In addition, we suggest components of a semi-automatic model for detecting fake news that is evidence based and draws on the correlation between cognitive authorities, declarative digital traces, news and semiotics in the context of post-truth. The proposed model aims to provide technological support for news consumption in digital environments and to support the structuring of proposals for information and media literacy.

CONCEPTUAL AND ANATOMICAL ELEMENTS OF LIES IN DIGITAL ENVIRONMENTS

Misinformation, a repertoire term in 1950 in the USSR, has become a social phenomenon with significant repercussions in recent years. It is the deliberate propagation of false content aimed at influencing opinions or weakening individual subjects and institutional contexts. According to Huyghe (2016), misinformation involves a path (contents) and a project (actions that lead to demoralization, destabilization or the degradation of an understanding). Misinformation requires propagation and reception mechanisms. A misinformation project includes semantic, rhetorical and media-oriented components for the purpose of excluding certainties, means and support.

Huyghe (2016) points out that the semantic component aims at shaping a meaning to be disseminated; the rhetoric seeks to persuade decision-making or opinion formation; and the media researchers aim to transmit and propagate information based on communication techniques.

In 2017, the concept of alternative facts was proposed by Kellyanne Conway, an adviser and spokesperson to Donald Trump. At the time, Conway defended the possibility of articulating information conceived as true to alternative facts and information.

Alternative facts, according to Lehtonen (2018), can be understood in two way: the diffusion of known false information that is presented as true, or an error or mistake that is accepted as true.

Post-truth is, as Ferraris (2019) points out, a symptom of an ongoing revolution, simultaneously technological, social and anthropological. Post-truth establishes epistemic relativism, which means that the idea of truth may vary depending on the context in which the subject is socially situated. Higgins (2016) explains that extreme epistemic relativism makes truth a concept that can vary from person to person by reducing it to the practices of reasoned arguments.

There is a tendency, in today's post-truth context that induces the subject to believe in versions of the truth that reinforce his identity and point of view. In this sense, it can be assumed that there are issues

Figure 1.
Source: Wardle & Derakhshan (2017)
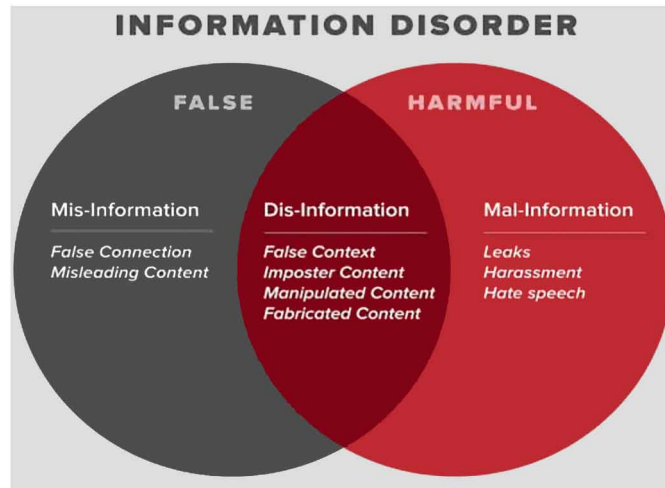
involving the cognitive authority (interests, experiences, perceptions) of the sender and receiver of the information.

However, deception is a fraud in the context of information technology-mediated presentation of information. It is an intentional control of information in a technology-mediated environment. (Rubin, Chen & Conroy, 2015).

There are several definitions of fake news, but the most striking of these defines the term as referring to news content in which the incorporation of informational elements is deliberately false. Bakir and McStay (2018) add that fake news may also have misleading content embedded in its content or context.

The construction of fake news encompasses four perspectives, according to Zhou & Zafarni (2018). These include: knowledge creation, publication, propagation, and credibility.

The creation of knowledge dwells within the false elements present in the produced knowledge. Herein, this publication explores and attempts to understand how fake news is written, and as such, references the titles, the body of the text, and the attributed authorship. Propagation analyzes how fake news is spread and its focus is on the source of information, feedback, and propagator. Finally, credibility focuses on the roles of document creators and propagators.

DECLARATIVE DIGITAL TRACES, ACCOUNTABILITY AND COGNITIVE AUTHORITY

Digital traces are identity markers produced in human-machine interaction. Traces are considered, according to Merzeau (2009) apud Serres (2012) as a category of digital presence that is organized into: declarative, behavioral, documentary, and presence of others.

Declarative traces are often found on blogs and social networks, while behavioral traces are available in the register of actions performed on the Web, such as cookies. The documentary traces reveal an intentionality and are organized around our networked documentary production. Finally, the traces

of the presence of others are associated with the building of personal reputation made explicit in digital environments.

Informational / digital identity can be understood, according to Serres (2012), as the set of digital documentary traces, individual or collective, that we consciously or unconsciously leave in the flow of our navigations and the reflection of this set of traces, remixed by search engines on the net. These traces can be identifiers (what I say I am), navigational (how I behave), and declarative (what I think). Associated with these traces is the concept of e-reputation, a set of opinions about a given social actor with an identifiable presence on the network.

The systematic collection and processing of these traces enables the planning and production of new products, services, and surveillance tools in digital environments.

Declarative digital traces are fundamental to the validation of information that is shared in a network, because when liking, sharing or commenting on social networks, the subject lends his cognitive authority, which consists of the power to influence the opinion of his interlocutors, to endorse, to dynamize and to circulate unaudited information in global proportions. In this case, the trust nurtured by the circles of intimacy contribute to the information being considered true. In addition, declarative digital traces allow an informational identity articulated by algorithms to become consolidated. In these terms, the convictions, language manifestations and cartography of interactions of a given subject create a favorable framework for the generation of fake news.

Accountability, on its own, is a process of social control adopted in political, administrative and financial contexts with a focus on mechanisms that promote transparency and ethical accountability.

Recently, the concept has gained socio-technical breadth as the adoption of accountability principles has been claimed in tools, products and services available in digital environments such as social networks, applications, algorithms and recommendation services.

According to Behrens (1994), information literacy refers to the skills required for collecting, organizing, processing and retrieving data and information for the construction of meaning and knowledge in presential contexts or digital environments.

Digital informational environments can be understood as semiotic scenarios. The semiotic scenario is a structure used for the specification and modeling of information products aimed at the production of meaning. It considers the semiotic project, the proposed reading pact, and the potentiality of meaning production actions (Stockinger, 1999).

In this scenario, it can be understood that cognitive authority is the recognition of the influence of certain social subjects in the learning process and knowledge production of others. For Wilson (1983), cognitive authority stems from the learner's own experience and its relationship with those subjects who have the power of determination in the cognitive process. Cognitive authority involves credibility, understood in terms of the competence and suitability attributed to the subjects invested with such authority. It offers reliability to shared information, enabling the necessary prerogatives to judge it true or credible.

Cognitive authority, as Wilson (1983) relates, essentially refers to two types of sociocultural interaction. The first is based on the subject's personal experiences and the second is related to their interactions in communities and to the construction of meanings.

From the perspective of cognitive authority, the decision about what is true is directly related to the meanings constructed in a given group.

All of this is now happening in a context where reporting is the result of such complex socio-technical, political and economic operations that it has become imperative to create methodologies that enable mediators and, by extension, information users to detect fake news in declarative digital traces.

METHOD

The semiotic circuit of fake news hinges on declarative digital traces for structuring the news as plausible information.

The semiotic evidence of lies in circulating news, and therefore fake news, was found:

- In alarmist narratives shared within a specific social group.
- In language markers to reinforce perceptions of the content served.
- In the absence of clear auditing markers in the shared information.
- In the presumed intellectual, institutional and documentary authority.
- In mimicking the informational standard adopted in the health area.

The proposed model focuses on the context of fake news circulation related to information sharing in the health field, notably on the theme of vaccination. This type of information is conducive to the circulation of false news due to the great concerns surrounding personal interests in health control and the large number of electronic sources for the dissemination of information in this area.

The strategy of engaging toxic information on these topics in social networks attempts to mimic the discourse adopted in the scientific field and to match the reputation of cognitive authorities in the health sciences field. Therefore, propagators of this toxic information adopt expressions that mimic the context of the circulation of medical information. Thus, strategies for falsifying statements are frequent:

- References to large research institutions.
- Forgery of experts' point of view.
- False incorporation of data and protocols.
- The use of infographics and tests based on user profiles.

In the analysis phase of fake news in the health area, content analysis and semiotics were applied to a sample of circulating fake news full texts on health issues.

In the second stage, the researchers sought to identify the elements of information toxicity used in the fake news argumentation, with reference to the concept of cognitive authority.

In the third stage, the researchers sought to identify the associated cognitive authorities and their plausibility in the context analyzed.

In the fourth stage, the semi-automatic fake news detection model in health data was structured. The elements used were the semantic components of an index and the authenticity of knowledge, in this case ICD 10 (International Statistical Classification of Diseases and Related Health Problems) was chosen. This is a discursive framework that has been adopted in fake news in the health area and a relational network of propagators and propagated themes.

DATA PRESENTATION AND ANALYSIS

The analysis was based on the perspective that news published in digital environments mobilizes structural elements, authority, and social dynamics.

Included in the structure are the metadata that enable the audit of the news, the data of the sharing environment, and the semiotic elements of digital news. Included in authority is the evidence of cognitive authority and declarative traces. Finally, included in the social dynamics are the information on the sharing dynamics and, once again, the declarative traces.

The fake news selected in this study was analyzed using the following aspects: the diffusion environment; the sharing dynamics; the semiotic news markers (semantic similarity, style, news graphic elements, plausibility); the evidence of cognitive authorities; and the associated declarative traces. Two publicly recognized fake news items selected in health and associated with vaccination campaigns were selected. This fake news has been disseminated on social networks and in messaging applications.

In the first fake news story analyzed (Figure 3), it was found that the news had as its source the Neon Nettle website. This source is not specialized in health and provides links to advertisements and various dynamic content.

The news has links to sharing on social networks and refers to the YouTube channel of the associated cognitive authority, in this case a doctor, with about 600,000 subscribers.

Regarding the semiotic markers of the news we observed:

- Inclusion of testimonials linked to audiovisual media.
- Alarmist tone in communication style.
- Images alluding to death and child suffering.
- Scientific illustrations and connection with other sources of information.
- Medical authority discourse.

The main declaratory trace found was the availability of a comment hit and the orientation to share the news on social networks.

The narrative, which guided the construction of the fallacious argument, adopted language that was easy to understand, but that employed an alarmist tone, such as "just don't ignore your symptoms though, which include chills, fever, headache, dry cough and aching of joints and muscles."

Figure 2. Digital News
(Source: developed by the authors)
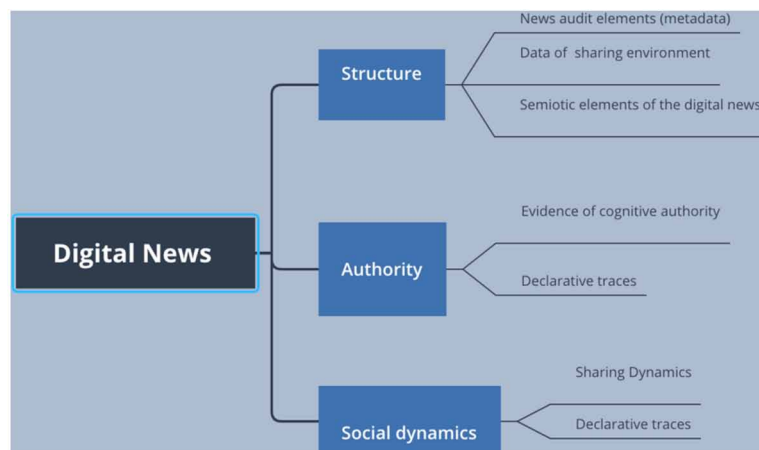
Figure 3. Fake News: Vaccination Campaign
Available at: https://neonnettle.com/news/3758-dr-john-bergman-flu-shots-contain-cancer-causing-ingredients-

The second story (Figure 4), also about vaccination, linked an allegedly deadly outbreak of influenza to the vaccine that immunizes the action of the virus.

The news was broadcast by Global News. Sharing dynamics have been associated with major social networks.

The article cites "CDC physician", Center for Disease Control and Prevention of the United States as its source.

The news, which had international repercussions, is a fake news story released by the site YoursNews-Wire.com in January 2018.

The fake news had repercussions on social networks in the USA, Canada and Brazil (translated into Portuguese by the site "Always distrust"). The information was denied by Global News Canada.

In this news the following elements are observed:

Figure 4. Fake News Vaccine
(Source: https://globalnews.ca/news/3973736/flu-shot-fake-news/)

- Presumed cognitive authority (reference to an alleged international health agency).
- Lack references to the primary sources of information.
- Lack of institutional authority responsible for spreading the news.
- Declarative digital traces within the propagator network (contextual sociocultural authority).

Contextual sociocultural cognitive authority is presented to the receiver of information through the mechanisms of content dissemination, whether social networks or messaging applications, based on declarative traces.

Synthetically, the main characteristics of fake news found in health in the analyzed news were:

- **Broadcast environment:** No links to original sources; inaccurate, confusing and misleading to readers; misleading in many ways.
- **Sharing dynamics:** contextual sociocultural cognitive authority - based on inner circle generated in social networks.
- **Semiotic news markers:** no links to research studies cited to support its findings; sensationalist narratives; articles not written in a dispassionate, scientific style.
- **Evidence of cognitive authority:** Poor quality of scientific citations; misunderstood and misrepresented data and information; wrong approach; unclear scientific evidence; no references to the study methodology; questionable conclusions.
- **Declarative Traces:** Describes personal stories and anecdotes; declarative traces (like, views, comments, emoticons and shares).

RECOMMENDATIONS FOR A SEMI-AUTOMATIC ENVIRONMENT FOR FAKE NEWS DETECTION AND INFORMATION USER GUIDANCE IN DIGITAL ENVIRONMENTS

This methodological proposal aims to suggest essential components for a semi-automatic model to provide technological support to the consumption of health news in digital environments and to support the structuring of information and media literacy initiatives. In the model, the conceptual dimensions of cognitive authority were considered: personal authority (intellectual authorship); institutional authority; documentary authority (nature of document); and intrinsic plausibility (content of document). The model seeks to organize fake news components into three major groups:

- Terminology base for knowledge authenticity in the area of detection (semantics).
- Relational base of propagators, themes and news propagation path (Social Network Analysis).
- Dynamic base of declarative digital traces taken from comments (discursive),

The model was built considering the semiotic, semantic and relational aspects of fake news circulation. Due to this, it is proposed that news verification be performed in three steps or stages:

1st stage - Localization of the disease and its elements in a knowledge authenticity index. In the case of this study, ICD 10- International Statistical Classification of Diseases and Related Health Problems is proposed as the authenticity index.
2nd Step – Check associated cognitive authorities (propagators, themes, and propagation path).
3rd Stage - Check discourse markers (plausibility and coherence, sensationalism and exaggeration markers, among others).

The purpose of the environment is to establish parameters, technological filters, and guidelines for fighting fake news from the understanding of a semiotic circuit of lies.

In this sense, the model seeks to demonstrate that fake news can be delimited and addressed using three fundamental elements:

Figure 5. Semi-automatic environment components for fake news detection and information user orientation in digital environments
(Source: developed by the authors)
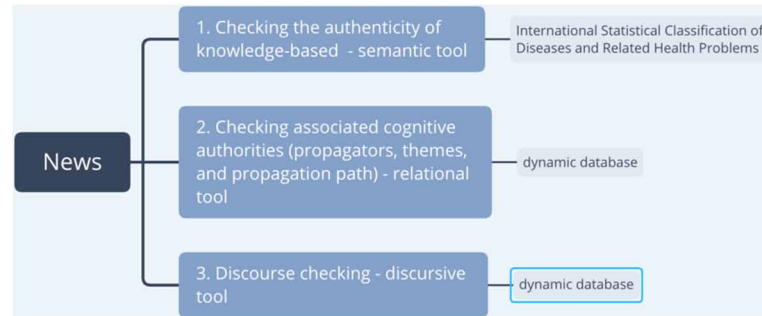
- An understanding of its structure.
- The perception of accountability.
- Information auditing for information and media literacy.

The semi-automatic health check fake news detection model considers the need for accountability in digital informational environments, the strategic character of digital traces for the credibility and intensification of the flow of news circulation. In addition, it considers the role of cognitive authority to be central to both fake news detection and informational and media literacy training.

The dynamics of fake news production and dissemination reconcile technological elements, declarative information, routines and propagation pathways adopted in social networks to organize knowledge, style, propagation and credibility.

Information diffusion technologies need to incorporate audit filters into their systems. Such filters can articulate semantic, semiotic and relational aspects for information qualification.

However, it should be emphasized that in addition to the technological apparatus that assists in the identification of fakes news, it is essential to invest in educational initiatives that would also help combat post-truth. In this sense, the promotion of information and media literacy is another important strategy.

INFORMATIONAL / MEDIA LITERACY AND FAKE NEWS: IMPLICATIONS

Information literacy consists of the performance of information professionals as agents in the cultural processes of educational and social transformation. Dudziak (2003) explains that the library and spaces for access to information as a multicultural, pluralistic institution can be considered the basis of this transformation.

Nowadays, the responsibility of preparing users and online readers to verify the quality of the information they access and share has become vital. In this sense, information literacy initiatives that integrate discussions and formative actions about digital platforms can be considered essential.

Information and media literacy are responsible for enabling the user of information on social media to understand the content of news or other information, the critical implications of that news or other

content, and the way it was constructed. Information and media literacy also help audiences discern the difference between opinion and facts (Gallagher and Magid, 2017).

In this context, based on the digital elements of accountability discussed above, we propose information / media literacy training focusing on the mapped digital footprints.

Information/media literacy can be established within the mechanisms of information diffusion: the digital platforms for sharing content. They may provide the basis for checking and accountability in auditing published news. These identifiers can be essential metadata for verifying any available news information: authorship, title, institution, date, format, etc. These elements must be capable of intuitive user realization and automatic operation by the software through which the information travels.

An important step towards a better understanding of how literacy can be applied to social networks is to analyze how information is presented to its users.

In online social media environments such as Facebook, Twitter, YouTube and Instagram, the goal is to become a one-time experience. Information that fits into each user's profiles is shown. This selection of interests is made in two ways: the first is by the user himself, when he uses the tools to "follow" other users, entertainment pages, corporate communication channels, and other personal and institutional pages. The second form of personalization comes from information acquired from other websites, cookies, which contain a user's search patterns, platform usage patterns, and history. Information acquired in this second way is primarily used by the platform to make recommendations for new content or product advertisements that may fit the user's profile.

Noting these characteristics of digital content sharing platforms is an essential part of information/ media literacy for today's world. In social networks, in addition to receiving and viewing information, each user can also spread their opinion through videos, photos and texts, or by referring to or engaging with other content already available on the network. They can also reinforce their views by interacting directly with other users' content through comments, likes, and shares. The ease of sharing associated with the dynamics of access to summary information can be considered one of the crucial elements in spreading lies in digital environments.

With information/media literacy, the information user can obtain the critical formative elements needed to discern the quality of the information they access, consume and share; to analyze false or untrue news; and to seek out trusted external sources for evidence or evidence that may refute content consumed. This formative model can help raise awareness of the quality of information in digital environments, thus fostering a critical information culture in today's post-truth environment. But this training needs to be implemented in both teaching information/media literacy and in understanding and developing digital environments. In this sense, a semi-automatic environment for fake news detection to guide users of digital environments is essential.

CONCLUSION

In the last decade, the circulation of fake news has reached near-uncontrollable proportions in different areas, especially health information and political decision-making.

The opacity and relative absence of accountability elements in digital environments and the growing use of information contained in declarative traces left by social actors in different interaction processes have opened up possibilities for the engagement of controversial informational practices characterized

by deliberate diffusion of fake news with a high degree of toxicity, resulting in impaired user decision making, among other problems.

Due to the findings of this study, the authors suggest a semi-automatic model for detecting fake news in digital environments with reference to the general characteristics of digital news, focusing on its structure, authority markers, and social dynamics. In association with this, the semiotic circuit of fake news was analyzed to identify the declarative traces that compose and reinforce the plausibility of the falsified information circulating in the health field.

This analysis highlights the need to publicize the notion of cognitive authorities in digital environments, evident in the consolidation of a set of audit metadata to check the reliability of the news, as well as to develop training initiatives focused on information and media literacy.

It is believed that the proposed detection model for health information may, with future studies, be extended to other areas of knowledge as the semiotic dimensions of the news, the centrality of the declarative digital traces to user credibility, and the dynamization of spreading deliberately toxic news and controversial content may have application beyond this initial study.

ACKNOWLEDGMENT

REFERENCES

Bakir, V., & McStay, A. (2018). Fake News and the economy of emotions: Problems, causes, solutions. *Digital Journalism*, *6*(2), 154–175. doi:10.1080/21670811.2017.1345645

Behrens, S. J. (1994). A conceptual analysis and historical overview of information literacy. *College & Research Libraries*, *55*(4), 309–322. doi:10.5860/crl_55_04_309

Dudziak, E. A. (2003) Information literacy: princípios, filosofia e prática. *Ciência da Informação, Brasília, 32*(1), 23-35. Available in: http://www.scielo.br/pdf/ci/v32n1/15970.pdf

Ferraris, M. (2019). *Post vérité et autores énigmes.* Paris: Puf.

Gallagher, K. J. D., & Magid, L. (2017). *Media, literacy and fake news*. Connect Safely and Yale Center for Emotional Intelligence.

Higgins, K. (2016). Post-truth: a guide for the perplexed. *Nature, 540*(7631), 9. Available in: https://www.nature.com/news/post-truth-a-guide-for-the-perplexed-1.21054

Huyghe, F.-B. (2016). *La désinformation - Les armes du faux*. Paris: Armand Colin.

Lehtonen, T. (2018). The Concept of alternative facts. In L. Kääntä, M. Enell-Nilsson, & N. Keng (Eds.), *Työelämän viestintä: VAKKI-symposiumi XXXVIII*. Retrieved from: http://www.vakki.net/publications/no9_fin.html

Merzeau, L. (2009). Présence numérique: les médiations de l'identité. *Les Enjeux de l'information et de la communication, 2009*(1), 79-91. Available in: . doi:10.3917/enic.009.0079

Rubin, V. L., Chen, Y., & Conroy, N. J. (2015). Deception detection for news: Three types of fakes. *ASIST2015*. Available in: https://asistdl.onlinelibrary.wiley.com/doi/epdf/10.1002/pra2.2015.145052010083

Serres, A. (2012). Problématiques de la trace à l'heure du numérique. *Sens-Dessous, 10*(1), 84-94. . doi:10.3917des.010.0084

Stockinger, P. (1999). Les nouveaux produits d' information: Conception et sémiotique du document. ParisL *Hermes*.

Wardle, C., & Derakhshan, H. (2017). *Information disorder: Toward an interdisciplinary framework for research and policy making*. Council of Europe report Available in: https://rm.coe.int/information-disordertoward-an-interdisciplinary-framework-for-researc/168076277c

Wilson, P. (1983). *Second-hand knowledge: An Inquiry into cognitive authority*. Westport, CT: Greenwood Press.

Zhou, X., & Zafarani, R. (2018). *Fake news: A Survey of research, detection methods, and opportunities.* Available in: https://arxiv.org/pdf/1812.00315.pdf

ADDITIONAL READING

Darton, R. (2017). *The true story of fake news*. Available em: http://www.nybooks.com/daily/2017/02/13/the-true-history-of-fake-news/

Huygie, F.-B. (2019). *Fake news: La manipulation en 2019*. Paris: V.A. Éditions.

Lokot, T., & Dakopoulos, N. (2016). News Bots: Automating news and information dissemination on Twitter. *Digital Journalism*, *4*(6), 682–699. doi:10.1080/21670811.2015.1081822

Potter, W. J. (2010). The State of media literacy. *Journal of Broadcasting & Electronic Media*, *54*(4), 675–696. doi:10.1080/08838151.2011.521462

KEY TERMS AND DEFINITIONS

Erroneous Information: Genuine information whose purpose is to damage someone's reputation.

Fake News: Deliberate dissemination of false announcement.

Falsification: The implication or act of false affirmation.

Hypocrisy: Dissimulation or falsifying an intention or feeling.

Insinuation: Subtle suggestion of a version of facts.

Lie: Conscious realization of a false statement.

Omission: Avoid telling the truth by deliberately mentioning only some part of the facts.

Plagiarism: Infringement of intellectual property.

Post-Truth: Socio-historical context in which people are prone to believe in alternative facts or fake news.

Chapter 13
Combating Fake News Online:
Turkish Fact–Checking Services

Mehmet Fatih Çömlekçi

https://orcid.org/0000-0002-4811-5558

Kirklareli University, Turkey

ABSTRACT

In today's post-truth environment, besides the increase in political polarization, the rapid spread of fake news infringes on society. In the struggle with fake news, fact-checking services have begun to play an important role. The aim of this chapter is to highlight how fact-checking services work, what their strategies and limitations are, their interaction with users, and the digital tools they use in such interactions. Thus, the platforms Teyit.org (Confirmation) and Doğruluk Payı (Share of Truth) that operate in Turkey have been chosen as exemplary cases. In the study, the content analysis and the in-depth interview methodological approaches have been used together. As a conclusion, it has been revealed that these aforementioned fact-checking services increase their activities during election times, adopt the principles of political impartiality and economic transparency, use the practices of data journalism, interact with users, and try to create a digital literacy ecosystem as an ultimate goal.

INTRODUCTION

In the post-truth age, where emotions and personal beliefs have started to overtake objective reality when it comes to shaping public opinion, people tend to use information that supports their own position and reject or overlook it if it does not (McIntyre, 2018). This causes political and ideological polarization to intensify and, as a result, leaves facts and truth on the back burner. The fact that people are trapped in social media's echo chambers, where one person cannot hear the other, poses a threat to the maintenance of transparent communications environments and democratic culture itself. In the digital media environment, where disinformation and fake news are a serious topic of discussion, independent and non-profit fact-checking services have been gaining prominence globally. Through the strategies and practices that these services implement, and by using digital data, software, technology, and the fundamental methods of journalism these services are active in a wide range of areas from questioning traditional media

and politicians to including citizens in the news production process (Wintersieck, 2017; Cheruiyot & Ferrer-Conill, 2018).

In this respect, the aims of the study could be summarized as to: a) highlight the working-styles and strategies of fact-checking services as well as the digital tools they utilize, b) understand how these platforms communicate and interact with users/society in terms of combating fake news, c) highlight the role these platforms have in increasing the digital literacy level of citizens as well as the limitations they face, all within Turkey, where political polarization is intensely experienced (Bulut & Yörük, 2017; Esmer, 2019).

In order to reach these aims, a three-stage methodological approach has been adopted. Firstly, a comprehensive literature review was carried out with the terms post-truth, fake news and fact-checking services. Thus, the Reuters Institute, the Edelman Trust Barometer, Teyit.org, and the European Union Commission's latest reports were scanned in terms of trust/distrust towards social media, fake news and precautions taken against these issues. In the second stage, a content analysis was carried out on the websites of Turkey's two most popular fact-checking platforms: "Teyit.org" (Confirmation) and "Doğruluk Payı" (Share of Truth). Thus, the topics that these platforms focus on, the methodology that they follow in the fact-checking process, and the ways in which they present fact-checking analyses to readers were revealed. The statements and interviews of the founders and editors of these platforms were also scanned. Lastly, an interview request was sent to "Teyit.org" and "DP" via email. In-depth interviews were carried out with the 3 people (Teyit.org editor, Teyit.org writer, and DP writer) that accepted the request. These interviews explored the aims and operations of fact-checking services, journalism practices, ways of combating fake news in a post-truth world and the limitations of these services. The reason why this method was chosen was to gather data that included more detailed and subjective experiences (Boyce & Neale, 2006) and to support the literature review and content analysis of the study.

BACKGROUND

Fake News and Social Media

The negative effects that may be caused by the spread of misinformation within a society are not a new phenomenon. Even in ancient Greece, Thucydides observed that truth could be used to manipulate public opinion (Garrett, 2011). News that is twisted or made up can be seen in the oldest journalism practices. Moreover, in times of social crises, anxiety, conflict, and transformation, this kind of news intensifies (Kiernan, 2017). One of the oldest examples of this in the press is the 1835 news article called the "Great Moon Hoax," which the New York Sun newspaper published, and which claimed that "life was found on the moon" (Allcott & Gentzkow, 2017, pp. 214). Just as lying and twisting facts in communication between people is as old as rhetoric, large scale propaganda and misinformation are as old as persuasion campaigns using modern mass communication tools.

With the Internet becoming a widespread part of people's social lives, it has been stated that manipulation, online gossip, and deception could increase in tandem with the quick spread of information (Ayres, 1999; Katz, 1998). The thing that is different in today's world is that, because of digital platforms like Facebook and Twitter, which are dominant, based on interaction, and which serve as places where anyone can produce content, false information can be spread more quickly and to a wider audience than ever before (Waisbord, 2018). With social media and advanced digital tools coming into play, the phenomenon

of deceiving the public through fake data, or in terms of a specific political/economic aim, has gained a whole new significance. In today's world, not only governments and media establishments but also large corporations can contribute to the fake news atmosphere through advertising to serve various economic interests. The scope of fake news and its effects can even reach public health matters. For example, in the UK, the claims that vaccines administered during childhood cause autism has caused an increase in vaccine-preventable illnesses and led to a public health crisis (Lewandowsky, Ecker & Cook, 2017).

Fake news is defined by Allcott and Gentzkow (2017, pp. 213) as "news articles that are intentionally and verifiably false, and could mislead readers." Amaros (2018) stated that fake news is able to ensnare people with a striking headline, content that manipulates people's emotions, and a so-called "trustworthy" appearance. Furthermore, this kind of incorrect and/or manipulative information can be more effective in environments where political polarization is more distinctive and where people tend toward news that supports their own opinions and beliefs. In this respect, the effect of fake news in the 2016 U.S. Elections and Brexit campaigns are still widely discussed and studies are still being conducted that will shed light on the matter (Allcott & Gentzkow, 2017; Bovet & Makes, 2019). This phrase became especially popular after the 2016 U.S. Elections and after a BuzzFeed news story dating from January 2017, which put forward evidence of the claim that Donald Trump and Russia collaborated to manipulate the election. Given these developments, media interest in the term fake news peaked (Media Cloud, 2019; Google Trends, 2019a). According to BuzzFeed, an alternative news site, in the three months preceding the 2016 U.S. Elections, fake news was shared more than real news on Facebook (Silverman, 2016). According to research conducted in the USA, segments of the population that consume media on a low scale, that are young, and that tend to get all their news from social media are more likely to believe in disinformation (Humprecht, 2018).

The phrase post-truth, defined as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief," was widely discussed in the media and academic circles following the U.S. elections (Google Trends, 2019b; Oxford Dictionaries, 2019). According to McIntyre (2018), the roots of the post-truth age, in which truth and facts started to lose significance, lie in the postmodernist approach that promotes different opinions/stories instead of a "holistic truth," which can lead to denial of fundamental scientific facts. This approach has been adopted by some politicians, and, in order to win elections and/or public support, "alternative truths" have started to be produced.

In this respect, the trust in media channels where fake news spreads has started to decrease. According to research conducted by the Reuters Institute (Newman et al., 2019), in which data from 38 countries was gathered, trust in news decreased by 2% from the previous year to 42%. Furthermore, in the study, it was discovered that a 55% segment of the population was concerned about what news was real and what was fake on the Internet. It was observed that in countries where a polarized political atmosphere combined with intense social media usage (Brazil 85%, the UK 70%, Spain 69%, the US 67%, and Turkey 63%), this ratio was even higher. In Turkey, general trust in news is 46% and the trust in social media news stands at 40%. Further, according to the report, the percentage of users avoiding news in Turkey is 55% (the 2nd highest country studied), and the percentage of users of using closed Facebook groups as a means of accessing news is 29%. It is stated that this situation makes media communications more closed off and increases political polarization. In the Edelman Trust Barometer Report (2019), which was conducted in 27 countries, it was revealed that 73% of the participants were worried about disinformation in the media and feared that fake news would be used as a political weapon.

In research that the Pew Research Center (Silver, 2019) conducted in 11 developing countries where political polarization is widespread, attitudes of citizens towards the manipulations that occur in the digital environment were surveyed. Citizens stated that technology made it easier to manipulate people through misinformation and gossip, thus increasing the risk of politicians manipulating their own people. Apart from this, people also stated that discussions in digital environments widened the rift between people's political views in their country and that hate speech could easily be spread via social media (Silver, 2019). In the study that Barbera et al. (2018) conducted with nearly 150 million Twitter posts, it was found that, especially when it comes to political matters, people tended to spread/share the news that came from sources that were more ideologically similar to their own. And in Peterson, Goel & Iyengar's study (2018) about the political atmosphere prior to the 2016 U.S. elections, it was concluded that the Democrats and the Republicans adopted completely different media channels and that this rift only intensified political polarization.

The struggle against fake news and disinformation that spread via social media is taking place, not only NGOs, but also in governments and international organizations. A policy was developed by the European Parliament in 2018 to combat online fake news and disinformation. It was decided that digital literacy would be embraced in order to raise the awareness levels of social media users (Renda, 2018). Additionally, also in 2018, the European Commission prepared an action plan against disinformation that made member countries responsible for ensuring that the public was not harmed by fake news (EEAS Press Team, 2018). Thus, Germany passed laws to combat fake news (*Netzwerkdurchsetzungsgesetz*) and impose sanctions on social media platforms that did not delete hate speech and fake news (Muller & Denner, 2017). Efforts to combat fake news by voluntary organizations and NGOs are also ongoing. In this respect, fact-checking services have gained prominence thanks to their struggle against fake news.

Fact-Checking Services and Data Journalism

In an environment where the media's trustworthiness is being questioned more and more, the fact-checking services and political actors of independent organizations play an important role in terms of monitoring corporate and alternative media establishments (Cheruiyot & Ferrer-Conill, 2018, pp. 967). Fact-checking services are platforms that have been founded by volunteers, independent journalists, or organizations, and that research the validity of the contents and claims in resources open to the public. They also share their findings with readers and inform people about the trustworthiness of online content. Thus, various texts, images, and videos are analyzed by researchers, volunteers and journalists via the help of various digital tools and software. The aim of fact-checking, in general, is to allow people to form their own opinions based on objective facts and to ensure they are exposed to disinformation as little as possible. As a result, the aim is to steer people properly in the digital environment and to stem the spread of fake news that may be a danger to democracy (Brandtzaeg, Følstad & Dominguez, 2018). Some of the most popular fact-checking platforms are the Pulitzer winning Politicalfact.com, the university-sponsored FactCheck.org, and the non-profit Snopes.com (Garrett, 2011). In today's world, 60 fact-checking platforms from 6 continents participate in the studies of The International Fact-Checking Network, which is a part of the Poynter Institute. Of those, thirty platforms have reached the stage of becoming members of the organization by signing the Code of Principles for Fact-Checkers (Poynter, 2019). According to Pavleska et al. (2018), as of 2018, there are 137 fact-checking services operating in the world.

İt is possible to separate fact-checking services into three categories in terms of their characteristics. The first of these are platforms that deal with political and public statements and generally focus on

politicians. Next are the platforms that deal with the gossip, deceptions, urban legends and made-up news that circulate online. Last are the fact-checking services that focus on only certain daily events, i.e. the Ukrainian conflict (Brandtzaeg & Følstad, 2017). When assessed in terms of organization, these platforms can generally be divided into two. The first of these is in the minority and works as a part of corporate media organizations. For example, mainstream media establishments like the BBC, Der Spiegel, and Le Monde have managed to keep up with this trend through the fact-checking services they provide. However, these endeavors are limited to the economic ownership of the media and to the editorial preferences that that ownership may shape or influence. The second and more common practice is the model that is established as an NGO and that is run by independent researchers, journalists, and volunteers. Because this model is non-profit, editorial preferences are more independent and objective (Graves & Cherubini, 2016). Despite all these differences in terms of character and organization, fact-checking services resemble each other in terms of the results they achieve, sharing their financial resources with the public and defining themselves as a part of a wider international "news trustworthiness" movement.

Whether the people that work at the fact-checking services consider themselves journalists or not, they use some data journalism practices. Data journalism, according to Stray's (2011) definition, is: "obtaining, reporting on, curating and publishing data in the public interest." Today, bits of information about any news story flow in online and offline environments from various sources, and are either highlighted by users, or disregarded by them. By intervening in this data flow in the digital environment, the value of data journalism, which means conveying data to the reader by obtaining, curating and visualizing it, increases day by day. Thus, in the process of preparing news files and also in the presentation of the news, various digital devices (infographics, network maps, etc.) are used.

Data journalism, instead of attempting to report on breaking news first (a reflex of traditional journalism), attempts to show the true face of things and to show what the news story means in a deeper context; these forms of journalism have started to rise to greater prominence (Gray et al., 2012). In this respect, instead of opinion and prediction, a journalistic style that favors verifiable data has gained prominence. According to Coddington (2014), data journalism and computer-supported journalism are gradually beginning to work in tandem with investigative journalism. For example, in The Guardian's project in 2009-2010, the newspaper shared a 460 000-page report on the UK's expenses and asked its readers to highlight suspicious points in it. At the end of the project, reports based on the research and data regarding the results were published. As a result, Parliament had to reconsider some of its operations. Thus, the foundations of data journalism, which are the practices of using data for the benefit of society, to curate, verify, analyze and synthesize the wash of data, were applied (Gray, Bounegru, & Chambers, 2012).

FINDINGS

Teyit.org: Combating the Fake News Ecosystem in a Politically Polarized Environment

Teyit.org is a non-profit fact-checking platform based in Turkey and established on October 26th, 2016. Its mission is described on its website as: "Our main aims are to prevent false information from spreading online, help media consumers develop their media literacy skills, and develop methods to promote critical thinking." Due to the platform's transparency principle, all of its financial resources, contributors and NGOs, companies, and other collaborators can be found in detail in its online documents.

As a part of its transparency principle, the methodology that the platform uses for fact-checking is available on its website. This methodology is as follows: 1) Scanning: The daily scanning of social media news via digital devices and software. The fake news, urban legends and the news seen as suspicious by readers that are in the headlines. 2) Choosing: The choosing of news according to the principles of Virality, Importance, and Urgency. 3) Investigation: Investigating the validity of news by using the fundamental journalism methods and digital tools in the "Verification Handbook" (Silverman, 2013). 4) Results and Analysis: Publishing the results of the investigation based on data over the website and Twitter account. İt is stated that during all fact-checking processes, Teyit.org adheres to the principles of objectivity, openness, correction and economic transparency. Furthermore, after the fact-check file has been published, the effect is monitored to check whether the person, social media account or newspaper has deleted the fake news.

The platform is made up of an 11-person team that consists of a founder, an editor, writers, a project assistant, and those responsible for video and graphics. By scanning newspapers, news broadcasts on TV, social media accounts that consistently spread fake news, and suspicious news sent in by users, the writers prepare content. According to platform reports, between October 1st, 2017 and December 31st, 2018, 11 518 user alerts were received. During scanning, priority is given to mainstream media's news, which is characterized by higher ideological segregation. Apart from this, Teyit.org is Facebook's third-party fact-checking platform, and, through the system that has been set-up, all news that is viral on Facebook lands on the laps of the writers. The alerts sent in by social media users are checked by the software Dubito, which they developed themselves, and are turned into cases that require confirmation from interaction editors. Apart from the collaboration between the editor and the writers in creating content, a network dealing with finding funds, determining long-term strategies, and designing the videos and graphics is also present.

During the fact-checking process, it is necessary to have accessible open sources of data; the analysis of this data via the use of digital tools starts the process. A Teyit.org writer (personal communication, June 4, 2019) indicates this by stating: "The way we reach information is not too different from the way normal citizens do." The only difference is that fact-checking processes are not carried out solely based on individual declarations; instead, the evidence is obtained, and the platform expects at least two other people to confirm the statement/declaration. As a result, the process can take a long time. Just as there is news that can be checked within 1 hour, there are claims that take 1 month to investigate. The participation of users in content creation is not limited to alerts and declarations; in certain cases, users support the investigative journalism process. For example, during "Feminist Night Walk" that took place in Istanbul on March 8th, 2019, a claim that the azan (Islamic call to prayer) was being protested caused Teyit.org staff to ask their followers to join the investigative journalism process by sharing the images they had. The findings obtained following the investigation process that occurred through users' reciprocal correspondence were published using data analysis and visualization techniques. Thus, investigative journalism and data journalism practices were used at the same time.

As of 2019, a total of 881 suspicious news stories have been fact-checked by the platform and 104 of them flagged as "true", 697 as "false", 66 as "complicated," and 14 as "uncertain". Looking at these statistics, it is possible to say that the platform primarily aims to expose the fake news that circulates on social media. Among this fake news, political propaganda, political statements, twisted data, gossip, and urban legends may be found. As seen in Table 1, national security and issues in Turkey's political agenda come to the forefront as the platform's major areas of focus. The news, images and videos about the statements and actions of politicians, political propaganda news that stirs up society, and deceptive

information about national security fall within this category. When we consider that political polarization in Turkey is usually revealed in internal political affairs, it seems reasonable that a large portion of the fact-checking is allocated to this area. The editor of Teyit.org (personal communication, June 6, 2019) draws attention to this by stating: "In an environment where there is intense polarization especially on political issues, fake news increases. We pursue genuine information independently."

During general elections, local elections and referendums, polarizing and manipulative content on social media that requires confirmation increases. Teyit.org editor Gülin Çavuş says this on the matter:

"A large part of society has no idea what the "others" are following. Content that has been shared hundreds of thousands of times in one social media echo chamber does not even reach another echo chamber. The point where we can sense the polarization the most is here... The relationship between polarization and fake news is being seriously discussed in journalism schools, media institutions and a few news centers just as the effects filter bubbles (echo chambers) in spreading fake news is. In Turkey, we benefit from the data of these investigations. We work on subjects like fake news, media literacy, trust in the media, and news consumption habits and soon will contribute more to the increase of Turkish sources in these areas" (NewsLabTurkey, November 22, 2018).

A Teyit.org writer's (personal communication, June 4, 2019) opinions on this matter are of a similar nature:

"During times of crises and regarding something in the news, especially via social media, people are able to make viral anything that feeds their political bias. For example, during elections, we receive many user alerts. If we take a look at the number of analyses on the site before the elections, it's very few. However, following the elections they increased... Every side is trying to share things that confirm what they themselves believe in."

Apart from internal affairs, news about international politics and economic and social developments is monitored by Teyit.org. In this respect, an analysis of Donald Trump's statements before and after the 2016 US Presidential elections comes to the forefront. Apart from this, various international news is

Table 1. Distribution of the Teyit.org fact-checking Analyses According to Their Subject (2016-2019).

Subject	Number of Analyses
Internal Politics and Security Issues	210
International Politics	92
Health Issues	39
Popular Culture	36
Economy	30
Crime News	25
Science and Technology	23
Environment	16
History	16
Immigration	14
Sports	10
Education	9
Culture and Art	6

evaluated (New Zealand mosque attack, the social movements in Venezuela, etc.). As can be seen, the platform does not confine itself to national matters in terms of fact-checking, but adds global issues to its agenda with the intention of being part of a bigger international fact-checking network.

Apart from political news, the editor and the writers prioritize fake news that has spread on social media about migrants and public health issues.

"If on social media a person continually comes across disinformation about migrants, that person goes and votes for the party against migrants. These are contents that can risk the lives of some people, a group and especially groups handicapped socially" (Teyit.org writer, personal communication, June 4, 2019).

"Syrian refugees in Turkey, refusal of vaccines and matters regarding public health... We prioritize information that affects people's rights and freedoms or that threatens their lives or property. A file may not be viral, it may not be shared a lot, however, it could be very important, it may be about a person's life or it may contain news that could stir up society and cause tension between factions in society. Though it is not viral, it is in our area of interest" (Teyit.org editor, personal communication, June 6, 2019).

As can be seen, priority is given to "protect" the groups who are a minority and who are known as "the vulnerable subjects of fake news." Beyond this, fact-checking is also conducted on various subjects such as the environment, science and technology, pop culture, legal cases, culture and art, economics, sports, education and history. The other area of interest of the platform are: to raise awareness, especially in environmental matters; to be one step ahead of the fake news about scientific matters, which prepared the path leading to today's post-truth environment, according to Kakutani (2018); and to prevent the twisting of historic events for political purposes.

The founder of the platform, Mehmet Atakan Foça, has called for collaboration with other fact-checking platforms, various alternative media channels, academicians, students, and all media users in general by saying that they are "trying to create an ecosystem that combats the disinformation / fake news spread in Turkey" (Foça, 2019). In conjunction with "[creating] an ecosystem to combat fake news," a sticker packet has been created for people to use in their Whatsapp groups. Through various stickers like "this information is false", "what's your source?", and "did you confirm it?" Users are also encouraged to act against false information that can spread in closed groups (Teyit.org, May 24, 2019). One of the portals of this endeavor is #Teyitpedia. In this portal, ways to recognize fake news, fact-checking tools, news from the fact-checking world, and reports and studies about fake news are provided. Through all their efforts, the platform is trying to change the perception of fact-checking as the duty of a few voluntary platforms and NGOs, and, instead, to make fact-checking practices common throughout Turkish society. The Teyit.org editor (personal communication, June 6, 2019), who believes they have achieved this to a certain degree, states: "Sometimes users research like we do and shed light on the matter before we do."

Similarly, in order to "create an ecosystem based on truth and accurate news", efforts in digital media literacy in offline environments are ongoing. Thus, various panels, sessions and school/university visits are organized, and digital media literacy training is given to both students and citizens and also to various institutions and journalism unions. Fact-checking practices are also published on YouTube and Instagram where imagery is at the forefront.

"Doğruluk Payı" (Share of Truth): Political Fact-Checking and Data Journalism Practices

Doğruluk Payı, Turkey's first fact-checking service, was founded in June 2014 by "Ortak Gelecek İçin Diyalog Derneği" (The Dialogue Association for a Common Future, now known as "İzlemedeyiz" - "We

are on Watch"). DP is a member of the International Fact-Checking Network and its founder Baybars Örsek is a director of IFCN. DP has a 10 person team that is comprised of a director and editors. The platform's main purpose is to scan all the statements, speeches, promises and claims of politicians, whether they are part of the ruling party or opposition party, and to check their validity through the aid of open sources. While choosing these claims and statements, they make sure the cases can be confirmed or denied and that they are relatively disputable and important. During the fact-checking stage, they check that the claims correspond to data in sources open to the public, and they check the quality of the confirmation sources as well as the context and purpose of the claim. Their main aim, however, is to help "citizens with access to better information and to help voters make a choice by benefitting from accurate information" (DP editor, personal communication, June 11, 2019). Furthermore, DP aims to "affect politicians with fact-checking contents and to make sure that from now on they reflect the truth clearly to citizens" (DP editor, personal communication, June 11, 2019).

DP adheres to 5 fundamental principles in their fact-checking process. These are: "impartiality and equality"; "the transparency of sources"; "the transparency of the financial and organizational structure"; "the transparency of the management"; and "the analyses being fact-checked openly and reliably" (Dogrulukpayi, 2019). News cases prepared about the claim of political figures are categorized by platform moderators according to their subjects and shared with readers afterward. These subject headings are: "Industry, Trade and Finance" (111); "Defense and Security" (26); "Economy" (100); "Social Politics" (119); "Public Works, Construction and Urbanization" (54); "Technology" (28); "General Politics" (98); "Domestic Politics" (66); "Environment" (37); "Agriculture, Forestry and Rural Affairs" (77); "Health" (49); and "Others" (30). Of these headings, "Economy" and areas in which pre-election promises are monitored via government actions were highlighted on the main page.

In order to remain impartial in a polarized environment, DP assesses both the ruling party's and the opposition party's statements. As a result of this, citizens and politicians from different political backgrounds follow the platform (DP editor, personal communication, June 11, 2019). The "Hükümetre" (Government Monitor) application, however, aims to track what percentage of pre-election promises the ruling party has realized. This application connotes, as a fourth power, the media's mission to regulate the government on behalf of citizens.

Apart from checking the statements and claims of politicians, DP has other operations in terms of increasing digital literacy. The employees of the platform visit different parts of Turkey and provide free digital literacy training to both university students and adults. In these training sessions, the history of fact-checking services in Turkey and the world, the way they work, and their aims are explained. Furthermore, basic information about combating fake news and checking facts via data/tools in the digital environment is provided to citizens.

Apart from this, bulletins which bring together open source data on the political agenda, developments in the economy, migrants in Turkey, and issues that concern public health are published. The news cases and bulletins that are prepared are also shared via Twitter, Facebook, and YouTube in order to reach a wider audience. During the sharing of the analyses, in order to increase audiences' comprehension, maintain the readers' attention, and increase the capacity of impact, data visualization techniques (infographics, tables, short documentaries, videos, etc.) are used. One reason for this is the fact that users do not always want/have the time to read long reports and information on the websites of institutions. DP editor (personal communication, June 11, 2019) explains this case as:

In today's world, visual culture is more prominent than reading. Therefore, whether it be Turkey's economic data or the pre-election, we explain what is occurring by visualizing it. Because YouTube is popular at the moment, we especially share via this channel.

As can be understood, DP's employees are also well-informed on subjects such as data analysis and data visualization and continue to develop their capabilities in this area.

In particular, videos are used to raise public awareness towards certain social issues such as the gender-related killing of women, violence, sexual harassment, problems faced by migrants, unemployment, and digital surveillance. By creating digital content about these issues, DP aims to convey accurate information to the public about these societal problems; to prevent information pollution; and to raise public awareness of these issues. Also, statistics obtained from reliable institutions and expert opinions are being used in those DP videos and mini-documentaries about social problems. Another feature that DP offers its users is quizzes on various topics. The following are some examples of these quizzes: "Do you think this information is true or false?", "Do you know the recent changes in the education system?" and "How much do you know about fact-checking methods?" Based on interaction, these quizzes help users to test their knowledge level on certain topics and to correct their false information.

Social media channels are also used to track user feedback regarding news cases and bulletins. In this respect, both citizens and political figures give feedback. Citizens are eager to send political statements whose truth they question to DP via social media and, from time to time, DP put these subjects onto its agenda. This gives DP the opportunity to analyze some political statements that it may have overlooked while also creating interaction between the user and the platform. Furthermore, a number of politicians from both the ruling and the opposition party can share the analyses published by the platform on their own social media accounts (DP editor, personal communication, June 11, 2019).

The Limits of Fact-checking Services

In the post-truth environment where truth is no longer at the forefront, there are a few difficulties, obstacles and limitations that services face when trying to provide accurate information to users. One particularly significant limitation is the challenge of accessing government-based data. Public institutions, companies, or figures are not always transparent or willing to share information, which can limit fact-checking services' area of influence. The fact that some sources are not open is an important problem for these platforms, whose operations are mostly based on the scanning, filtering and analyzing of data in open sources. This difficulty was expressed by Teyit.org editor (personal communication, June 6, 2019), as follows:

There is a limitation in accessing information. The simplest example is Wikipedia not being accessible from Turkey. Of course we do not obtain information from there, however, this is the clearest example of the difficulty in accessing information in Turkey. In an environment like this, we find information on the background and try to provide people with accurate information. There is the problem of people and the government not being transparent. It is difficult to obtain information from government sources and government-based people.

Apart from institutions and establishments, the fact that from time to time media channels and journalists also do not warm to collaboration is another problem for fact-checking services. In this respect, it is

possible to list the difficulties as: journalists not always being willing to follow the fact-checking process so that they can be faster than others in publishing news; the fact that even alternative media circles are involved in political polarization; and the fact that journalists, too, may be unwilling to listen to different opinions. When we consider that Teyit.org is trying to create an ecosystem in the media to combat fake news and is trying to provide education, a lack of adequate collaboration or support from mainstream or alternative media channels has been called a long-term problem for fact-checking practitioners.

Another difficulty expressed by fact-checking practitioners is managing the expectations of users in an environment where headlines change quickly and where political polarization is intense. Different users or groups seeking the latest news that supports their own opinion do not want to wait for the processes of fact-checking services, as those can take days. There also cases that cannot be finalized because of insufficient data. In such cases, the "silence" of the platforms during the research process may be criticized by users. Replying to the latest news quickly and shedding light on the truth without making a mistake are big challenges that fact-checkers face. The Teyit.org editor (personal communication, June 6, 2019), who stated, "People can get angry with us if they want, we do not publish an analysis without gathering all the facts", underlines the importance of seeking truth instead of quick responses. However, the fake news, manipulations, and rumors that circulate on social media should be exposed as quickly as possible in order to allow public opinion to be formed properly.

This situation takes us to the economic issues that voluntary endeavors and alternative media channels like fact-checking services experience. The difficulties in ensuring income for continuity that non-commercial alternative media face (Fuchs, 2010, pp. 179) are also, to some extent, a challenge for fact-checking services. These platforms that do not possess capital, do not accept sponsors or advertisements, and that strive to be economically transparent are trying to produce alternative income models. EU funds, the aid of NGOs, and individual and corporate benefactors stand out in this respect. In the Teyit. org and DP examples, users also contribute to the financing process as well as the research process. The individual donations of users are also used to pay for the main expenses (office, legal fees, accounting), to maintain the work environment, and to expand the fact-checking staff.

Lastly, monitoring the impact of fact-checking releases emerges as a key issue. Teyit.org tries to monitor the social impact of the analyses it publishes and checks whether the person who made the claim deletes what they have shared after the fake news is exposed. However, one of the limitations of these platforms is that the impact of the fact-checking releases about fake news shared on many different accounts on social media is restricted.

Regarding the respond we receive from the users and media ecosystem... Fake news spreads quickly but the fact-checking file we conduct reaches fewer people and receives less interaction. We think that we share something about a very important topic, we spend a lot of time on it; let's say a topic about public health. Not being able to completely see the impact of our work is a limitation. At times it can be a tiring process for us" (Teyit.org writer, personal communication, June 4, 2019).

In order to combat the aforementioned limitations, besides websites, fact-checking services take advantage of many different social media channels (e.g., Twitter, Facebook, Instagram, YouTube) at the same time, thus trying to spread their messages to as many people as possible. The fact that search engine Google has started to prioritize Teyit.org's analyses (Foça, 2017) is an important step in this respect.

FUTURE RESEARCH AND DIRECTIONS

In future research, by carrying out surveys and in-depth interviews with people who use fact-checking services, it would be possible to measure the social effects of these endeavors. Reception studies could be beneficial in terms of understanding the limitations of these platforms and in improving the process of combating fake news. Furthermore, a comparison between fact-checking services in other countries is also a possibility; such studies could explore the effect of cultural and political differences on fact-checking processes.

DISCUSSION AND CONCLUSION

Firstly, it has been seen that in an environment where political polarization is intense, fact-checking services prioritize remaining impartial and protecting their economic transparency. DP and Teyit.org both give priority to subjects about internal politics and these platforms increase their operations during election periods. Furthermore, it has been observed that they give priority to subjects that involve migrants and public health issues. Comparing the two platforms, it can be said that the DP mostly focuses on the accuracy of politicians' statements, while Teyit.org practices fact-checking for all kinds of suspicious news/information circulating on both traditional and social media. Apart from this, it has been found that fact-checking services use both data journalism and investigative journalism before, during, and after their fact-checking practice. Before fact-checking, various software is used to determine the subjects that stand out in the latest news and that draw public attention. During fact-checking, however, the data in open sources is scanned, filtered and analyzed. The results gained from this, in conjunction with data journalism principles, are shared to the benefit of society and made public/visible. During the period following the analysis, data visualization techniques are applied and the impact is monitored.

Furthermore, it has been found that the monitoring of fake news and political statements that fact-checking services carry-out over open sources is only one part of their aims and strategies. These platforms view the politically polarized environment as a problem and, in the name of solving this problem, they aim to deliver "truth" to all parts of society. Thus, they aim for public opinion to be formed with accurate information and for the false statements of political figures to be exposed. In essence, these platforms aim for citizens and journalists to be skeptical towards the information they access on social media and to become digital media readers and writers that are equipped to verify information. In this respect, media literacy and data journalism training are given to journalists, students and other users; informative bulletins are prepared; and digital tools that can be used during the fact-checking process are introduced.

McIntyre (2018) states that since the 90s, fact-based journalism has been sacrificed for journalism based on opinion and emotion. In the post-truth era, where fake news and rumors have come to be seen as of equal significance to the truth, revealing facts relentlessly and supporting critical thinking and investigative journalism has become a prerequisite for combating this environment. In the study that Redlawsk, Civettini & Emmerson (2010) carried out on the behaviors of partisan voters, it was stated that even people who have a tendency to believe in false information that fits with their political opinion have their limits, and that when these people are constantly exposed to correctional information, their opinions can change. In other words, it can be expected that these platform's long-term research and information sharing in the name of truth can have an effect in forming a healthy public opinion. It can

be observed that the fact-checking services Teyit.org and DP in Turkey focus on fact-based journalism and that they constantly try to reveal the "truth" through the analyses they prepare to combat fake news. New communication technologies and digital tools can be used to spread lies, but they can also be used to spread truth (McIntyre, 2018).

According to Berghel (2017), fact-checking services are important for the public's benefit. However, the effects of these services can be limited in terms of reaching society as a whole. As Teyit.org's writer stated (personal communication, June 4, 2019), their main aim is to increase media literacy for both journalists and social media users and to teach them to be skeptical towards any information on social media and to show them which tools they need to check this information. Therefore, in online and offline environments, the establishment of continual interaction with users is essential. Users are included in the fact-checking and the research processes and the feedback and alerts received from them are assessed. In order to reach more people and increase interaction, many different social media platforms are used. The idea of "establishing a fact-checking school" in the future is in conjunction with the ultimate goal of spreading fact-checking practices throughout society and creating an ecosystem to combat fake news. However, traditional journalists do not want to or are not ready to join this ecosystem; it is difficult to reach all members and levels of society; and fake news spreads faster than fact-checked analyses. These all stand out as important problems and limitations of fact-checking services.

REFERENCES

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *The Journal of Economic Perspectives*, *31*(2), 211–236. doi:10.1257/jep.31.2.211

Amorós, M. (2018). *Fake News. La verdad de las noticias falsas*. Barcelona: Plataforma Editorial.

Ayres, J. M. (1999). From the streets to the Internet: The cyber-diffusion of contention. *The Annals of the American Academy of Political and Social Science*, *566*(1), 132–143. doi:10.1177/0002716299566600111

Barberá, P., Jost, J. T., Nagler, J., Tucker, J. A., & Bonneau, R. (2015). Tweeting from left to right: Is online political communication more than an echo chamber? *Psychological Science*, *26*(10), 1531–1542. doi:10.1177/0956797615594620 PMID:26297377

Berghel, H. (2017). Alt-News and Post-Truths in the" Fake News" Era. *Computer*, *50*(4), 110–114. doi:10.1109/MC.2017.104

Bovet, A., & Makse, H. A. (2019). Influence of fake news in Twitter during the 2016 US presidential election. *Nature Communications*, *10*(1), 7. doi:10.103841467-018-07761-2 PMID:30602729

Boyce, C., & Neale, P. (2006). *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input.* Pathfinder International. Monitoring and Evaluation, 2.

Brandtzaeg, P. B., & Følstad, A. (2017). Trust and distrust in online fact-checking services. *Communications of the ACM*, *60*(9), 65–71. doi:10.1145/3122803

Bulut, E., & Yörük, E. (2017). Mediatized Populisms| Digital Populism: Trolls and Political Polarization of Twitter in Turkey. *International Journal of Communication*, *11*, 4093–4117.

Cheruiyot, D., & Ferrer-Conill, R. (2018). "Fact-Checking Africa" Epistemologies, data and the expansion of journalistic discourse. *Digital Journalism*, *6*(8), 964–975. doi:10.1080/21670811.2018.1493940

Coddington, M. (2015). Clarifying Journalism's Quantitative Turn. *Digital Journalism*, *3*(3), 331–348. doi:10.1080/21670811.2014.976400

Dogrulukpayi. (2019). Retrieved June 01, 2019, from https://www.dogrulukpayi.com/~Degerlendirme-Kriterleri

Edelman. (2019). *2019 Edelman Trust Barometer: Global Report*. Retrieved June 03, 2019, from https://www.edelman.com/sites/g/files/aatuss191/files/2019-03/2019_Edelman_Trust_Barometer_Global_Report.pdf?utm_source=website&utm_medium=global_report&utm_campaign=downloads

EEAS Press Team. (2018). *Action Plan against Disinformation*. Retrieved June 01, 2019, from https://eeas.europa.eu/headquarters/headquarters-homepage/54866/action-plan-against-disinformation_en

Esmer, Y. (2019). Identity Politics: Extreme Polarization and the Loss of Capacity to Compromise in Turkey. In U. van Beek (Ed.), *Democracy under Threat. Challenges to Democracy in the 21st Century*. Cham: Palgrave Macmillan. doi:10.1007/978-3-319-89453-9_5

Foça, M. A. (2017). *Teyit.org*. Retrieved June 01, 2019, from https://Teyit.org/google-Teyit-org-analizlerini-arama-sonuclarinda-onceliklendirmeye-basladi/

Foça, M. A. (2019). *Teyit.org*. Retrieved June 03, 2019, from https://Teyit.org/bu-hesabin-arkasinda-bir-adminden-fazlasi-var/

Fuchs, C. (2010). Alternative media as critical media. *European Journal of Social Theory*, *13*(2), 173–192. doi:10.1177/1368431010362294

Garrett, R. K. (2011). Troubling consequences of online political rumoring. *Human Communication Research*, *37*(2), 255–274. doi:10.1111/j.1468-2958.2010.01401.x

Google Trends. (2019a). Retrieved June 05, 2019, from https://trends.google.com.tr/trends/explore?date=all&q=fake%20news

Google Trends. (2019b). Retrieved June 05, 2019, from https://trends.google.com.tr/trends/explore?date=all&q=post-truth

Graves, L., & Cherubini, F. (2016). *The rise of fact-checking sites in Europe*. Oxford, UK: Reuters Institute.

Gray, J., Chambers, L., & Bounegru, L. (2012). *The data journalism handbook: how journalists can use data to improve the news*. O'Reilly Media, Inc.

Humprecht, E. (2018). Where 'fake news' flourishes: A comparison across four Western democracies. *Information Communication and Society*. doi:10.1080/1369118X.2018.1474241

Kakutani, M. (2018). *The death of truth: Notes on falsehood in the age of Trump*. New York: Tim Duggan Books.

Katz, J. E. (1998). Struggle in cyberspace: Fact and friction in the World Wide Web. *The Annals of the American Academy of Political and Social Science*, *560*(1), 194–199. doi:10.1177/0002716298560001015

Kiernan, L. (2017). 'Frondeurs' and fake news: how misinformation ruled in 17th-century France. *The Conversation.* Retrieved June 03, 2019, from https://theconversation.com/frondeurs-and-fake-news-how-misinformation-ruled-in-17th-century-france-81196

Lewandowsky, S., Ecker, U. K., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the "post-truth" era. *Journal of Applied Research in Memory and Cognition*, *6*(4), 353–369. doi:10.1016/j.jarmac.2017.07.008

McIntyre, L. (2018). *Post-truth*. MIT Press. doi:10.7551/mitpress/11483.001.0001

Media Cloud. (2017). Retrieved June 05, 2019, from https://topics.mediacloud.org/#/topics/1539/summary?focusId&q&snapshotId=1477&timespanId=39849

Müller, P., & Denner, N. (2017). *Was tun gegen "Fake News"? Friedrich-Naumann-Stiftung für die Freiheit*. Berlin: COMDOK GmbH.

Newman, N., Fletcher, R., Kalogeropoulos, A., & Nielsen, R. K. (2019). *Reuters Institute Digital News Report.* Reuters Institute for the Study of Journalism. Retrieved June 16, 2019, from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2019-06/DNR_2019_FINAL_0.pdf

NewsLabTurkey. (2018). Retrieved June 05, 2019, from https://www.newslabturkey.org/gulin-cavus-toplumun-yarisi-diger-yarisinin-ne-okudugundan-haberdar-degil/

Oxford Dictionaries. (2019). *Post-truth.* Retrieved June 05, 2019, from https://en.oxforddictionaries.com/definition/post-truth

Pavleska, T., Školkay, A., Zankova, B., Ribeiro, N., & Bechmann, A. (2018). Performance analysis of fact-checking organizations and initiatives in Europe: a critical overview of online platforms fighting fake news. *Social Media and Convergence, 17*.

Peterson, E., Goel, S., & Iyengar, S. (2018). *Echo chambers and partisan polarization: Evidence from the 2016 presidential campaign.* Unpublished manuscript. Retrieved June 01, 2019, from https://5harad.com/papers/selecfive-exposure.pdf

Poynter. (2019). *Poynter is a thought leader.* Retrieved June 01, 2019, from https://www.poynter.org/poynter-thought-leader/

Redlawsk, D. P., Civettini, A. J., & Emmerson, K. M. (2010). The affective tipping point: Do motivated reasoners ever "get it"? *Political Psychology*, *31*(4), 563–593. doi:10.1111/j.1467-9221.2010.00772.x

Renda, A. (2018). *The legal framework to address "fake news": possible policy actions at the EU level.* CEPS Research Report.

Silver, L. (2019). *Misinformation and fears about its impact are pervasive in 11 emerging economies.* Pew Research Center. Retrieved June 05, 2019, from https://www.pewresearch.org/fact-tank/2019/05/13/misinformation-and-fears-about-its-impact-are-pervasive-in-11-emerging-economies/

Silverman, C. (2013). *Verification handbook.* Retrieved June 05, 2019, from http://verificationhandbook.com/

Silverman, C. (2016). *This Analysis Shows How Viral Fake Election News Stories Outperformed Real News On Facebook.* BuzzFeed. Retrieved June 01, 2019, from https://www.buzzfeednews.com/article/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook

Stray, J. (2011). *A Computational Journalism Reading List.* Retrieved June 01, 2019, from http://jonathanstray.com/a-computational-journalism-reading-list

Teyit.org. (2019). Retrieved June 05, 2019, from https://Teyit.org/Teyit-stickerlari-ile-whatsapp-ve-instagramda-yanlis-bilgi-paylasanlari-uyarin/

Waisbord, S. (2018). Truth is What Happens to News. *Journalism Studies*, *19*(13), 1866–1878. doi:10.1080/1461670X.2018.1492881

Wintersieck, A. L. (2017). Debating the Truth: The Impact of Fact-Checking During Electoral Debates. *American Politics Research*, *45*(2), 304–331. doi:10.1177/1532673X16686555

ADDITIONAL READING

Bartlett, B. (2017). *The Truth matters: A Citizen's guide to separating facts from lies and stopping fake news in its tracks*. New York: Ten Speed Press.

Cooke, N. A. (2018). *Fake news and alternative facts: Information literacy in a post-truth era*. Chicago: American Library Association.

d'Ancona, M. (2017). *Post-truth: The new war on truth and how to fight back*. UK: Random House.

Kucharski, A. (2016). Post-truth: Study epidemiology of fake news. *Nature*, *540*(7634), 525. doi:10.1038/540525a PMID:30905947

LaGarde, J., & Hudgins, D. (2018). *Fact vs. fiction: Teaching critical thinking skills in the age of fake news*. Washington: International Society for Technology in Education.

O'Connor, C., & Weatherall, J. O. (2019). *The Misinformation age: How false beliefs spread*. Yale University Press. doi:10.2307/j.ctv8jp0hk

Peters, M. A., Rider, S., Hyvönen, M., & Besley, T. (Eds.). (2018). *Post-truth, fake news: Viral modernity & higher education*. Springer. doi:10.1007/978-981-10-8013-5

Ünal, R., & Çiçeklioğlu, A. Ş. (2019). The Function and Importance of Fact-Checking Organizations in the Era of Fake News: Teyit. Org, an Example from Turkey. *Media Studies*, *10*(19), 140–160.

KEY TERMS AND DEFINITIONS

Data Journalism: A journalistic style which is based on obtaining, reporting on, curating, and publishing data in the public interest.

Digital Literacy: A set of competencies that allow people to function and participate fully in a digital environment.

Disinformation: False information intentionally spread in order to influence public opinion.

Echo Chamber: A social setting where individuals experience only similar opinions to their own, and where opposing or alternative opinions are ignored.

Fact-Checking: A process of investigating an issue or a news article in order to verify the facts.

Fact-Checking Service: An organization or group of volunteers come together with the intention of verifying/checking facts and sharing them with the public.

Fake News: News pieces that are intentionally and verifiably false and could mislead audiences/readers.

Chapter 14
Understanding the Landscape of Online Deception

Hicham Hage
Notre Dame University – Louaize, Lebanon

Esma Aïmeur
Université de Montréal, Canada

Amel Guedidi
Université de Montréal, Canada

ABSTRACT

While fake and distorted information has been part of our history, new information and communication technologies tremendously increased its reach and proliferation speed. Indeed, in current days, fake news has become a global issue, prompting reactions from both researchers and legislators in an attempt to solve this problem. However, fake news and misinformation are part of the larger landscape of online deception. Specifically, the purpose of this chapter is to present an overview of online deception to better frame and understand the problem of fake news. In detail, this chapter offers a brief introduction to social networking sites, highlights the major factors that render individuals more susceptible to manipulation and deception, detail common manipulation and deception techniques and how they are actively used in online attacks as well as their common countermeasures. The chapter concludes with a discussion on the double role or artificial intelligence in countering as well as creating fake news.

INTRODUCTION

Tim Berners-Lee famously said: "I invented the Web. Here are three things we need to change to save it" (Berners-Lee, 2017). Specifically, the three things to be changed are, first, the loss of control over personal data, second, the ease of spreading misinformation on the Web, and third, online political advertising. In tandem, speaking at the Web Summit technology conference in Lisbon, Portugal, Berners-Lee listed

some of the current problems of the Web: fake news; privacy issues; collection and abuse of personal data; and the way people are profiled and then manipulated.

Fake or distorted news and information is not exactly anything new. It has been a part of media history long before the creation of the Web and social media. For example, in ancient Rome, Octavian (who became Augustus, the first Roman Emperor) conducted a propaganda campaign to smear the reputation of Antony, using slogans and fake news (Posetti & Matthews, 2018). However, the Web and social media allow for an unprecedentedly rapid dissemination of unsubstantiated and unconfirmed information, rumors, and conspiracy theories, that often produce rapid and widespread, but naive social responses, resulting in fake news stories spreading faster than true stories (Del Vicario et al., 2016). Analyzing a Twitter data set, the authors discovered that fake news was more likely to be retweeted and cascade down to between 1,000 and 100,000 Twitter users (Vosoughi, Roy, & Aral, 2018). To exacerbate the issue even further, the abundance of readily available personal data enables the micro-targeting of fake news to users that are most susceptible and receptive (EDPS, 2018).

Even though incorrect or misleading information may in some cases be unintentionally shared, false information is mainly deliberately and often craftily created and spread in order to affect public opinion or obscure the truth. Ultimately, whether it is for influencing people's opinions or simply for financial gain (Kirby, 2016), false information is designed and crafted in order to deceive and manipulate users.

However, fake news and misinformation are part of the larger landscape of *Online Deception*. This chapter provides an overview of the landscape of online deception, since understanding the general context will help provide a better understanding of the problem of fake news and how to address the issue.

In the larger context of online deception, the major factors to be considered are: the deceiver's purpose or aim; the context of the deception; the online media used; the deception technique; and the target or potential victim. Several aspects of **deceivers** must be considered: their technical skill, expectations and motivation. These issues have an impact on the difficulty level and possibility of success of the deception. Specifically, the **purpose or aim**, as well as the motivation of the deception can all impact the success and complexity of the deception. Moreover, these factors also affect the social media used to perform the deception, in addition to the methods used to deceive the target. The **social media platform** can likewise affect the success of the deception. For example, heightened security can decrease online deception by deterring or preventing attacks. However, it might also have the opposite effect by instilling a false sense of security in the target users. Similarly, low security can increase online deception or perhaps do the opposite and decrease it by increasing the suspiciousness of potential targets.

Nowadays, numerous online **deception techniques** exist. However, the social media where the deception is performed; the characteristics of the targeted user (single or multiple targets, cognitive ability, background, etc.); and even the purpose or aim of the deception all affect the choice of the deception technique. Finally, the **target or potential victim** must be considered as well. Indeed, while social media platforms are expected to safeguard the user's data and information, this task becomes much harder when human factors are considered. While the user's ICT (Information and Communication Technology) literacy does help in detecting online deception (Tsikerdekis & Zeadally, 2014), other factors can play a role in the deception of the users, such as their cognitive biases.

Organisation of the Chapter

The chapter starts by introducing the Online Deception Ecosystem. Specifically, this section briefly introduces social networking sites, since these platforms are a major scene of online deception. Moreover, this

section describes the personal data available online (that can be used by or against the attackers' target) and defines the concept of privacy. The second section underscores the human side of online deception, emphasizing some of the major factors that make the potential victim more susceptible to manipulation and deception. The third section defines and contrasts the concepts of influence, manipulation, and deception, highlighting common influence and deception techniques. The fourth section provides a technical overview of online deception. Specifically, the various types of online deception attacks, based on the aim or purpose of the attack, and the respective techniques used to conduct these attacks are detailed. Moreover, some current countermeasures, to detect/prevent these attacks, are highlighted. The chapter concludes with a discussion on the double role of Artificial Intelligence in countering as well as creating fake news and highlights the need for a socio-technical approach to Online Deception.

SOCIAL NETWORKING SITES, USER DATA AND PRIVACY

Today, Social Networking Sites (SNS) have become very versatile, providing users with a wide range of functionalities: from posting messages, photos and videos, to playing games online, shopping and finding a job. Indeed, they have radically changed the way people interact, and have become a predominant online service. Specifically, SNS such as Facebook and Google+ have become regular "meeting" places for people to socialize, stay in touch with family members and friends, reconnect with long lost acquaintances, or meet new people. In fact, today, more than two billion users use SNS, consuming social media as well as uploading and sharing hundreds of billions of data items (Such & Criado, 2018).

SNS services are usually classified based on social presence/media richness and self-representation/self-disclosure (Kaplan & Haenlein, 2010). Social presence is influenced by the intimacy and immediacy of the medium in which the communication occurs while media richness represents the amount of information that can be transmitted at a specific duration of time.

Another way to view SNS is based on their purpose, which could be grouped into the following major categories:

- Social networks (Facebook, Google+, RenRen, etc.)
- Business-focused social networks (LinkedIn, AngelList, BranchOut, etc.)
- Media sharing networks (Instagram, YouTube, Pinterest, etc.)
- Microblogging (Twitter, Tumblr, Weibo, etc.)
- Discussion forums (Reddit, Quora, Digg, etc.)
- Consumer review networks (Yelp, Zomato, TripAdvisor, etc.)

Due to the variety of SNS, the user's information and data can vary greatly from one to another. This variety of SNS platforms and services, along with the broad popular appeal and extensive use of SNS, creates a wealth of information on users. User data can be separated into seven general groups (See Table 1 adapted from (Aïmeur, Hage, & Amri, 2018)). It is important to note that these categories are not exclusive, and that some information may transcend multiple categories.

A report by the Pew research center indicates that about 75% of the American public uses more than one SNS platform, and the typical American uses three of these sites (Smith, Anderson, & Caiazza, 2018). Moreover, the report also indicates that younger adults tend to use a greater variety of social media platforms. However, the way information is organized and exchanged in social media helps reveal

Table 1. User Data in Social Networking Sites

Type	Explanation	Example
Personal Details	Information that may identify, completely or partially, a specific individual	Full name Profile picture / Status Birth date / Age Place of birth Nationality Ethnicity Gender Religion Marital status Home address Personal email Etc.
Interests and preferences	Detail what users like and are interested in	Favorite movies/books/music Sexual preferences Political affiliations/opinion Activities (recreational, social, etc.) Hobbies Affiliations (organisations, groups, etc.) Topics/subjects of interest Etc.
Social circle	Would typically include the users' contacts, "whom the user knows"	Family relations Friends and Contacts Partner(s) Followers / Following Etc.
Shared Content	Consists of original content contributed by users, and/or re-shared content of other users	Wall posts Blog post Comments Opinions Likes / Ratings Sharing content Etc.
Locations	Includes information about locations visited by users as well as geolocation data	Travels Trips Visited places Shared / Tagged Geolocation data Etc.
Qualifications	Incorporates information that essentially forms an online résumé	Education (Schools/ Universities attended, degree, etc.) Professional experiences (current/previous employers, positions held, etc.) Training, certifications and skills Memberships in professional organisations Etc.
Life events	Comprises the information relating to various events in the user's life	Marriage / Divorce Pregnancy / Birth Retirement Death Relocating / Moving Graduation Birthday Etc.

sensitive personal information (Aïmeur, Brassard, & Rioux, 2013). Actually, SNS actively encourages the collection and sharing of information by gradually increasing the variety and types of collected data, as well as by relying on more revelatory default visibility settings (Acquisti, Brandimarte, & Loewenstein, 2015). Ultimately, one cannot deny that information technology has made it easier than ever to obtain a great deal of information about anyone, even about complete strangers. Yet, even in this information age, most of us would like to think that we can still preserve our privacy.

Privacy

Privacy is notoriously difficult to define, and can be interpreted differently by people (Finn, Wright, & Friedewald, 2013). In the case of information privacy, it is best defined in terms of *restricted access/ limited control* (Tavani & Moor, 2001). Restricted access indicates that the condition of privacy can exist only when individuals have the capacity to restrict their information from some people while sharing it with others. In addition, to ensure restricted access, individuals also need a minimum of *limited control* over their personal data. The restricted access/limited control theory indicates that an individual cannot have any information privacy without restrictions on information dissemination about oneself and without some control (Spinello, 2011). However, as information technology continues to advance, the concept of privacy has progressed as well, to capture the complexity of privacy issues that these new technologies present. Specifically, Finn et al. (Finn et al., 2013) propose seven different types of privacy:

- **Privacy of the person**: comprises protections against physical intrusions, which also includes the right to keep body functions and characteristics (such as genetic codes and biometrics) private.
- **Privacy of behavior and action:** includes sensitive issues such as sexual preferences, political activities and religious practices, and involves activities in public space, as well as private space.
- **Privacy of personal communication:** aims to avoid the various forms of communications interception, including the use of wiretaps, bugs, pen registers, and access to e-mail and other forms of messaging.
- **Privacy of data and image:** means to ensure that individuals' data is not automatically available to other individuals and organizations. This aspect of privacy is based on a social arrangement that addresses the balance of power between the state and the person.
- **Privacy of thoughts and feelings:** relates to the individuals' right to think whatever they like, as well as their right not to share their thoughts or feelings or have them revealed. Such creative freedom benefits society but is under threat as a result of new and emerging technologies, which allow censorship, flaming, trolling and cyberbullying, among other things.
- **Privacy of location and space:** is concerned with the individuals' right to move about without being identified, tracked or monitored. In addition to individuals' right to solitude and privacy in private spaces, this also includes public and semi-public spaces such as the car or the office.
- **Privacy of association:** relates to the individuals' right to freely associate with whomever they wish, without interference and monitoring. Society benefits from this type of privacy which can ensure that marginalized voices are heard.

In the general sense, one can consider privacy as a *zone of inaccessibility* that surrounds an individual, balancing on one side the rights of individuals to limit and control access to their information and on the other side the needs and responsibilities of society to gain access to that information (Quinn, 2014).

SELF-DISCLOSURE AND THE PRIVACY PARADOX

Self-disclosure is the act of voluntarily sharing and disclosing personal information to others. Today, with the advent of SNS, an unprecedented level of self-disclosure activity is taking place. Indeed, these sites offer users several benefits, such as relationship building and self-presentation, pleasing others, convenience and enjoyment, and building trust and credibility among users (Osatuyi, Passerini, Ravarini, & Grandhi, 2018). Specifically, the act of using SNS grants people the pleasant and gratifying feelings of affiliation, belonging, and social support (Yu, Hu, & Cheng, 2015).

Alternatively, while users in general report a high concern for their privacy, they tend to demonstrate privacy-compromising behavior online. This contradiction between privacy attitudes and actual behavior is generally referred to as the privacy paradox (Acquisti, 2004). Specifically, despite the fact that Internet users claim that privacy is a high priority, they do not behave accordingly (Kokolakis, 2017).

Essentially, one would logically expect that users' privacy concerns would restrict the voluntary disclosure of personal information. However, the reverse effect is observed where users tend to share private information in exchange for retail items and personalized services, or through their social networking activities (Barth & de Jong, 2017).

Various existing studies have attempted to understand this discrepancy between the users' attitudes towards privacy and their actual behavior. While the users' attitude toward manipulation does affect data disclosure (Aïmeur & Sahnoune, 2019), several other factors that make them more susceptible to manipulation and deception were identified, most of which revolve around one of the following: privacy calculus, social theory, cognitive biases, bounded rationality, and incomplete and asymmetric information.

Privacy Calculus

Privacy calculus theories stipulate that users perform calculations to evaluate the expected loss of privacy versus the potential gain of disclosure. The final decision of whether or not to disclose is determined by the outcome of the privacy trade-off (Xu, Luo, Carroll, & Rosson, 2011). Essentially, the main underlying assumption is that a rational process accounts for the privacy paradox: disclosure decisions are carefully considered by weighing the negative consequences against the gains of achieving the goal, trying to maximize benefits while minimizing the risks of information disclosure.

In the context of social interactions, rewards are mostly intangible and thus difficult to observe. As a result, the disclosing behavior of users often seems unreasonable and inconsistent with their privacy concerns. However, when one considers the intangible rewards involved, then the disclosing behavior of users becomes more understandable (Kokolakis, 2017). While it seems reasonable to use such a rational model of decision making to explain privacy and security decisions and whether to disclose or protect personal information, a number of other factors can affect the actual privacy and security choices of users (Acquisti et al., 2017).

Social Theory

Just as in the traditional face-to-face context, users of SNS engage in social interactions developing their relationships with others through voluntary self-disclosure, sharing intimate and personal information such as their current status, activities, photos and other media, locations, preferences, even their thoughts and feelings. In fact, the way social networking sites have been embedded into our daily social lives

creates strong motivations for self-disclosure, effectively forcing users to disclose information on them despite their privacy concerns, simply to keep up with their social circle and maintain their social lives (Blank, Bolsover, & Dubois, 2014).

Besides, in social networking sites, the rules of behavior are mostly implicit, and individuals generally foster their relationships and search for a feeling of belonging. In such social collectives, individuals are more willing to provide information and data about themselves as this is an implicit part of being a member of the community.

Cognitive Biases

Cognitive biases are systematic errors in judgments and behaviors (Acquisti et al., 2017). These biases do not necessarily entail "wrong" behavior, but rather, they refer to "deviations" from the rational behavior predicted by rational choice theory. The following are some of the cognitive biases that have been shown to affect online privacy decisions: optimism bias and overconfidence, framing effect, hyperbolic discounting and anchoring.

Optimism bias and overconfidence describes the tendency of individuals to confidently consider that they are, compared to others, less at risk of experiencing a negative event. Specifically, the optimism bias towards online privacy breaches negatively affects the adoption of protective behaviors, effectively hindering individuals from protecting themselves (Kokolakis, 2017). Moreover, individuals tend to exhibit overconfidence in their knowledge: a 2013 study by Brandimarte, Acquisti, & Loewenstein indicates that when given more control over the accessibility of their information, individuals tend to reveal and expose more information, hence increasing privacy risks.

Framing effect refers to how an individual's decisions are influenced by the way their choices are framed through different wordings, settings, and situations. For instance, people tend to prefer option A (selected by 200 out of 600) rather than option B (rejected by 400 out of 600). Framing affects affect privacy decision making in a similar fashion when the alternatives to disclosing information are outlined in a positive and appealing setting.

Hyperbolic discounting is the tendency of people to favor smaller rewards, closer or sooner in time, at the expense of larger rewards which they would only receive further in the future. For example, Jentzsch, Preibusch, & Harasser (2012) conducted an experiment where individuals were offered movie tickets from two providers, one of which is privacy-friendly, requesting less personal information than the other provider. They first offered tickets at the same price, and unsurprisingly, the privacy-friendly provider had the larger market share. However, when the privacy-friendly provider requested a higher price, people preferred monetary savings (an immediate gain – closer in time) over privacy protection (a future gain – long-term benefit).

Anchoring involves information or points of reference individuals rely on when making decisions. For example, when individuals are faced with the decision to post some information on a social media service, they may be affected by what others post and set that as an *anchor*. Consequently, they may end up sharing that information irrespective of how they may initially feel about revealing personal information, or of the consequences it may entail (Acquisti et al., 2017).

Bounded Rationality

Bounded rationality refers to the notion that, when making decisions, the rationality of individuals is constrained by the available information, the cognitive limitations of their minds, and the amount of time they have to make the decision. Indeed, privacy contexts often require individuals to evaluate, in a restricted and short amount of time, the consequences of highly uncertain security and privacy events (that might or might not happen) in an often far future, with limited/incomplete information.

Such decisions may often require considerable cognitive effort and information. Consequently, in such cases, individuals will often rely on heuristics, or rules of thumb, which are shortcuts in decision making.

One example is the availability heuristic which refers to misestimating probabilities depending on the relevant points of comparison. Fundamentally, individuals may estimate the risk of disclosure by evaluating the probability of others disclosing personal information in the same or similar contexts. In fact, Buck, Horbel, Germelmann, & Eymann (2014) revealed that, when deciding on which mobile application to download, individuals do not rely on the information provided by application vendors on the collection and use of personal data. They actually rely on information from their social group and the app store, effectively basing their decisions by evaluating the probability of others disclosing personal information in the same or similar contexts.

Incomplete and Asymmetric Information

Whereas "incomplete information" is self-explanatory and refers to situations where individuals lack information, the term "asymmetric information" refers to situations where one party has access to additional and/or better information than other parties. In the latter situation, he/she who is better informed is often in an advantageous position. Such situations of asymmetric and/or incomplete information are typical in information security and privacy. Specifically, often individuals are unaware of what information the data holder collects and the purposes and conditions of future use of that data. For instance, individuals who sign up for loyalty cards might not be aware that the information collected about their purchases can be used to build a customer profile, which is then sold or used in targeted advertisements. Another example of information asymmetry is the individuals' lack of awareness and underrating of the actual monetary value of their personal data within the data-driven economy (Malgieri & Custers, 2018).

INFLUENCE, MANIPULATION AND DECEPTION

This section explains and contrasts the concepts of influence, manipulation and deception. The Cambridge Dictionary defines influence as "*to cause someone to change a behavior, belief, or opinion*". Bob Burg states that on a very basic level, influence can be defined as the ability to move a person to a desired action, usually within the context of a specific goal (Duncan, 2018). Influence is simply an effect exerted by the influencer on others, and in itself is neither positive nor negative. Rather, the outcome of the effect determines the type of influence. In that sense, it is somewhat similar to gravity (Duncan, 2018). Gravity has an effect on us, and everything that surrounds us. The effect of gravity is good when it keeps us on the ground and prevents us from floating into space. However, the effect of gravity is bad when it causes mud slides or a bridge to collapse.

With that in mind, the Cambridge Dictionary defines manipulation as "*the action of influencing or controlling someone or something to your advantage*." Essentially, manipulation is influence with the intention of a positive outcome to the influencer, and a negative outcome to the influenced individual.

Alternatively, deception is defined by the Cambridge Dictionary as: "*the act of hiding the truth, especially to get an advantage*." Essentially, both manipulation and deception share the fact that their goal is essentially to produce a positive outcome for the deceiver/manipulator at the expense of the victim. However, the main difference is in the means to achieve the goal. Basically, manipulation relies on influence whereas deception relies on lies and tricks. The following subsections introduce Cialdini's Six Principles of Persuasion (well established influence techniques) and Dark Patterns (commonly used deception techniques).

The Six Principles of Persuasion

Dr. Robert Cialdini, in his prominent book "Influence: The Psychology of Persuasion" (Cialdini, 2007) defines six key principles of persuasion: Reciprocity, Scarcity, Authority, Commitment and Consistency, Liking and Social Proof/Consensus.

- **Reciprocity:** in essence, it is the fact that people typically give back to others, in the form of service, gift, or behavior, what they have initially received. In other words, people are more likely to comply with a request if it comes from someone who has previously done something for them. If a colleague does you a favor first, then you owe that colleague, and are more likely to say "yes" when that colleague comes asking for a favor.
- **Scarcity**: people tend to desire something based on its perceived scarcity. Effectively, when there is less of something, people will value and desire it more. This principle is regularly employed by resellers when they advertise their "Limited Time Offer" or "48 Hour Sale".
- **Authority**: basically, people are more likely to comply with authority figures. For instance, doctors display their medical diplomas and various certificates on the walls in their office or consulting room as a testimony of their expertise (their authority) to better persuade their patients.
- **Commitment and Consistency**: essentially, this point states that people tend to be consistent and committed to the things they have previously said or done. Specifically, consistency is usually activated by first asking for small and simple initial commitments (that can be easily made), and then asking for other actions that are similar to the initial commitment. For example, asking people about their *opinion* on giving donations to a certain charity will increase their commitment to future requests for donations to that charity.
- **Liking**: basically, people are more inclined to comply with people they like. In general, people like others they can relate to and who are similar to them, those who are nice to them and pay them compliments, and those who are helpful and cooperate with them towards mutual goals.
- **Social Proof/Consensus**: primarily refers to the fact that people rely on *social cues* to determine how to feel or act in various situations. Essentially, it is our tendency to consider what many others are doing, especially many *similar* others, as the appropriate thing to do. For example, bartenders often drop a few bills in their tip jars at the beginning of the evening to suggest tips from prior customers, effectively stimulating tipping (where an empty tip jar would not) by giving the impression that it is proper behavior.

Dark Patterns

The term dark patterns is used to define instances of user interface design choices designed to coerce, steer, and/or deceive users into making decisions that are not in their best interests (Gray, Kou, Battles, Hoggatt, & Toombs, 2018; Mathur et al., 2019). Fundamentally, dark patterns are *tactics* used primarily in websites and applications to deceive users and trick them into doing things that they did not mean to, such as buying or signing up for something (Brignull, 2019).

The design tricks used in dark patterns could be summarized into the following (Mathur et al., 2019):

- **Asymmetric:** imposing unequal weights/importance to the available choices. For example, using a large and noticeable button to accept cookies while the opt-out option is smaller and less visible.
- **Covert:** the effect of the choice is hidden from users. For instance, the decoy effect, in which an additional choice (the decoy) is introduced to make other choices seem more appealing: the Medium sized popcorn (the decoy) is used to encourage people to buy the Large sized popcorn (getting more popcorn for a small increase in price).
- **Deceptive:** the use of misrepresentations, misleading statements, or even omissions to induce false beliefs. For instance, offering what appears to be limited-time discounts to users.
- **Hides Information:** hide, disguise or even delays some information, such as hidden costs or disclosing additional charges only at checkout.
- **Restrictive:** restricting the users' choices to a set of unfavorable options. For instance, requiring users to sign up with an existing social media account (which allows gathering more information about them).

Several existing studies (e.g. Brignull, 2019; Gray et al., 2018; Mathur et al., 2019) attempt to list and even categorize the different types of dark patterns. The differences between these classifications are not major, and in some cases are only syntactic. The following table (adapted from (Mathur et al., 2019)), provides an appropriate summary of the different types of dark patterns.

ONLINE DECEPTION: ATTACKS AND COUNTERMEASURES

The various manipulation and deception techniques mentioned in the previous section have been exacerbated by new technologies and the proliferation of social media. However, the attack vector employed by the deceiver is largely based on the target user and the goal of the deception.

Specifically, different online deception attack goals can be grouped into 3 general categories (Aïmeur et al., 2018). The first category is Harvesting Information. In this case, the attackers' aim is to collect as much information as possible. Ultimately, the gathered information is used to create a profile of the target user (which is then used for another attack) or for financial fraud (such as stealing money from the victim's financial institutions). The second category is Social Influence. In this case, the attacker's intent is to influence and manipulate the victims. Ultimately, there are four goals for social influence: Promoting Business (unlawfully and deceitfully attract more followers and subscribers); Promoting Idea or Agenda (deceptively spread ideas and support usually biased agendas); Influencing User Opinion (mislead, distort or even censor the truth); and Increasing Popularity (fraudulently increase the popularity or fame of an account or product), which can be the goal in itself, or can be done for the purpose

Table 2. Types of dark patterns

Type	Description	Asymmetric	Covert	Deceptive	Hides Information	Restrictive
Sneak into Basket	Adding additional products to users' shopping carts without their consent	○	○	◐	●	○
Hidden Costs	Revealing previously undisclosed charges to users right before they make a purchase	○	○	◐	●	○
Hidden Subscription	Charging users a recurring fee under the pretense of a one-time fee or a free trial	○	○	◐	●	○
Countdown Timer	Indicating to users that a deal or discount will expire using a counting-down timer	○	◐	◐	○	○
Limited-time Message	Indicating to users that a deal or sale will expire soon without specifying a deadline, thus creating uncertainty	○	◐	○	●	○
Confirm shaming	Using language and emotion (shame) to steer users away from making a certain choice	●	○	○	○	○
Visual Interference	Using style and visual presentation to steer users to or away from certain choices	◐	●	◐	○	○
Trick Questions	Using confusing language to steer users into making certain choices	●	●	○	○	○
Pressured Selling	Pressuring the user to accept the more expensive variations of a product and related products	◐	◐	○	○	○
Activity Message	Informing the user about activity on the website (e.g., purchases, views, visits)	○	◐	◐	○	○
Testimonials	Testimonials on a product page whose origin is unclear	○	○	◐	○	○
Low-stock Message	Indicating to users that limited quantities of a product are available, increasing its desirability	○	◐	◐	◐	○
High-demand Message	Indicating to users that a product is in high demand and likely to sell out soon, increasing its desirability	○	◐	○	○	○
Hard to Cancel	Making it easy for the user to sign up for a service but hard to cancel it	○	○	○	◐	●
Forced Enrollment	Coercing users to create accounts or share their information to complete their tasks	●	○	○	○	●

(Mathur et al., 2019)

Legend: ● = always, ◐ = sometime, ○ = never

of conducting other attacks. The last category is Identity deception. In this case, the attacker wants to misappropriate and assume the target's identity.

The following table, adapted from (Aimeur et al., 2018), highlights the common attack techniques for each of the general attack goal categories.

The following subsections highlight these attacks along with their common countermeasures. However, it is important to note that since these attacks exploit the vulnerabilities of the human user, a common, important, and crucial defence is awareness and education. Nonetheless, when detailing the typical countermeasures in the following subsections, we omit user awareness to avoid repetition.

Table 3. Online Deception Attack Goal and its Corresponding Common Techniques

Attack Goal	Attack Techniques
Harvesting information	• Phishing attack • Session hijacking attack
Social Influence	• Spamming • Misinformation attack • Social-bots attack • Sybil attack • Trolling attack
Identity Deception	• Phishing attack • Sybil attack.

Phishing Attack

In reference to fishing, where a fisherman deceives the fish with bait, the phisher (or the attacker) attempts to *fish* for potential victims. Essentially, phishing is an online deception approach that targets unsuspecting online users, tricking them into revealing sensitive information. The most common forms of phishing are emails and websites, and attacks often follow the same approach: plan; compose the email; attack; gather the data; and commit the fraud (Shankar & Shetty, 2019). As a first step, the attacker plans the approach, choosing the legitimate entity to masquerade as; selecting the victim's profile; choosing which personal data has to be gathered, etc. Next comes the process of email composition, designed to deceive and lure the victim. Finally, the phisher sends the email they composed to the intended target, and, if successful, collects the gathered data that now can be used to commit the fraud. To succeed, phishing attacks rely heavily on deception, exploiting human psychology and interactions to appear trustworthy and deceive the victim (Ferreira & Teles, 2019). There are various forms of phishing attacks most notably: Spear Fishing, Whaling, Vishing and Pharming.

In contrast to phishing, which is somewhat indiscriminate and does not have a certain target victim (similar to fishing with a net), **spear phishing** is more targeted at a certain victim or community. Specifically, spear phishing is designed with a specific *target audience* in mind. For example, the attacker is targeting a certain organization, and crafts the spear phishing attack to appear as if it is originating form an actual authority within that organization (the HR or IT department for instance). Due to their specificity, spear phishing attacks are more dangerous, but they do require an additional amount of research by the attacker. Similarly, **whaling** is a form of spear phishing where the target is a "big fish," such as high-profile individuals in private businesses, government agencies or other organizations. Whaling attacks are highly customized and personalized. The term **vishing** is derived from voice and phishing; it is essentially a phishing attack that is performed through the phone system. In vishing attacks, other than attempting to manipulate the victim, the attacker might also impersonate the victim to deceive a certain organization, such as the victim's bank or phone service provider. **Pharming** is a term derived from phishing and farming. It refers to a type of phishing attack that is not based on targeting and profiling. Pharming attacks are based on Domain Name System (DNS) poisoning. Specifically, the Internet's naming system relies on DNS servers to convert website names, such as "www.google.com," to the actual IP address which is used for communicating with computer services and devices. As such, using a DNS cache poisoning attack, a pharmer targets DNS servers and changes the IP address associated with the targeted website name. Effectively, the attacker redirects the traffic from a specific website to a

fake website, successfully sending the users to the malicious website even when these victims type the correct website name in their browsers (Salahdine & Kaabouch, 2019).

Countermeasures

To detect and prevent phishing attacks, the existing literature identifies a set of various approaches and countermeasures. Machine Learning (ML) represents one of the most common approaches to anti-phishing tools (Aimeur et al., 2018; Rao & Pais, 2018; Salahdine & Kaabouch, 2019). ML is a subfield of Artificial Intelligence (AI) that aims to equip computer systems with the ability to automatically learn and improve their performance, with little or no human intervention. In the context of phishing detection, ML approaches essentially rely on the analysis of malicious URLs and pages, illegitimate emails, and other phishing material to extract characteristics, which are then used to build a model of the phishing attack. The learnt model allows distinguishing and classifying websites and emails as phishing or legitimate. ML based techniques mainly differ in their choice of ML algorithm, and the characteristics or *features* used to build the model. These features can be based on one or a combination of the following: URL, images, text, etc. (Abdelhamid, Thabtah, & Abdel-jaber, 2017; Moradpoor, Clavie, & Buchanan, 2017; Sahingoz, Buber, Demir, & Diri, 2019; P. Yang, Zhao, & Zeng, 2019).

On the other hand, list-based techniques are another approach for detecting and blocking phishing sites. These approaches are usually deployed as a toolbar embedded into the browser. They are mainly classified into whitelists and blacklists. Whitelists contain a list of legitimate URLs that the browser can access, whereas blacklists contain a list of illegitimate and malicious URLs that the browser should not access (Barraclough & Sexton, 2016).

Session Hijacking Attack

Session hijacking, also known as cookies hijacking, is a form of Web attack that works based on computer sessions, mainly active sessions. Basically, a session is the exchange of information between two entities over a limited time frame. Some sessions involve a client and a server, while other sessions may involve two personal computers. Web or HTTP sessions are common types of client/server sessions. For instance, consider a user who wishes to access and use his account on a Social Networking Site (SNS). The user must first authenticate his identity with the SNS, usually by providing a password. However, once authenticated, the user can interact with the SNS for an amount of time (a session), without having to re-establish his identity, until the user quits the SNS or logs out. In general, the SNS (or other server) uses a session ID to *remember* the user throughout the session.

As such, the term session hijacking refers to the attacker's ability to take over an active session and act as one of the participants (usually the user). Session hijacking involves an attacker capturing or determining session IDs to masquerade as the authorized user while that session is still in progress, effectively seizing control of the user's Web application session (Hossain, Paul, Islam, & Atiquzzaman, 2018). There are various methods to perform session hijacking attacks; the following three methods are the most common ones: session sidejacking, session fixation and cross-site scripting.

Session sidejacking attacks involve the use of packet sniffing tools, which allow the attacker to monitor and read network traffic. Since the session ID is exchanged between the user and the server, packet sniffing allows the attacker to hijack the victim's session and impersonate them, especially when the communication is done on a clear unprotected channel.

In a **session fixation** attack, the attacker attempts to *fix* or set the user's session ID to a predetermined value known to him. In other words, instead of trying to guess or obtain the session ID, the attacker seeks to trick the user and the server into using a predetermined session ID known by the attacker.

Cross-site scripting attacks consist of the attacker compromising and determining the session ID by crafting malicious code/script that is run at the client-side, usually in the user's browser.

The two major variations of cross-site scripting are: stored cross-site scripting (where the malicious scripts are injected and permanently stored on the application server) or reflected cross-site scripting (where the malicious script is delivered to the victim through an alternate channel).

Countermeasures

It is no surprise that there exists little research literature on session hijacking, in general, and its countermeasures, in particular, since this is mainly a technical problem with known solutions. For example, by simply using encryption, to protect all the communication between the user and the server (using SSL or HTTPS), or simply to encrypt the session ID, one can thwart the packet sniffing approach, since the attacker will be unable to decrypt the encrypted information. Moreover, implementing proper session management, such as generating a new random session ID after login, and securely storing and invalidating them after logout, can block session fixation attacks. Finally, defensive programming techniques and proper input validation can impede cross-site scripting attacks by hindering the delivery of the malicious code/script to the victim's browser. It is important to note that while the countermeasures are straightforward and known, *broken authentication* (which includes session management) and *cross-site scripting* are still quite prevalent and are ranked 2nd and 7th in the OWASP Top Ten Most Critical Web Application Security Risks (van der Stock, Glas, Smithline, & Gigler, 2017).

Spam Attack

Spam is simply defined as "*unsolicited bulk email*" (Quinn, 2014). The main attraction of spam is its low cost. Traditional flyers are more than 100 times more expensive than email advertisements; the cost of digital spam is so low that even if only one in 100,000 recipients of the spam actually buys the product or service, it is still profitable (Hansell, 2003). Spam can be sent through various channels: search engines, wikis, instant messengers, and, most importantly, emails.

While some spam messages contain simple advertisements, spammers often use embedded links and/or attachments to infect the victim's system and spread to other systems using contact lists or to deliver malware. In general, spam can be categorized as advertising spam or scam spam.

Advertising spam is one of the most widely used forms of spam. It consists of mass mailing for advertising purposes. In general, advertising spam contains financial credit, online gambling, falsified diplomas, cracked software, etc.

Scam spam generally contains various forms of proposals claiming to be able to enrich the victim quickly: work at home, small stock purchase advice, etc. Ultimately, the attacker is deceiving the victim to embezzle money.

Countermeasures

Similarly to phishing attacks, the main approaches to counter spamming threats are based mainly on ML techniques (Benevenuto, Magno, Rodrigues, & Almeida, 2010; Dada et al., 2019; Faris et al., 2019). Indeed, since spam attacks can vary greatly and change often and quickly, ML tools are efficient in adapting quickly, automatically learning and identifying spam. Moreover, ML tools can adapt to varying conditions and can continuously generate new rules and adjust based on their learning capacity as they continue in their spam filtering operation (Dada et al., 2019; Faris et al., 2019). ML-based techniques mainly differ in the ML approach used and the characteristics or features used, which can draw on one or a combination of the following: the header of an email; the content (images and text); attachments; number of followers/following (in the case of social media), etc.

Additionally, various technical countermeasures exist to reduce spam. One such approach is to prevent email harvesting (obtaining lists of email addresses) using techniques such as address munging, HTML and JavaScript obfuscation, and even the use of a CAPTCHA before revealing an email address. Another example is the use of email authentication, which makes it much harder for spammers to spoof email addresses.

Misinformation Attack

Misinformation refers to the willful distortion of the truth (Vosoughi et al., 2018) and represents fake news, false or misleading content, hoaxes, rumors, conspiracy theories, fabricated reports, propaganda, click-bait headlines, and even satire that are spread in order to deceive audiences.

Today, in addition to serving as a forum to share messages with friends, family, fans, or customers, social media is also used to support of freedom of speech, whether in political campaigns or coordinated protests. However, when they are used to spread misinformation, these platforms can play a negative role in shaping user's behavior and impacting people's beliefs and opinions (Zhou, Guan, Bhat, & Hsu, 2019). The online spread of misinformation represents a major public concern (Grinberg, Joseph, Friedland, Swire-Thompson, & Lazer, 2019). Indeed, today more and more people receive and share news online and, consequently, misinformation can reach large audiences, spreading rapidly from one individual to another (Roozenbeek & van der Linden, 2019). Specifically, with the massive digital transformation of recent years, true information as well as false misinformation that spread over social media such as Facebook and Twitter have become so pervasive and persuasive that they can damage societies and democratic processes (Del Vicario et al., 2016). To exacerbate the issue even further, the wide availability of online content facilitates the aggregation of people around common interests, worldviews, and narratives that can be used to better target false news, increasing their effectiveness and their spread.

Various factors in the emergence and persistence of misinformation can be examined across three levels of analysis (Scheufele & Krause, 2019):

- **Individual level**: this level refers to the inability and/or the lack of motivation of individuals to recognize misinformation as well as their affective state.
- **Group level**: this level refers to the fact that attitudes and beliefs are persistent within homogenous groups and that individuals within that group can influence each other.

- **Societal/Socio-structural level**: this level relates to social issues (such as social capital, social inequalities, and political polarization) and how communication dynamics in online media play a key role in shaping public opinion

Countermeasures

Among the most commonly used approaches to detect and counter misinformation are heuristics, fact-checking, statistics, and semantics-based techniques. Heuristics are rules that are designed in order to solve certain problems faster, often producing satisficing solutions. For instance, Pak & Zhou (2014) rely on rules from social theory pertaining to behavioral expectations and structural relations to determine a deceiver (trying to spread lies) from the truth-teller. Fact checking attempts to corroborate the information by relying on third-party services (such as Snopes.com and FactCheck.org) or on automated techniques (Gupta, Kumaraguru, Castillo, & Meier, 2014; Thorne & Vlachos, 2018). The statistics-based approaches rely mainly on collecting quantitative data (such as the number of shares, number of posts, update frequency, etc.) to perform statistical analysis in order to detect misinformation (Shao, Ciampaglia, Flammini, & Menczer, 2016). In addition, AI represents a crucial and efficient countermeasure for misinformation attacks as well (Seo, Xiong, & Lee, 2019; Torabi Asr & Taboada, 2019; Zhuk, Tretiakov, Gordeichuk, & Puchkovskaia, 2018). For example, Natural Language Processing (NLP) tools are employed in order to classify news text into fake and legitimate instances using methods as feature-based approaches (such as n-grams, subjectivity and polarity markers, lexical semantic classes and syntactic or discourse-level features) and Deep Learning models (where large-scale training data is available).

Social Bot Attack

In the general sense, a bot is a program designed and implemented to automate generally repetitive tasks. While their original purpose was to be helpful, today many bots are designed with malicious and disruptive intent such as influencing conversations and political debates, spreading misinformation, and stealing the personal data of users (Stella, Ferrara, & De Domenico, 2018).

Social bots mimic and imitate real user behavior on social media platforms, automatically producing content or interacting with other users. Essentially, they are social media accounts that are controlled entirely or in part by computer algorithms which attempt to pose as or imitate humans, generating automated content and interacting with human users (K.-C. Yang et al., 2019). Social bots have the potential to affect public opinion and choice, especially when they spread negative and inflammatory content (Stella et al., 2018; K.-C. Yang et al., 2019). Specifically, they rely on human vulnerabilities, such as the human tendency to pay attention to and believe what appears to be popular and to trust social contacts (Jun, Meng, & Johar, 2017).

Simple social bots are naïve and are easily detected, since they mainly post and simply re-share a specific type of content. However, more sophisticated bots aim to impersonate human users. These social bots can therefore create realistic profiles by collecting data from existing users, copying account information and other material (such as profile pictures). Moreover, these bots use artificial intelligence (AI) and natural language processing (NLP) techniques to generate automated yet realistic content, effectively enabling them to post on specific topics as well as comment on posts and interact with human users.

Countermeasures

Social bot detection approaches can be divided into approaches based on social network information and those based on machine learning (ML) approaches (Efthimion, Payne, & Proferes, 2018; Ferrara, 2018; K.-C. Yang et al., 2019). In the first category, the detection strategies used often rely on examining the structure of the social graph, which represents the social relations between different entities. The underlying assumption is that accounts controlled by bots exhibit a different *social* behavior than legitimate users. Alternatively, strategies and approaches based on supervised ML algorithms mainly depend on the collection of datasets (labeled as either human or bot) for learning process. Specifically, ML techniques attempt to learn the signature of bot behavior (as opposed to human behavior), generally drawing on features such as account creation date, profile, geographical data as well as the content and sentiment of the posts.

Sybil Attack

Sybil attack refers to the "use of multiple forged identities, controlled by the attacker, in order to subvert the reputation system, falsely increasing/decreasing the reputation of users" (Aimeur et al., 2018, p. 1268). Essentially, Sybils are fake identities (or user accounts) created in large numbers by the attacker in order to attack and subvert a certain system (Al-Qurishi et al., 2017). In fact, most, if not all, social networks offer a lightweight process for users to create an account, often relying on a simple email confirmation to validate the user identity, which makes it very easy for any person to have multiple accounts. Additionally, there are other aspects of social networks that make them *appealing* for Sybil attacks (Al-Qurishi et al., 2017). For instance, users tend to trust their social connections and are likely to fall into a trap set by fake social connections. Moreover, attackers usually imitate the targeted users, building fake accounts that are similar to and consistent with the targeted profiles, thus tricking the SNS's recommender system into effectively recommending these fake accounts to the victims. In a similar manner, SNS reputation systems are also vulnerable, and can be subverted by the attackers using fake ratings and reviews. As such, various factors stimulate Sybil attacks on social networks, which are usually motivated by the desire to deceive users, promote certain ideas of fake news or engage in other fraudulent activities (Asadian & Javadi, 2018).

Countermeasures

There exists in the literature a number of approaches to counter Sybil attacks. One such approach relies on the analysis of social graphs in order to identify tightly connected communities of Sybil nodes (Z. Yang et al., 2014). Other popular approaches include immediate comparison methods and baseline methods (Tsikerdekis, 2018). The first of these attempts to detect either duplicate accounts (very similar), or fake accounts by searching for any *inconsistencies* and mismatches in a certain profile, for example, by cross-referencing with information from other sources (often other social networking sites). Baseline methods observe user behavior and evaluate how different and distant it is from the expected legitimate user behavior, which serves as a baseline. The underlying assumption in that approach is that any divergence from this baseline is an indication of identity deception. It is essential to note that ML algorithms can be used to determine the baseline and the threshold parameters used to classify an unknown behavior as deceptive or not (Gu, Khatoun, Begriche, & Serrhouchni, 2017).

Trolling Attack

While they agree on the presence and prevalence of trolling online, different researchers use different criteria to describe the same phenomenon (Cook, Schaafsma, & Antheunis, 2018). In this work, trolling is defined as

the deliberate act of posting provocative and confrontational messages online with the intent of provoking and triggering quarrels and disputes, and ultimately upsetting people to distract and sow discord for a specific gain (Aimeur et al., 2018, p. 1268).

Trolling refers to other behavior as well, including online abuse, cyberbullying, or antisocial online behavior that impacts users' cyber psychology (March & Marrington, 2019; Synnott, Coulias, & Ioannou, 2017). The literature has identified four primary characteristics of trolling: aggression, disruption, success, and deception.

The exponential growth of social media usage in recent years has led, in part, to an exponential increase in reported incidences of trolling attacks (Synnott et al., 2017). In trolling attacks, the troll posts digressive, extraneous, or off-topic messages, usually within an online community (such as a newsgroup, forum, chat room, or blog) with the intent of provoking readers into displaying emotional responses and participating in unproductive and tangential discussion, whether for the troll's amusement or for some specific gain. Indeed, trolling strategies have changed from provoking others for mutual enjoyment and entertainment to an abusive behavior that is not intended to be humorous (flame trolling) (March & Marrington, 2019).

It is important to note that the anonymity the Internet offers can cause users to behave differently online than they would in face-to-face encounters, violating social norms with a certain sense of impunity. For example, researchers (Cho & Acquisti, 2013) have found that a user's tendency to troll others and to use offensive language decreased as the level of identifying information available about that user increased (such as the use of real name accounts in comparison to pseudonymous accounts).

Countermeasures

In existing SNS, there are already some measures and functionalities to address trolling manually, including relying on moderators as well as flagging and reporting abusive content/users by community members. Additionally, artificial intelligence (AI) provides efficient countermeasures for trolling attacks as well (Fornacciari, Mordonini, Poggi, Sani, & Tomaiuolo, 2018; Galán-García, de la Puerta, Gómez, Santos, & Bringas, 2014; Sadeque et al., 2019). ML and NLP techniques can be used to analyze diverse features of trolls (in contrast to legitimate users), using writing style, sentiment, behaviors, social interactions, linked media and publication time, in order to automatically detect and prevent trolling attacks.

DISCUSSION

One cannot conclude an overview of online deception without considering the double role of AI (Artificial Intelligence). It is clear from the previous section that AI, in general, and ML techniques, in particular, are the most frequently used techniques in the prevention and detection of online deception.

Indeed, AI techniques analyze the content of messages or posts and *learn* to detect malicious attacks. Essentially, these algorithms discover and deduce patterns in malicious content and then use these patterns to counteract attacks by determining how likely it is that an incoming message is spam/phishing or from a legitimate source, or how well a post fits with its headline or with other existing media facts to detect fake news. However, since the AI algorithm is learning from existing data, it will incorporate into its learnt patterns any biases that might exist in that data. Specifically, while learning, the AI algorithm will retain any patterns it finds in the data, exposing and even amplifying certain biases that might exist in that data. A highly publicized example is the AI recruiting tool used by Amazon, which was biased against women (Dastin, 2018). Moreover, researchers at MIT tested 3 AI based commercial gender classification algorithms and found that race and gender biased, where all 3 classifiers performed best for lighter individuals and males overall, while performing worst for darker females (Buolamwini & Gebru, 2018). Nonetheless, there exist in the literature attempts to detect and mitigate biases in the training data or within the learnt models (Amini, Soleimany, Schwarting, Bhatia, & Rus, 2019; Chen, Johansson, & Sontag, 2018).

Be that as it may, the most significant challenge to detecting online deception is AI itself. For instance, the OpenAI Research Institute set out to develop a general-purpose language algorithm, one that can be used for a variety of tasks such as translating text, answering questions, and generating summaries. However, they ended up with a bot that is capable of making highly plausible auto-generated fake news (Knight, 2019). Similarly, today AI is actively used to create high quality fake media content referred to as "deepfakes". Essentially, deepfakes are images, video, or audio that are altered using AI to make it appear as if individuals are doing or saying something they never did or said. Realistic alterations to images and videos are not new: examples can be found in Hollywood movies incorporating clips of historical figures, such as "Forrest Gump," where the filmmakers edited old footage of JFK to make it look like he met and exchanged a few words with the film's protagonist. However, these movie scenes were created by skilled artists, and required time and money. With deepfake technology, it is computers, not humans, that do the hard work, and that technology is evolving very quickly. Indeed, while only a couple of years ago it took a lot of data to create a deepfake, today one can transfer the head position and rotation as well as facial expressions (including eye gaze and blinking) from a source actor to a portrait video of a target actor (Kim et al., 2018). Likewise, deepfake makers can now simply edit the text transcript of a video to synthesize a convincing new video of a person speaking (Fried et al., 2019) or even generate talking deepfakes from a single image (Nield, 2019). With these techniques becoming better, more accessible, and easier to use, it is no surprise that we are beginning to see successful and complicated attacks being conducted. Indeed, there are already reports of successful audio attacks on private companies, where the attackers, impersonating a CEO by simulating his voice with an audio deepfake, called the financial officer requesting an urgent money transfer (Grothaus, 2019). However, researchers are already actively working on detecting and preventing deepfakes (Agarwal et al., 2019; Guera & Delp, 2018).

CONCLUSION

It is undeniable that in this age of information, more people are connecting and spending time online. Indeed, the World Economic Forum reports that half of the world's population is now online (Broom, 2019). Users spend, on average, about 6.5 hours online each day (Hughes, 2019). While the global

reach of ICT (Information and Communication Technology) has benefits, it also provides deceivers and manipulators access to an unprecedented assortment of tools and broader access to potential victims. In order to help provide a better understanding of this complex issue, this chapter detailed the landscape of online deception, highlighting the various factors and actors involved as well as the most common attacks and their countermeasures, and provided a discussion on the double role of AI.

While technologically based approaches are efficient at detecting and preventing deception, it is clear that a purely technical solution to the problem of online deception is not sufficient. Specifically, the section Self-Disclosure and the Privacy Paradox addresses the various factors that cause users to be more susceptible to manipulation and deception, where the underlying assumption is that the users are rational beings, aiming to protect themselves from deception. However, there are existing studies that reveal such phenomena as *deliberate ignorance, information avoidance,* or *biased interpretation of information*, phenomena in which individuals deliberately choose not to know (Golman, Hagmann, & Loewenstein, 2017; Hertwig & Engel, 2016). Consequently, while technological countermeasures can reduce the spread on online deception, they cannot entirely address the issue alone, and, therefore, a **socio-technical approach** is more desirable and efficient.

One such approach is Tim Berners-Lee's World Wide Web Foundation and its *Contract for the Web* (www.contractfortheweb.org). Essentially, the Contract aims at saving the Internet from itself by establishing rules and guidelines for ethical and transparent use of the Web. The effort brings together governments, companies, civil society, and Internet users with the objective of laying a roadmap to build a Web that is a public good for everyone. The Contract for the Web provides guiding principles (or tasks) for each of the 3 actors. While these principles are concerned with the Web in general, many do apply to the problem of Online Deception. In fact, the Contract for the Web calls for governments to have educational policies stipulating that 70% of the individuals (10 years and older) have ICT education which will empower them to detect online deception (Tsikerdekis & Zeadally, 2014). Moreover, companies are expected to develop user interfaces that are effective (which can solve the dark patterns deception techniques) and to develop and adopt technologies that increase the users' security. Even Web users have some responsibilities which would reduce online deception, such as respecting civil discourse and human dignity, taking steps to protect their privacy and security and those others, and helping to raise awareness and educate their peers.

REFERENCES

Abdelhamid, N., Thabtah, F., & Abdel-jaber, H. (2017). Phishing detection: A recent intelligent machine learning comparison based on models content and features. *2017 IEEE International Conference on Intelligence and Security Informatics (ISI)*, 72–77. 10.1109/ISI.2017.8004877

Acquisti, A. (2004). Privacy in Electronic Commerce and the Economics of Immediate Gratification. In *Proceedings of the 5th ACM Conference on Electronic Commerce*, (pp. 21–29). New York, NY: ACM. 10.1145/988772.988777

Acquisti, A., Adjerid, I., Balebako, R., Brandimarte, L., Cranor, L. F., Komanduri, S., … Wilson, S. (2017). Nudges for Privacy and Security: Understanding and Assisting Users' Choices Online. *ACM Comput. Surv., 50*(3), 44:1–44:41.

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, *347*(6221), 509–514. doi:10.1126cience.aaa1465 PMID:25635091

Agarwal, S., Farid, H., Gu, Y., He, M., Nagano, K., & Li, H. (2019). Protecting World Leaders Against Deep Fakes. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*. Retrieved from http://openaccess.thecvf.com/content_CVPRW_2019/papers/Media%20Forensics/Agarwal_Protecting_World_Leaders_Against_Deep_Fakes_CVPRW_2019_paper.pdf

Aïmeur, E., Brassard, G., & Rioux, J. (2013). Data Privacy: An End-User Perspective. *International Journal of Computer Networks and CommunicationsSecurity*, *1*(6), 237–250.

Aimeur, E., Hage, H., & Amri, S. (2018). The Scourge of Online Deception in Social Networks. *5th Annual Conf. on Computational Science & Computational Intelligence (CSCI'18)*, 1266–1271. 10.1109/CSCI46756.2018.00244

Aïmeur, E., & Sahnoune, Z. (2019). Privacy, Trust, and Manipulation in Online Relationships. *Journal of Technology in Human Services*, 1–25. doi:10.1080/15228835.2019.1610140

Al-Qurishi, M., Al-Rakhami, M., Alamri, A., Alrubaian, M., Rahman, S. M. M., & Hossain, M. S. (2017). Sybil Defense Techniques in Online Social Networks: A Survey. *IEEE Access: Practical Innovations, Open Solutions*, *5*, 1200–1219. doi:10.1109/ACCESS.2017.2656635

Amini, A., Soleimany, A. P., Schwarting, W., Bhatia, S. N., & Rus, D. (2019). Uncovering and Mitigating Algorithmic Bias through Learned Latent Structure. *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society - AIES '19*, 289–295. 10.1145/3306618.3314243

Asadian, H., & Javadi, H. H. S. (2018). Identification of Sybil attacks on social networks using a framework based on user interactions. *Security and Privacy, 1*(2).

Barraclough, P., & Sexton, G. (2016). Phishing-Deception Data Model for Online Detection and Human Protection. In H. Jahankhani, A. Carlile, D. Emm, A. Hosseinian-Far, G. Brown, G. Sexton, & A. Jamal (Eds.), *Global Security, Safety and Sustainability—The Security Challenges of the Connected World* (pp. 144–154). Springer International Publishing. doi:10.1007/978-3-319-51064-4_13

Barth, S., & de Jong, M. D. T. (2017). The Privacy Paradox Investigating Discrepancies Between Expressed Privacy Concerns and Actual Online Behavior A Systematic Literature Review. *Telematics and Informatics*, *34*(7), 1038–1058. doi:10.1016/j.tele.2017.04.013

Benevenuto, F., Magno, G., Rodrigues, T., & Almeida, V. (2010). Detecting Spammers on Twitter. *Proceedings of the 7th Annual Collaboration, Electronic Messaging, Anti-Abuse and Spam Conference (CEAS)*, 10.

Berners-Lee, T. (2017, March 12). I invented the web. Here are three things we need to change to save it. *The Guardian*. Retrieved from https://www.theguardian.com/technology/2017/mar/11/tim-berners-lee-web-inventor-save-Internet

Blank, G., Bolsover, G., & Dubois, E. (2014). *A New Privacy Paradox: Young People and Privacy on Social Network Sites*. SSRN Electronic Journal.

Brandimarte, L., Acquisti, A., & Loewenstein, G. (2013). Misplaced Confidences: Privacy and the Control Paradox. *Social Psychological & Personality Science*, *4*(3), 340–347. doi:10.1177/1948550612455931

Brignull, H. (2019). *Dark Patterns—Types of Dark Pattern*. Retrieved July 2, 2019, from Dark Patterns website: https://www.darkpatterns.org

Broom, D. (2019, March 19). More than half of the global population is now online. *World Economic Forum*. Retrieved from https://www.weforum.org/agenda/2019/03/chart-of-the-day-more-than-half-of-the-global-population-is-now-online/

Buck, C., Horbel, C., Germelmann, C. C., & Eymann, T. (2014). *The Unconscious App Consumer: Discovering and Comparing the Information-seeking Patterns among Mobile Application Consumers*. ECIS.

Buolamwini, J., & Gebru, T. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. *Conference on Fairness, Accountability and Transparency*, 77–91.

Chen, I., Johansson, F. D., & Sontag, D. A. (2018). *Why Is My Classifier Discriminatory?* In Advances in Neural Information Processing Systems. NIPS.

Cho, D., & Acquisti, A. (2013). The More Social Cues, The Less Trolling? An Empirical Study of Online Commenting Behavior. *Twelfth Workshop on the Economics of Information Security (WEIS 2013)*, 8.

Cialdini, R. B. (2007). *Influence: The Psychology of Persuasion*. New York: Harper Collins.

Cook, C., Schaafsma, J., & Antheunis, M. (2018). Under the bridge: An in-depth examination of online trolling in the gaming context. *New Media & Society*, *20*(9), 3323–3340. doi:10.1177/1461444817748578 PMID:30581367

Dada, E. G., Bassi, J. S., Chiroma, H., Abdulhamid, S. M., Adetunmbi, A. O., & Ajibuwa, O. E. (2019). Machine learning for email spam filtering: Review, approaches and open research problems. *Heliyon (London)*, *5*(6), e01802. doi:10.1016/j.heliyon.2019.e01802 PMID:31211254

Dastin, J. (2018, October 10). Amazon scraps secret AI recruiting tool that showed bias against women. *Reuters*. Retrieved from https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G

Del Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., & Caldarelli, G. Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(3), 554–559. 10.1073/pnas.1517441113

Duncan, R. D. (2018, December). *Influence Versus Manipulation: Understand The Difference*. Retrieved June 27, 2019, from Forbes website: https://www.forbes.com/sites/rodgerdeanduncan/2018/12/21/influence-vs-manipulation-understand-the-difference/

EDPS. (2018). *Online manipulation and personal data*. Retrieved from European Data Protection Supervisor website: https://edps.europa.eu/sites/edp/files/publication/18-03-19_online_manipulation_en.pdf

Efthimion, P. G., Payne, S., & Proferes, N. (2018). *Supervised Machine Learning Bot Detection Techniques to Identify Social Twitter Bots*. Academic Press.

Faris, H., Al-Zoubi, A. M., Heidari, A. A., Aljarah, I., Mafarja, M., Hassonah, M. A., & Fujita, H. (2019). An intelligent system for spam detection and identification of the most relevant features based on evolutionary Random Weight Networks. *Information Fusion*, *48*, 67–83. doi:10.1016/j.inffus.2018.08.002

Ferrara, E. (2018). Measuring Social Spam and the Effect of Bots on Information Diffusion in Social Media. In S. Lehmann & Y.-Y. Ahn (Eds.), *Complex Spreading Phenomena in Social Systems: Influence and Contagion in Real-World Social Networks* (pp. 229–255). doi:10.1007/978-3-319-77332-2_13

Ferreira, A., & Teles, S. (2019). Persuasion: How phishing emails can influence users and bypass security measures. *International Journal of Human-Computer Studies*, *125*, 19–31. doi:10.1016/j.ijhcs.2018.12.004

Finn, R. L., Wright, D., & Friedewald, M. (2013). Seven Types of Privacy. In S. Gutwirth, R. Leenes, P. de Hert, & Y. Poullet (Eds.), *European Data Protection: Coming of Age* (pp. 3–32). doi:10.1007/978-94-007-5170-5_1

Fornacciari, P., Mordonini, M., Poggi, A., Sani, L., & Tomaiuolo, M. (2018). A holistic system for troll detection on Twitter. *Computers in Human Behavior*, *89*, 258–268. doi:10.1016/j.chb.2018.08.008

Fried, O., Tewari, A., Zollhöfer, M., Finkelstein, A., Shechtman, E., Goldman, D. B., … Agrawala, M. (2019). Text-based Editing of Talking-head Video. *ACM Transactions on Graphics, 38*(4), 68:1–68:14.

Galán-García, P., de la Puerta, J. G., Gómez, C. L., Santos, I., & Bringas, P. G. (2014). Supervised Machine Learning for the Detection of Troll Profiles in Twitter Social Network: Application to a Real Case of Cyberbullying. In Á. Herrero, B. Baruque, F. Klett, A. Abraham, V. Snášel, A. C. P. L. F. de Carvalho, … E. Corchado (Eds.), *International Joint Conference SOCO'13-CISIS'13-ICEUTE'13* (pp. 419–428). Springer International Publishing.

Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information Avoidance. *Journal of Economic Literature*, *55*(1), 96–135. doi:10.1257/jel.20151245

Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., & Toombs, A. L. (2018). The Dark (Patterns) Side of UX Design. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*, 1–14. 10.1145/3173574.3174108

Grinberg, N., Joseph, K., Friedland, L., Swire-Thompson, B., & Lazer, D. (2019). Fake news on Twitter during the 2016 U.S. presidential election. *Science*, *363*(6425), 374–378. doi:10.1126cience.aau2706 PMID:30679368

Grothaus, M. (2019, July 19). Criminals are using deepfakes to impersonate CEOs. *Fast Company*. Retrieved from https://www.fastcompany.com/90379001/criminals-are-using-deepfakes-to-impersonate-ceos

Gu, P., Khatoun, R., Begriche, Y., & Serhrouchni, A. (2017). Support Vector Machine (SVM) Based Sybil Attack Detection in Vehicular Networks. *2017 IEEE Wireless Communications and Networking Conference (WCNC)*, 1–6. 10.1109/WCNC.2017.7925783

Guera, D., & Delp, E. J. (2018). Deepfake Video Detection Using Recurrent Neural Networks. *2018 15th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS)*, 1–6. 10.1109/AVSS.2018.8639163

Gupta, A., Kumaraguru, P., Castillo, C., & Meier, P. (2014). TweetCred: Real-Time Credibility Assessment of Content on Twitter. In L. M. Aiello & D. McFarland (Eds.), *Social Informatics: 6th International Conference, SocInfo 2014*, *Barcelona, Spain*, *November 11-13, 2014*. *Proceedings* (pp. 228–243). 10.1007/978-3-319-13734-6_16

Hansell, S. (2003, April 22). TECHNOLOGY; Internet Is Losing Ground in Battle Against Spam. *The New York Times*. Retrieved from https://www.nytimes.com/2003/04/22/business/technology-Internet-is-losing-ground-in-battle-against-spam.html

Hertwig, R., & Engel, C. (2016). Homo Ignorans: Deliberately Choosing Not to Know. *Perspectives on Psychological Science*, *11*(3), 359–372. doi:10.1177/1745691616635594 PMID:27217249

Hossain, M., Paul, A., Islam, M. H., & Atiquzzaman, M. (2018). Survey of the Protection Mechanisms to the SSL-based Session Hijacking Attacks. *Network Protocols and Algorithms*, *10*(1), 83. doi:10.5296/npa.v10i1.12478

Hughes, M. (2019, January 31). Study shows we're spending an insane amount of time online. *The Next Web*. Retrieved from https://thenextweb.com/tech/2019/01/31/study-shows-were-spending-an-insane-amount-of-time-online/

Jentzsch, N., Preibusch, S., & Harasser, A. (2012). *Study on monetising privacy: An economic model for pricing personal information. European Network and Information Security Agency*. ENISA.

Jun, Y., Meng, R., & Johar, G. V. (2017). Perceived social presence reduces fact-checking. *Proceedings of the National Academy of Sciences of the United States of America*, *114*(23), 5976–5981. doi:10.1073/pnas.1700175114 PMID:28533396

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, *53*(1), 59–68. doi:10.1016/j.bushor.2009.09.003

Kim, H., Theobalt, C., Carrido, P., Tewari, A., Xu, W., Thies, J., ... Zollhöfer, M. (2018). Deep video portraits. *ACM Transactions on Graphics*, *37*(4), 1–14. doi:10.1145/3197517.3201283

Kirby, E. J. (2016, December 5). *The city getting rich from fake news*. Retrieved April 1, 2019, from BBC News website: https://www.bbc.com/news/magazine-38168281

Knight, W. (2019, February 14). An AI that writes convincing prose risks mass-producing fake news. *MIT Technology Review*. Retrieved from https://www.technologyreview.com/s/612960/an-ai-tool-auto-generates-fake-news-bogus-tweets-and-plenty-of-gibberish/

Kokolakis, S. (2017). Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon. *Computers & Security*, *64*, 122–134. doi:10.1016/j.cose.2015.07.002

Malgieri, G., & Custers, B. (2018). Pricing privacy – the right to know the value of your personal data. *Computer Law & Security Review*, *34*(2), 289–303. doi:10.1016/j.clsr.2017.08.006

March, E., & Marrington, J. (2019). A Qualitative Analysis of Internet Trolling. *Cyberpsychology, Behavior, and Social Networking*, *22*(3), 192–197. doi:10.1089/cyber.2018.0210 PMID:30720370

Mathur, A., Acar, G., Friedman, M., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites [Draft].

Moradpoor, N., Clavie, B., & Buchanan, B. (2017, July). *Employing machine learning techniques for detection and classification of phishing emails*. doi:10.1109/SAI.2017.8252096

Nield, D. (2019, May 26). Samsung's Creepy New AI Can Generate Talking Deepfakes From a Single Image. *ScienceAlert*. Retrieved from https://www.sciencealert.com/samsung-s-ai-can-now-generate-talking-heads-from-a-single-image

Osatuyi, B., Passerini, K., Ravarini, A., & Grandhi, S. A. (2018). "Fool me once, shame on you… then, I learn." An examination of information disclosure in social networking sites. *Computers in Human Behavior*, *83*, 73–86. doi:10.1016/j.chb.2018.01.018

Pak, J., & Zhou, L. (2014). Social structural behavior of deception in computer-mediated communication. *Decision Support Systems*, *63*, 95–103. doi:10.1016/j.dss.2013.08.010

Posetti, J., & Matthews, A. (2018, July 23). *A Short Guide to the History of 'Fake News' and Disinformation: A New ICFJ Learning Module*. Retrieved April 4, 2019, from International Center for Journalists website: https://www.icfj.org/news/short-guide-history-fake-news-and-disinformation-new-icfj-learning-module

Quinn, M. J. (2014). *Ethics for the Information Age* (6th ed.). Addison-Wesley Professional.

Rao, R. S., & Pais, A. R. (2018). Detection of phishing websites using an efficient feature-based machine learning framework. *Neural Computing & Applications*. doi:10.100700521-017-3305-0

Roozenbeek, J., & van der Linden, S. (2019). The fake news game: Actively inoculating against the risk of misinformation. *Journal of Risk Research*, *22*(5), 570–580. doi:10.1080/13669877.2018.1443491

Sadeque, F., Rains, S., Shmargad, Y., Kenski, K., Coe, K., & Bethard, S. (2019). Incivility Detection in Online Comments. In *Proceedings of the Eighth Joint Conference on Lexical and Computational Semantics (*SEM 2019)*, (pp. 283–291). Minneapolis, MN: Association for Computational Linguistics. 10.18653/v1/S19-1031

Sahingoz, O. K., Buber, E., Demir, O., & Diri, B. (2019). Machine learning based phishing detection from URLs. *Expert Systems with Applications*, *117*, 345–357. doi:10.1016/j.eswa.2018.09.029

Salahdine, F., & Kaabouch, N. (2019). Social Engineering Attacks: A Survey. *Future Internet, 11*.

Scheufele, D. A., & Krause, N. M. (2019). Science audiences, misinformation, and fake news. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(16), 7662–7669. doi:10.1073/pnas.1805871115 PMID:30642953

Seo, H., Xiong, A., & Lee, D. (2019). *Trust It or Not: Effects of Machine-Learning Warnings in Helping Individuals Mitigate Misinformation*. doi:10.1145/3292522.3326012

Shankar, A., & Shetty, R. (2019). A Review on Phishing Attacks. *International Journal of Applied Engineering Research*, *14*(9), 2171–2175.

Shao, C., Ciampaglia, G. L., Flammini, A., & Menczer, F. (2016). Hoaxy: A Platform for Tracking Online Misinformation. *Proceedings of the 25th International Conference Companion on World Wide Web - WWW '16 Companion*, 745–750. 10.1145/2872518.2890098

Smith, A., Anderson, M., & Caiazza, T. (2018). *Social Media Use in 2018*. Retrieved from Pew Research Center website: http://assets.pewresearch.org/wp-content/uploads/sites/14/2018/03/01105133/PI_2018.03.01_Social-Media_FINAL.pdf

Spinello, R. A. (2011). *Privacy and Social Networking Technology*. Academic Press.

Stella, M., Ferrara, E., & De Domenico, M. (2018). Bots increase exposure to negative and inflammatory content in online social systems. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(49), 12435–12440. doi:10.1073/pnas.1803470115 PMID:30459270

Such, J. M., & Criado, N. (2018). Multiparty Privacy in Social Media. *Communications of the ACM*, *61*(8), 74–81. doi:10.1145/3208039

Synnott, J., Coulias, A., & Ioannou, M. (2017). Online trolling: The case of Madeleine McCann. *Computers in Human Behavior*, *71*, 70–78. doi:10.1016/j.chb.2017.01.053

Tavani, H. T., & Moor, J. H. (2001). Privacy protection, control of information, and privacy-enhancing technologies. *ACM SIGCAS Computers and Society*, *31*(1), 6–11. doi:10.1145/572277.572278

Thorne, J., & Vlachos, A. (2018). Automated Fact Checking: Task Formulations, Methods and Future Directions. *Proceedings of the 27th International Conference on Computational Linguistics*, 3346–3359. Retrieved from https://www.aclweb.org/anthology/C18-1283

Torabi Asr, F., & Taboada, M. (2019). Big Data and quality data for fake news and misinformation detection. *Big Data & Society*, *6*(1), 205395171984331. doi:10.1177/2053951719843310

Tsikerdekis, M. (2018). Real-Time Identity-Deception Detection Techniques for Social Media: Optimizations and Challenges. *IEEE Internet Computing*, *22*(5), 35–45. doi:10.1109/MIC.2017.265102442

Tsikerdekis, M., & Zeadally, S. (2014). Online deception in social media. *Communications of the ACM*, *57*(9), 72–80. doi:10.1145/2629612

van der Stock, A., Glas, B., Smithline, N., & Gigler, T. (2017). *OWASP Top 10 -2017 The Ten Most Critical Web Application Security Risks*. Retrieved from OWASP website: https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, *359*(6380), 1146–1151. doi:10.1126cience.aap9559 PMID:29590045

Xu, H., Luo, X., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems*, *51*(1), 42–52. doi:10.1016/j.dss.2010.11.017

Yang, K.-C., Varol, O., Davis, C. A., Ferrara, E., Flammini, A., & Menczer, F. (2019). Arming the public with artificial intelligence to counter social bots. *Human Behavior and Emerging Technologies*, *1*(1), 48–61. doi:10.1002/hbe2.115

Yang, P., Zhao, G., & Zeng, P. (2019). Phishing Website Detection Based on Multidimensional Features Driven by Deep Learning. *IEEE Access: Practical Innovations, Open Solutions*, *7*, 15196–15209. doi:10.1109/ACCESS.2019.2892066

Yang, Z., Wilson, C., Wang, X., Gao, T., Zhao, B. Y., & Dai, Y. (2014). Uncovering Social Network Sybils in the Wild. *ACM Transactions on Knowledge Discovery from Data*, *8*(1), 1–29. doi:10.1145/2556609

Yu, J., Hu, P. J.-H., & Cheng, T.-H. (2015). Role of Affect in Self-Disclosure on Social Network Websites: A Test of Two Competing Models. *Journal of Management Information Systems*, *32*(2), 239–277. doi:10.1080/07421222.2015.1063305

Zhou, Z., Guan, H., Bhat, M., & Hsu, J. (2019). *Fake News Detection via NLP is Vulnerable to Adversarial Attacks*. doi:10.5220/0007566307940800

Zhuk, D., Tretiakov, A., Gordeichuk, A., & Puchkovskaia, A. (2018). Methods to Identify Fake News in Social Media Using Artificial Intelligence Technologies. In D. A. Alexandrov, A. V. Boukhanovsky, A. V. Chugunov, Y. Kabanov, & O. Koltsova (Eds.), *Digital Transformation and Global Society* (Vol. 858, pp. 446–454). Cham: Springer International Publishing. doi:10.1007/978-3-030-02843-5_36

ADDITIONAL READING

Aïmeur, E., Díaz Ferreyra, N., & Hage, H. (2019). *Manipulation and Malicious Personalization: Exploring the Self-Disclosure Biases Exploited by Deceptive Attackers on Social Media*. Frontiers in Artificial Intelligence; doi:10.3389/frai.2019.00026

Chan, M. S., Jones, C. R., Hall Jamieson, K., & Albarracín, D. (2017). Debunking: A Meta-Analysis of the Psychological Efficacy of Messages Countering Misinformation. *Psychological Science*, *28*(11), 1531–1546. doi:10.1177/0956797617714579 PMID:28895452

Froehlich, T. (2017). A Not-So-Brief Account of Current Information Ethics: The Ethics of Ignorance, Missing Information, Misinformation, Disinformation and Other Forms of Deception or Incompetence. BiD: Textos Universitaris de Biblioteconomia i Documentació, (39). Retrieved from http://bid.ub.edu/en/39/froehlich.htm

Newman, N., Fletcher, R., Kalogeropoulos, A., & Nielsen, R. (2019). Reuters Institute Digital News Report 2019 (pp. 1–156). Retrieved from Reuters Institute for the Study of Journalism website: https://ora.ox.ac.uk/objects/uuid:18c8f2eb-f616-481a-9dff-2a479b2801d0

Nielsen, R. K., & Graves, L. (2017). "News you don't believe": Audience perspectives on fake news (p. 8). Retrieved from Reuters Institute website: https://reutersinstitute.politics.ox.ac.uk/our-research/news-you-dont-believe-audience-perspectives-fake-news

Pennycook, G., & Rand, D. G. (n.d.). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *Journal of Personality*. doi:10.1111/jopy.12476 PMID:30929263

Shu, K., Sliva, A., Wang, S., Tang, J., & Liu, H. (2017). Fake News Detection on Social Media: A Data Mining Perspective. *SIGKDD Explorations*, *19*(1), 22–36. doi:10.1145/3137597.3137600

Turk, D. Z. (2018). Technology as Enabler of Fake News and a Potential Tool to Combat It (No. PE 619.008; p. 30). Retrieved from European Parliament website: http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/619008/IPOL_IDA(2018)619008_EN.pdf

KEY TERMS AND DEFINITIONS

Artificial Intelligence: An umbrella term that encompasses many disciplines with the unified goal of building technologies that mimic human intelligence.

Deception: A deliberate and intentional act meant to mislead others into a state of false beliefs.

Deepfake: Very realistic and convincing fake media content that was produced or altered using artificial intelligence-enabled techniques.

Fake News: Fabricated stories, hoaxes, propaganda or inaccurate information that appear to be genuine, generally crafted and spread to deliberately misinform and deceive people.

Machine Learning: A subfield of Artificial Intelligence, it is the pursuit of providing computers with the ability to acquire knowledge through the analysis of data and other interactions, and to ultimately apply this knowledge to new settings.

Privacy Paradox: The contradiction between the users' reported concerns for safeguarding their privacy, and their actual behavior which exposes and reveals their private and sensitive information.

Self-Disclosure: The act of voluntarily sharing and disclosing personal information to others.

Social Media: The collection of tools and online platforms built around the creation and sharing of user-generated content within self-organizing groups and communities of interest.

Conclusion

THE POST-TRUTH WORLD

Fake news is not a new phenomenon, as it has been used by early Roman Emperors; in war propaganda; and as part of the corporate domination of major publishing outlets in the 1920s (Lazer et al, 2018), among other examples. However, the rapidity with which it can now be spread is new and owes much to recent technological developments such as the Internet and social media.

We seem to be living in a society that prioritizes speed over accuracy, sharing over reading, commenting over understanding (Leetaru, 2019, p. 1)

Fake news is a complex phenomenon that requires a comprehensive, multi-faceted solutions comprised of education, laws, and tools (including newer artificially intelligent ones).

Post-Truth Literacy and Education

One component of this solution is to better equip people to detect fake news. Critical information skills and literacy are now being taught in some primary and secondary schools; however, it is difficult to assess whether this training is effective (Lazer et al, 2018). Although a number of fact-checking organizations and websites exist, one major limitation they have to contend with may be information overload. The fact-checking services simply cannot keep up. As Laybats and Tredinmick (2016, p. 205) note:

Thirty-five years ago, the controversial theorist Baudrillard suggested that 'we live in a world where there is more and more information, and less and less meaning (1994, p. 79) and speculated that 'information is directly destructive of meaning and signification' (1994, p. 79).

Traditional fact-checking methods, such as those used by journalists and publishers, are no longer adequate given the vast amount of content being produced quickly and by almost anyone with access to the Internet and to social media.

In addition, there is a very challenging constraint that is cognitive in nature. Humans do not appear to be very good at detecting false information.

Conclusion

Four decades of deception detection research has helped us to learn about how well humans are able to detect lies in text. The findings show that we are not good at it. In fact, just 4% better t than chance (Conroy et al, 2015, p. 1).

Another major reason why we are so bad at detecting fake news is the fact that we live in filter bubbles: we like to hear others who agree with us and filter out those who do not (DiFranzo and Gloria, 2017). There is also extensive confirmation bias, in which we tend to prefer to digest information that confirms what we think we already know (Enfield, 2007). Other cognitive factors include repetition theory, which states that we tend to believe in something if we hear about it many times (Hasher et al, 1977). Lazer et al (2018) note that, paradoxically, re-reading false content on a fact-checking site may serve to repeat it and therefore increase the likelihood that the reader thinks it is true. Finally, information avoidance is a form of information behavior that is increasing because we simply cannot deal with information overload. We therefore purposefully avoid consuming some content. Lenker (2016) notes that people tend to engage in something called motivated reasoning, which he defines as:

a frequently unnoticed tendency to a) avoid or dismiss new information that challenges existing beliefs and 2) to readily accept new information that appears to conform to prior beliefs (p. 512).

Motivated reasoning thus combines confirmation bias with information avoidance.

In addition to these individual cognitive biases, there is also a social dimension to consider that further contributes to this challenge. Given that people tend to associate with like-minded people on social networks, this means that people are increasingly getting their news (fake or real) from a homogenous community. Lazer et al (2018) note that people prefer to acquire new information that validates their existing attitudes (selection bias), and that they are inclined to accept new information that pleases them (desirability bias). This behavior makes sense when we take into account the sheer number of different channels that push information to us constantly in real time. People lack the time to read, let alone verify, all this content. It is much easier to rely on their social networks. In parallel, personalization algorithms on social media make use of artificial intelligence to recognize users' preference patterns. In this way, the probability that users will receive content they will react to favorably or find interesting is greatly increased. The "formula" seems to be that information overload plus information avoidance minus time equals the post-truth world, where content value is measured by reach (the number of likes) rather than validity.

The fact that most people read news through their social networks and not newspapers, newsfeeds, or television news (over 66% from Facebook ("FB") in the US) creates a phenomenon of crowd-sourced content and "groupthink." Social media sites have become the primary source of news for the vast majority of people regardless of age, profession, and geographical location. These sites also allow for a much more rapid sharing of news, potentially making each individual a creator and a disseminator of content. While this is good news for valid content, it also makes the proliferation of fake news that much more efficient. It is quicker and less expensive to consume news from social media than from traditional sources such as newspapers. This content is also easier to share with others, to comment on, and to discuss with one's friends via one's social network (Shu et al, 2017). We can therefore extend our "formula" of post-truth to: trust plus share speed plus repetition equals post-truth.

The fastest speed of sharing is between close networks of trusted colleagues, family, and friends, which also leads to the most repetitions (e.g. likes, retweets). There is some evidence that crowdsourced

judgments about the quality of news sources may be effective in identifying false news stories, much like the self-regulating aspect of Wikipedia (Pennycook and Rand (2019). There may, therefore, be positive aspects associated with the filter bubbles and groupthink phenomena.

Peters (2017) notes that:

One major consideration about the shift to post-truth is the "truth-carrying capacity" of new media and its propensity to disseminate fake news through Facebook, Google and Twitter, and thereby to create a "bubble world' where algorithmically selected news sources simply reinforce existing prejudices thus compromising the capacity for moral thinking (p. 564). It's not so much that facts are futile, it's just that they take a while to collect and marshal into a knock-down argument. By the time the facts are gathered the media moment has passed, the headline has been grabbed, and the lie can be modified, apologized for or replaced by another (p. 565).

Part of the answer lies in improving users' ability to spot fake news. Information literacy has traditionally been taught by libraries and information schools to help equip learners with a means of identifying intentionally produced fake news. The need for digital literacy is greater than ever and all educators, librarians, and information professionals need to be more visible and advocate more strongly in order to raise awareness and better serve end users. Aharony et al (2017) note that all information consumers need to know how to evaluate the merits of the source of the information they are reading and that this is a critical component for an informed democratic society. Information professionals such as librarians, journalists, and information architects need to play a more visible role in today's society to inform and educate citizens about how best to select, evaluate, and use information. This means the curriculum and professional training of information professionals must include digital literacy skills.

However, this approach is also no longer enough to deal with the post-truth world, where misinformation can be disseminated so quickly and to so many different sites around the world. Even worse, many potential users are unaware that resources such as information literacy instruction even exist.

Organizational Regulation and National Legislation

There are some embryonic efforts to introduce information policies in organizations; however, the leaders are not proving to be good role models. Facebook states that they are "making it as difficult as possible for people posting false news to buy ads on our platform through strict enforcement of our policies" on their website. Despite this assertion, they have not introduced any policies whereby those who intentionally spread fake news face any sort of concrete consequence. Facebook's approach is that this is a community problem that should be "policed" by the community and not the organization. This appears to be the current status quo for most organizations.

"A new system of safeguards is needed" to address the rise of fake news (Lazer et al, 2018, p. 1094). Companies such as Google, Facebook and Twitter have the ethical responsibility to implement platform-based policies. These, in turn, should be regulated by government legislation. While many would protest that this is a form of censorship and that freedom of speech or expression is being compromised, a strong balance needs to be established in order to prevent the spread of fake news. There needs to be some type of consequence to intentionally spreading false content. This could be through direct laws or through the use of lawsuits (Lazer et al, 2018). Most countries that are actively producing fake news, such as Macedonia and Georgia, do not have any consequences, such as the possibility of arrest or conviction.

The proliferation of fake news has led to an increase in fabricated content that successfully camouflages itself as news. Fake news does not have the same vetting and gatekeeping that real news goes through with respect to content accuracy and credibility. Platforms such as Facebook, Google and Twitter need to provide users with an easy means of quickly ascertaining the credibility of content. For example, Facebook added an easy feedback tool to signal that content is not true. Users can now easily report fake news by clicking on the upper right hand of a post and tapping on "It's a fake news story." Once such a story is flagged, it is checked by third party fact-checkers and, if it is proven to be false, then it cannot be turned into an ad or promoted[1].

However, these organizations need to do much more. Lazer et al (2018) advocate a partnership between these companies and academic researchers in order to come up with solutions to better curb the spread of fake news.

While a few countries have introduced laws that address fake news, the majority do not have any legislation that is directly on point. Most countries have established some type of task force, websites to report fake news, databases of misinformation or information and digital literacy efforts (including Canada). For example, there is currently a British parliamentary inquiry into fake news to consider legislation on how social media platforms handle complaints to try to oblige them to take responsibility for their content. The analogy current in British discourse is that of an editor being responsible for press ads they print in their newspaper (Figueira and Oliveira, 2017).

Exceptions include France, where a new law specifically prohibits election misinformation, and Germany, where a new law addressing illegal posts on social media came into effect in 2018 but has proven challenging to enforce. One of the first countries to introduce fake news legislation was Germany, with a law that demands that social media sites remove hate speech, fake news, and illegal content or else face fines of up to $6.1 m. This legislation came into effect on Jan. 1, 2018 (Wendling, 2018).

Funke and Flamini (2018) survey the status of legislation in countries around the world and single out China as the country that has some of the strictest laws in the world when it comes to misinformation.

In 2016, the government criminalized creating or spreading rumors that "undermine economic and social order." Another law in 2017 requires social media platforms to solely republish and link to news articles from registered news media… [in 2018] started requiring microblogging sites to highlight and refute rumors on their platforms.

A second example provided by the authors is that of Singapore:

In May 2019, Singapore became the latest country to pass a law criminalizing the dissemination of false information online. The law …. makes it illegal to spread "false statements of fact" in Singapore that compromise security, "public tranquility," public safety and the country's relations with other nations. The law punishes people who post false information with heavy fines and even jail time…On April 1, 2019, lawmakers first read a bill that would give them new powers to crack down on the spread of misinformation on platforms like Facebook, which could be fined if they don't comply with specific censorship provisions. That bill passed within the month.

A number of other countries have draft legislation that may or may not be implemented in the near future. Unfortunately, a significant number seem to have or are considering legislation that appears to target journalists and free expression, which would thwart the intended benefits of anti-misinformation laws.

Some promising approaches include looking at traditional means of detecting deception as inspiration for sophisticated new solutions to the problem of detecting fake news. Torres et al (2018) offer one example. They look at the epistemology of testimony: how to determine whether information provided by others is valid. Testimony can be shared through written text or directly (face-to-face or through audio or video interfaces). While the authors note that testimony is often associated with courts of law, whenever someone shares content on social media, they are in fact `testifying` that their content is valid and valuable. Research on knowledge sharing and the role of trust points to the pivotal role played by the credibility of the person who shares the information, rather than receiver attempts to assess the validity of the information itself. In other words, if we trust the person sharing information, then we trust the content they give us, whether that occurs in person or via social media. This trust is developed mostly through a track record that the person has built up over time: they have shared valid content with us in the past, therefore we trust them. While we would normally seek to corroborate this content from other sources, the very nature of the Internet and social media are such that we mistakenly perceive that there has in fact been corroboration (e.g., many other sites have the same information and many others have liked or shared the content already).

Blitz (2018) notes that deep fakes, which are highly realistic yet false depictions of people saying or doing things in audio or video formats, pose new legal challenges. Are deep fakes subject to protection by the First Amendment guaranteeing free speech in the U.S.? Is any false statement or factual claim? There is a long spectrum, with freedom of speech and expression at one end and protection against intent to deceive at the other.

There is a strong conflict between a government's duty to actively patrol falsehoods in the realm of commerce and security and its obligation to refrain from doing so in the realm of ideas (p. 72).

The author discusses an interesting typology of knowledge that includes accepted knowledge, anti-knowledge, and contested knowledge. Accepted knowledge is supported by sufficient credible evidence and vetted by experts. Anti-knowledge is supported by enough credible evidence and vetted by experts to "prove" it is not true. Contested knowledge resides in between the two, as there is not enough evidence to prove or disprove it. Blitz (2018) argues that governments should be able to restrict anti-knowledge that carries serious risks, such as false medical advice. Of course, risk assessment is not always so clear – deep fakes are intended to be malicious and can cause serious harm to the person whose voice and/or image was altered. A good analogy is how the Digital Millenium Copyright Act (DMCA) influenced copyright law. Computers created an enhanced threat to copyright by making it much easier for anyone to copy and disseminate a digital movie. Congress did not invent new copyright protection technologies but, instead, let private companies do so and then implemented legal barriers to anyone misusing these new tools. The delicate balance that governments need to find is protecting individuals while at the same time not restricting how they can use new tools to express themselves – a very tough challenge!

Technological Solutions

If post-truth literacy is not enough, then can technology come to our rescue? An automated fake news detector remains a very challenging problem. A number of diverse software approaches, such as computational linguistics (to attempt to understand natural language and detect red flags) with machine learning (to detect patterns that are unique to fake news such as its dissemination speed and pattern), will likely be

required. It is also very likely that a purely automated approach may not be possible. A hybrid approach that combines the complementary strengths of humans and artificial intelligence appears to be the most promising path in the battle against fake news. For example, automated tools can help journalists in their fact-checking and can also help all consumers of content to better filter and flag fake news, alternative facts and misinformation (Conroy et al, 2015).

Shu et al (2017) note that it is particularly difficult to detect fake news on social media because it is content that was intentionally written to deceive; as a result, data mining cannot easily distinguish between real and fake content. Fake news is also very diverse – it is written about different topics using different linguistic styles. Some fake news contains elements of valid content. The authors also note that:

Fake news is usually related to newly emerging, time-critical events, which may not have been properly verified by existing knowledge bases due to the lack of corroborating evidence or claims. (p. 2).

Other technological tools include a number of algorithms to automatically detect fake news. In 2017, Pomerleau and Rao organized the first Fake News Challenge to invite the artificial intelligence community to develop technology to detect fake news. Fifty teams from both academia and industry participated in the challenge. The focus of the challenge was to identify the stance of a news article with respect to the headline: does the stance agree or disagree with the headline; does it discuss the same topic; or does it discuss something unrelated? Examples included fake news detecting software making use of linguistic analysis and machine learning (e.g. Conroy et al, 2015); lexical overlap between the headline and the article (Hanselowski et al, 2018); and linguistic comparison of language used in real news and deceptive news (Rashkin et al, 2017).

Fake news also tends to employ certain types of language, including suspenseful or sensationalistic terminology; words that are a call to action; celebrity names; and emotional words such as "love" and "hate." Sentiment or opinion polling is a form of text mining that detects these emotional terms (Feldman, 2013). For example, Potthast et al (2017) conducted a writing style analysis using a meta-learning approach that was originally designed to identify text authorship. Their approach proved very effective at identifying highly partisan content, both left wing and right wing, when compared to more neutral text. While this is not enough to detect all fake news, it is a promising approach that can be part of the overall toolkit.

In another study, Jain et al (2016) also used sentiment and semantic analysis to detect misinformation in real time. They compared tweets from the public and verified news sources to identify the degree of agreement or discrepancy between the two groups. Qzvinian et al (2011) gathered a corpus of tweets about a specific rumor to develop a general framework that can assess whether a given tweet is rumor related and whether the user believes the rumor. There is also work in the area of rumor detection that can be applied to the detection of fake news. Rumors or gossip represent content that has not yet been verified – it is neither true nor false but is "unverified" (Shu et al, 2017). This mirrors an interesting concept used in the McElroy model of knowledge management and knowledge sharing, where a knowledge claim can either be true, false or unproven (McElroy, 2003). Knowledge claims are either accepted, rejected, or labelled "not proven." The community of trusted users provide feedback via the KM system when they use the knowledge.

Bourgonje et al (2017) consider digital curation, which has historically looked at ways of assessing veracity or authenticity of content. The authors do not believe that fully automated fact-checking systems are possible but argue that a hybrid system in which software helps humans decide whether or

not content is fake is feasible. They also use natural language processing to establish the relationship between headlines and the content of news articles. The more unrelated the headline is with respect to the article content, the more likely this is to be a form of fake news called "clickbait" which is intended to get readers to click on a link.

Finally, there is a promising approach that stems from an unlikely connection between an AI researcher (Martin Schenk) and the "Godfather of fake news" (Christopher Blair)[2]. Blair began fabricated news stories that closely resembled real news headlines. He took on personas and wrote as if he were a liberal, a feminist, an advocate of Black Lives matter among many others, using his sensationalist headlines and articles to provoke extreme reactions. Blair claims to be something like an ethical hacker – creating and spreading fake news in order to identify and expose extremist and radical groups who are attracted to his fake content. Martin Schenk is a Belgian computer programmer who wrote software that initially detected stories that were trending on Facebook (Trendolzer). He then adapted this to detect patterns that were characteristic of how fake news was shared across the Internet, even after the initial websites and Facebook posts were removed.

Schenk's goal is to be "just a Google search away" when people think they are looking at a false story. While he notes there are over 200 fact-checking organizations, he does not think they are effective. Meanwhile, Blair vows to continue doing what he is doing and the two appear to be on the same side. An unlikely meeting was organized between them by the BBC in 2018.

There is a growing consensus that the best approach does appear to be one that combines the strengths of both humans and algorithms.

I see enormous potential in technology as an assistant and turbocharger of fact-checking. I see very little use in technology as a one-size-fits all universal fixer of the problem. (Alexios Mantzarlis, Director, Poynter Institute's Fact-Checking Network, in Wendling, 2018).

While increasing public awareness is usually a good idea, in this context it risks exacerbating public information overload. It may also be subject to all of the human cognitive biases described above. An effective means of combatting fake news must therefore be a multi-pronged, comprehensive approach.

Algorithms can help citizens sort through the deluge of information around them, identifying contested narratives and disputed facts, but technology alone is not a panacea. There is no magical algorithm that can eliminate all false and misleading information online. (Leetaru, 2019, p. 3).

Gill (2018) notes that fake news is "a human problem and a technological one" (p. 2). We certainly need and should use tools but, at the same time, there is a growing need to increase the literacy of information consumers and sharers. We need to teach this at a very early age, and it should be part of the general curriculum. Students should learn about how to search for information, research, assess source credibility, triangulate information, and think about the veracity of information almost at the same time they learn to read. The best of all possible worlds would be to use computers to

identify and eliminate sources of misinformation and then rely on well-informed, literate citizens to spread the word, blacklist and ignore the worst purveyors of falsehoods." (Gill, 2018, p. 3)

It is clear that more than one approach, technique or tool is needed to navigate effectively in a post-truth world. End users need to have greater awareness of the existence of fake news, alternative facts, and misinformation. Organizations need to develop information policies to deal with internal issues while countries need to develop laws that enforce concrete consequences for the deliberate dissemination of fake news. Last but not least, we need to deploy an effective set of tools to help us detect fake news.

CONCLUDING REMARKS

In a post-truth world, we are deliberately looking for facts that support our beliefs, opinions, and conclusions. Post truth has been defined as the "public burial of objective facts by an avalanche of media appeals to emotion and personal belief" (Oxford English Dictionary). There is even a new word for the post-truth world: agnotology (Rose and Barros, 2017). Whereas epistemology is the study of knowledge, agnotology is the study of ignorance. Agnotology was named the 2016 New Word of the Year by the Oxford English Dictionary. Agnotologists study false information, such as industry attempts to obfuscate the links between smoking and cancer or, more recently, pseudo- academic or pseudo-scientific reports on human-based climate change.

Fake news is not a new phenomenon. However, the advent of the Internet and social media have definitely increased its geographic reach (it is worldwide) and the speed at which we share our crowd-sourced content with our circle of friends and family. Whereas in the past only powerful people, rulers, billionaires or major corporations, could generate significant doubt, today social media lets anyone present "false news" and potentially have significant impacts.

As Kshetri and Voas (2017) note, there is a fake news ecosystem today that can be characterized by three main groups of actors. The first group consists of creators of fake news. They need to put in only minimal investment to derive significant financial or other gains with little risk of any penalty nor guilt, as no one is physically hurt. The second group consists of consumers of fake news. They cannot easily assess the veracity of content and they receive their news largely through social media. The third group is made up of arbitrators and they are broken down further into three sub-groups:

1. social arbitrators (e.g. press, governance watchdog groups, academics, activists);
2. legal arbitrators (e.g. misinformation laws, constitutional protection of free speech);
3. economic arbitrators (e.g. social networking sites).

Unfortunately, all categories of arbitrators have so far proven to be quite weak, including social networking sites because they place little importance on accuracy, veracity, and reliability of content. There are no substantive measures to control the spread of fake news. The authors recommend a three-fold solution: use artificial intelligence and increase human proficiency to detect fake news; encourage social networking sites to ban fake content creators (which will diminish potential financial gain through fake news); and encourage users to put pressure on organizations to fight fake news as part of their corporate social responsibility or they will take their business elsewhere. This solution is strongly aligned with the major emphasis throughout the chapters in this book: we need literacy, legislation and technologies to work together in order to strengthen this ecosystem. As Sullivan (2018) notes, information professionals need to work together with cognitive scientists and technology developers in order to provide an effective antidote to the harmful effects of fake news. Information/digital literacy education needs to

include and integrate such specific biases in the ways in which people interact with information. Only by tackling fake news, alternative facts and misinformation in a concerted interdisciplinary manner do we stand a chance against the ever-increasing flood of information, both valid and invalid, both true and false, both corroborated and uncorroborated.

Kimiz Dalkir
McGill University, Canada

REFERENCES

Aharony, N., Limberg, L., Julien, H., Albright, K., Fourie, I., & Bronstein, J. (2017). Information literacy in an era of information uncertainty. *Proceedings of the Association for Information Science and Technology*, *54*(1), 528–531. doi:10.1002/pra2.2017.14505401063

Baudrillard, J. (1994). *Simulacra and Simulation* (S. F. Glaser, Trans.). University of Michigan Press.

Blitz, M. (2018). Lies, line drawing, and (deep) fake news. *Oklahoma Law Review*, *71*(1), 59–116.

Bourgonje, P., Schneider, J. M., & Rehm, G. (2017, September). From clickbait to fake news detection: an approach based on detecting the stance of headlines to articles. In *Proceedings of the 2017 EMNLP Workshop: Natural Language Processing meets Journalism* (pp. 84-89). 10.18653/v1/W17-4215

Conroy, N., Rubin, V., & Chen, Y. (2015). Automatic deception detection: methods for finding fake news. *Proceedings, ASIST 2015*. 10.1002/pra2.2015.145052010082

DiFranzo, D., & Gloria, M. J. K. (2017). Filter bubbles and fake news. *ACM Crossroads*, *23*(3), 32–35. doi:10.1145/3055153

ENDNOTES

Enfield, N. (2017). We're in a post-truth world with eroding trust and accountability. It can't end well. *The Guardian.* Available at https://www.theguardian.com

Feldman, R. (2013). Techniques and applications for sentiment analysis. *Communications of the ACM*, *56*(4), 82–89. doi:10.1145/2436256.2436274

Figueira, A., & Oliveira, L. (2017). The current state of fake news: challenges and opportunities. *Proceedings CENTERIS, International Conference on Enterprise Information systems,* 817-825. 10.1016/j.procs.2017.11.106

Funke, D., & Flamini, D. (2018). A guide to anti-misinformation actions around the world. *Poynter Organization.* Available at: https://www.poynter.org/ifcn/anti-misinformation-actions/

Gill, S. (2018). Why combatting fake news requires people and technology working together. *Knight Foundation.* Available at: https://knightfoundation.org/articles/why-combatting-fake-news-requires-people-and-technology-working-together/

Hanselowski, A., Schiller, B., Caspelherr, F., Chaudhuri, D., Meyer, C. M., & Gurevych, I. (2018). *A retrospective analysis of the fake news challenge stance detection task*. Available at: https://arxiv.org/pdf/1806.05180.pdf

Hasher, L., Goldstein, D., & Toppino, T. (1977). Frequency and the conference of referential validity. *Journal of Verbal Learning and Verbal Behavior*, *16*(1), 107–112. doi:10.1016/S0022-5371(77)80012-1

Jain, S., Sharwa, V., & Kaushal, R. (2016). Towards automated real-time detection of misinformation on Twitter. *Proceedings 2016 International Conference on Advances in Computing, Communications and Informatics (ICACCI)*, 2015-2020. 10.1109/ICACCI.2016.7732347

Kaufmann, P. (2017, April). In the post-truth era, colleges must share their knowledge. *The Chronicle of Higher Education*, 2.

Kshetri, N., & Voas, J. (2017). The economics of "fake news". *IT Professional*, *19*(6), 8–12. doi:10.1109/MITP.2017.4241459

Laybats, C., & Tredinnick, L. (2016). Post truth, information and emotion. *Business Information Review*, *33*(4), 204–206. doi:10.1177/0266382116680741

Lazer, D., Baum, M., Benkler, Y., Berinsky, A., Greenhill, K., Menczer, P., ... Zittrain, J. (2018). The science of fake news. *Science*, *359*(6380), 1094–1096. doi:10.1126cience.aao2998 PMID:29590025

Leetaru, K. (2019). A reminder that 'fake news' is an information literacy problem – not a technology problem. *Forbes*, *7*. Available at https://www.forbes.com/sites/kalevleetaru/2019/07/07/a-reminder-that-fake-news-is-an-information-literacy-problem-not-a-technology-problem/#35b7fdef6a6f

Lenker, M. (2018). Motivated reasoning, political information and information literacy education. *Libraries and the Academy*, *16*(3), 511–528. doi:10.1353/pla.2016.0030

Mackey, T. P., & Jacobson, T. E. (2014). *Metaliteracy: Reinventing information literacy to empower learners*. American Library Association.

McElroy, M. W., & McElroy, L. (2003). *The new knowledge management: Complexity, learning, and sustainable innovation*. Routledge.

Pennycook, G., & Rand, D. G. (2019). Fighting misinformation on social media using crowdsourced judgments of news source quality. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(7), 2521–2526. doi:10.1073/pnas.1806781116 PMID:30692252

Peters, M. (2017). Education in a post-truth world. *Educational Philosophy and Theory*, *49*(6), 563–566. doi:10.1080/00131857.2016.1264114

Potthast, M., Kiesel, J., Reinartz, K., Bevendorff, J., & Stein, B. (2017). *A stylometric inquiry into hyperpartisan and fake news*. Available at: https://arxiv.org/pdf/1702.05638.pdf

Qazvinian, V., Rosengren, E., Radev, D., & Mei, Q. (2011). Rumor has it: identifying misinformation in microblogs. *Proceedings 2011 Conference on Empirical Methods in Natural Language Processing*, 1589-1599.

Rashkin, H., Choi, E., Jang, J. Y., Volkova, S., & Choi, Y. (2017, September). Truth of varying shades: Analyzing language in fake news and political fact-checking. In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing* (pp. 2931-2937). 10.18653/v1/D17-1317

Rose, J., & Barros, M. (2017). Scientists have a word for studying the post-truth world: agnotology. *The Conversation*. Available at: http://theconversation.com/scientists-have-a-word-for-studying-the-post-truth-world-agnotology-71542

Shu, K., Silva, A., Wang, S., Tang, J., & Liu, H. (2017). Fake news detection on social media: A data mining perspective. *ACM SIGKDD Explorations Newsletter*, *19*(1), 22–36. doi:10.1145/3137597.3137600

Sullivan, M. (2018). Why librarians can't fight fake news. *Journal of Librarianship and Information Science*, *51*(4), 1146–1156. doi:10.1177/0961000618764258

Torres, R., Gerhart, N., & Negahban, A. (2018). Combating fake news: an investigation of information verification behaviors on social networking sites. *Proceedings, 51st Hawaii International Conference on System Sciences*, 3976-3985. 10.24251/HICSS.2018.499

Wendling, M. (2018). The (almost) complete history of 'fake news.' *BBC Trending*. Available at: https://www.forbes.com/sites/amitchowdhry/2017/03/05/facebook-fake-news-tool/

[1]   Facebook launces a new tool that combats fake news. Available at: https://www.forbes.com/sites/amitchowdhry/2017/03/05/facebook-fake-news-tool/.

[2]   The Godfather of Fake News. BBC Online. Available at: https://www.bbc.co.uk/news/resources/idt-sh/the_godfather_of_fake_news.

Compilation of References

Abdelhamid, N., Thabtah, F., & Abdel-jaber, H. (2017). Phishing detection: A recent intelligent machine learning comparison based on models content and features. *2017 IEEE International Conference on Intelligence and Security Informatics (ISI)*, 72–77. 10.1109/ISI.2017.8004877

Abdulla, R. A., Garrison, B., Salwen, M., Driscoll, P., & Casey, D. (2002, August). *The credibility of newspapers, television news, and online news*. Paper presented at the meeting of Association for Education in Journalism and Mass Communication, Mass Communication and Society Division, Miami, FL.

Acquisti, A., Adjerid, I., Balebako, R., Brandimarte, L., Cranor, L. F., Komanduri, S., … Wilson, S. (2017). Nudges for Privacy and Security: Understanding and Assisting Users' Choices Online. *ACM Comput. Surv., 50*(3), 44:1–44:41.

Acquisti, A. (2004). Privacy in Electronic Commerce and the Economics of Immediate Gratification. In *Proceedings of the 5th ACM Conference on Electronic Commerce*, (pp. 21–29). New York, NY: ACM. 10.1145/988772.988777

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, *347*(6221), 509–514. doi:10.1126cience.aaa1465 PMID:25635091

ACRL. (2015). *First part of the draft framework for information literacy for higher education*. Available at: http://acrl.ala.org/ilstandards/wp-content/uploads/2014/02/Framework-for-IL-for-HE-Draft-1-Part-1.pdf

Adams, R. (2017, November 17). *Michel Foucault: Discourse*. Retrieved from http://criticallegalthinking.com/2017/11/17/michel-foucault-discourse/

Adornato, A. C. (2016). Forces at the gate: Social media's influence on editorial and production decisions in local television newsrooms. *Electronic News*, *10*(2), 87–104. doi:10.1177/1931243116647768

Affelt, A. (2019). Creating a playbook to Combat: Fake news. *Online Searcher*. Retrieved from: http://www.infotoday.com/OnlineSearcher/Articles/Features/Creating-a-Playbook-to-Combat-Fake-News-132864.shtml

Agarwal, S., Farid, H., Gu, Y., He, M., Nagano, K., & Li, H. (2019). Protecting World Leaders Against Deep Fakes. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*. Retrieved from http://openaccess.thecvf.com/content_CVPRW_2019/papers/Media%20Forensics/Agarwal_Protecting_World_Leaders_Against_Deep_Fakes_CVPRW_2019_paper.pdf

Agger, B. (1991). Critical Theory, Poststructuralism, Postmodernism: Their Sociological Relevance. *Annual Review of Sociology*, *17*(1), 105–131. doi:10.1146/annurev.so.17.080191.000541

Aïmeur, E., Brassard, G., & Rioux, J. (2013). Data Privacy: An End-User Perspective. *International Journal of Computer Networks and CommunicationsSecurity*, *1*(6), 237–250.

Aimeur, E., Hage, H., & Amri, S. (2018). The Scourge of Online Deception in Social Networks. *5th Annual Conf. on Computational Science & Computational Intelligence (CSCI'18)*, 1266–1271. 10.1109/CSCI46756.2018.00244

Aïmeur, E., & Sahnoune, Z. (2019). Privacy, Trust, and Manipulation in Online Relationships. *Journal of Technology in Human Services*, 1–25. doi:10.1080/15228835.2019.1610140

Akalın, M. (2015). *Örnek açıklamalarıyla sosyal bilimlerde araştırma tekniği anket*. Ankara: Seçkin Yayıncılık.

ALA. (2000). *Information literacy: a position paper on information problem solving*. Wisconsin Educational Media Association.

Alba, D., & Satariano, A. (2019, September 26). At least 70 countries have had disinformation campaigns, study finds. *The New York Times*. Retrieved September 29, 2019, from https://www.nytimes.com/2019/09/26/technology/government-disinformation-cyber-troops.html

Albitz, R. S. (2007). The what and who of information literacy and critical thinking in higher education. *Portal (Baltimore, Md.)*, *7*(1), 97–109.

Alexander, J. C. (2003). The strong program in cultural sociology: Elements of a structural linguistics (with Philip Smith). In *The meaning of social life* (pp. 11–26). New York, NY: Oxford University Press. doi:10.1093/acprof:oso/9780195160840.003.0011

Alexander, J. C. (2015). The crisis of journalism reconsidered: Cultural power. *Fudan Journal of the Humanities and Social Sciences*, *8*(1), 9–31. doi:10.100740647-014-0056-5

Alexander, J. C. (2018). Raging against the enlightenment: The ideology of Steven Bannon. In J. Mast & J. Alexander (Eds.), *Politics of meaning/Meaning of politics: Cultural sociology of the 2016 U.S. presidential election* (pp. 37–48). London, UK: Palgrave Macmillan.

Alicke, M. (2017, September 10). Willful ignorance and self-deception. *Psychology Today*. Retrieved July 30, 2019, from https://www.psychologytoday.com/blog/why-we-blame/201709/willful-ignorance-and-self-deception

Allcott, H., Gentzkow, M., & Yu, C. (2018, October). *Trends in the diffusion of misinformation on social media*. Retrieved from https://web.stanford.edu/~gentzkow/research/fake-news-trends.pdf

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *The Journal of Economic Perspectives*, *31*(2), 211–236. doi:10.1257/jep.31.2.211

Al-Qurishi, M., Al-Rakhami, M., Alamri, A., Alrubaian, M., Rahman, S. M. M., & Hossain, M. S. (2017). Sybil Defense Techniques in Online Social Networks: A Survey. *IEEE Access: Practical Innovations, Open Solutions*, *5*, 1200–1219. doi:10.1109/ACCESS.2017.2656635

Alvermann, D. E. (2017). Social Media Texts and Critical Inquiry in a Post-Factual Era. *Journal of Adolescent & Adult Literacy*, *61*(3), 335–338. doi:10.1002/jaal.694

Amabile, T., & Kramer, S. J. (2011). *The Progress Principle*. Harvard Business Review Press.

American Association of School Librarians. (1998). *Information Literacy Standards for Student Learning*. Chicago: American Library Association.

American Library Association. (1989). *Presidential Committee on Information Literacy. Final Report*. Retrieved from: http://www.ala.org/acrl/publications/whitepapers/presidential

American Library Association. (1989). *Presidential Committee on Information Literacy: Final Report*. Washington, DC: American Library Association. Retrieved from http://www.ala.org/acrl/publications/whitepapers/presidential

American Library Association. (1998). *A Progress report on information literacy: An Update on the American Library Association presidential committee on information literacy: Final report*. Retrieved from http://www.ala.org/acrl/publications/whitepapers/progressreport

American Medical Association. (1999). Health literacy: Report of the Council on Scientific Affairs. *Journal of the American Medical Association*, *281*(6), 552–557. doi:10.1001/jama.281.6.552 PMID:10022112

Amini, A., Soleimany, A. P., Schwarting, W., Bhatia, S. N., & Rus, D. (2019). Uncovering and Mitigating Algorithmic Bias through Learned Latent Structure. *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society - AIES '19*, 289–295. 10.1145/3306618.3314243

Amorós, M. (2018). *Fake News. La verdad de las noticias falsas*. Barcelona: Plataforma Editorial.

Andersen, J. (2006). The public sphere and discursive activities: Information literacy as sociopolitical skills. *The Journal of Documentation*, *62*(3), 213–228. doi:10.1108/00220410610653307

Anderson, J., & Rainie, K. (2017). *The future of truth and misinformation online*. Retrieved from https://www.pew Internet.org/2017/10/19/the-future-of-truth-and-misinformation-online/

Anderson, M. (2018, April 6). *Facebook privacy scandal explained*. Retrieved from https://www.ctvnews.ca/sci-tech/facebook-privacy-scandal-explained-1.3874533

Arceneaux, K., Johnson, M., & Murphy, C. (2012). Polarized political communication, oppositional media hostility, and selective exposure. *The Journal of Politics*, *74*(1), 174–186. doi:10.1017/S002238161100123X

Arendt, H. (1956). Truth and politics. In *Between past and future: Eight exercises in political thought* (pp. 227–264). Penguin Books.

Arıkan, R. (2004). *Araştırma Teknikleri Ve Rapor Hazırlama*. Ankara: Asil Yayın.

Arpan, L. M., & Raney, A. A. (2003). An experimental investigation of news source and the hostile media effect. *Journalism & Mass Communication Quarterly*, *80*(2), 265–281. doi:10.1177/107769900308000203

Asadian, H., & Javadi, H. H. S. (2018). Identification of Sybil attacks on social networks using a framework based on user interactions. *Security and Privacy, 1*(2).

Ashley, S., Maksl, A., & Craft, S. (2013). Developing a news media literacy scale. *Journalism & Mass Communication Educator*, *68*(1), 7–21. doi:10.1177/1077695812469802

Association College for research Libraries - ACRL. (2000). *Information literacy competency standards for higher education*. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency

Association of College and Research Libraries (ACRL). (2000). *Information literacy competency standards for higher education*. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency

Association of College and Research Libraries (ACRL). (2015). *Framework for information literacy for higher education*. Retrieved from http://www.ala.org/acrl/standards/ilframework

Association of College and Research Libraries. (2000). *Information literacy competency standards for higher education.* Chicago: ALA. Retrieved from http://www.ala.org/acrl/standards/informationliteracycompetency#f

Association of College and Research Libraries. (2000). *Information Literacy Competency Standards for Higher Education*. Chicago: American Library Association.

Association of College and Research Libraries. (2011). *Information literacy standards for teacher education.* Retrieved from http://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/ilstandards_te.pdf

Association of College and Research Libraries. (2015). *Framework for Information Literacy in Higher Education.* Chicago: American Library Association.

Association of College and Research Libraries. (2016). *Framework for information literacy for higher education.* Retrieved from http://www.ala.org/acrl/standards/ilframework

Ayres, J. M. (1999). From the streets to the Internet: The cyber-diffusion of contention. *The Annals of the American Academy of Political and Social Science*, *566*(1), 132–143. doi:10.1177/000271629956600111

Badke, W. (2010). Foundations of information literacy: Learning from Paul Zurkowski. *Online (Bergheim)*, *34*(1), 48–50.

Bakir, V., & McStay, A. (2018). Fake News and the economy of emotions: Problems, causes, solutions. *Digital Journalism*, *6*(2), 154–175. doi:10.1080/21670811.2017.1345645

Baldasty, G. J. (1992). *The Commercialization of news in the nineteenth century*. Madison, WI: University of Wisconsin Press.

Barberá, P., Jost, J. T., Nagler, J., Tucker, J. A., & Bonneau, R. (2015). Tweeting from left to right: Is online political communication more than an echo chamber? *Psychological Science*, *26*(10), 1531–1542. doi:10.1177/0956797615594620 PMID:26297377

Barraclough, P., & Sexton, G. (2016). Phishing-Deception Data Model for Online Detection and Human Protection. In H. Jahankhani, A. Carlile, D. Emm, A. Hosseinian-Far, G. Brown, G. Sexton, & A. Jamal (Eds.), *Global Security, Safety and Sustainability—The Security Challenges of the Connected World* (pp. 144–154). Springer International Publishing. doi:10.1007/978-3-319-51064-4_13

Barthel, M., Mitchell, A., & Holcomb, J. (2016, December 15). *Many Americans Believe Fake News Is Sowing Confusion*. Retrieved October 29, 2019, from Pew Research Center's Journalism Project website: https://www.journalism.org/2016/12/15/many-americans-believe-fake-news-is-sowing-confusion/

Barth, S., & de Jong, M. D. T. (2017). The Privacy Paradox Investigating Discrepancies Between Expressed Privacy Concerns and Actual Online Behavior A Systematic Literature Review. *Telematics and Informatics*, *34*(7), 1038–1058. doi:10.1016/j.tele.2017.04.013

Baş, T. (2001). *Anket: anket nasıl hazırlanır, anket nasıl uygulanır, anket nasıl değerlendirilir*. Ankara: Seçkin.

Batchelor, O. (2017). Getting out the truth: The role of libraries in the fight against fake news. *RSR. Reference Services Review*, *45*(2), 143–148. doi:10.1108/RSR-03-2017-0006

Bauder, J., & Rod, C. (2016). Crossing thresholds: Critical information literacy pedagogy and the ACRL framework. *College & Undergraduate Libraries*, *23*(3), 252–264. doi:10.1080/10691316.2015.1025323

Bauman, Z. (2018). *Liquid modernity*. Cambridge, MA: Polity Press.

Baum, M. A., & Groeling, T. (2008). New media and the polarization of American political discourse. *Political Communication*, *25*(4), 345–365. doi:10.1080/10584600802426965

Bawden, D., & Robinson, L. (2016). Super-Science, Fundamental Dimension, Way of Being: Library and Information Science in an Age of Messages. In *Information Cultures in the Digital Age: A Festschrift in Honor of Rafael Capurro*. Wiesbaden: Springer Fachmedien Wiesbaden. doi:10.1007/978-3-658-14681-8_2

BBC Trending. (2016, November 6). The rise and rise of fake news. *BBC*. Retrieved from https://www.bbc.com/news/blogs-trending-37846860

Beck, S. (1997). *The Good, The Bad & The Ugly: or, Why It's a Good Idea to Evaluate Web Sources.* Retrieved from http://lib.nmsu.edu/instruction/eval.html

Beckwith, R. T. (2016). Donald Trump's new ad attacks Hillary Clinton's health. *Time.* Retrieved March 4, 2019, from http://time.com/4526724/donald-trumps-new-ad-attacks-hillary-clintons-health/

Behrens, S. J. (1994). A conceptual analysis and historical overview of information literacy. *College & Research Libraries*, *55*(4), 309–322. doi:10.5860/crl_55_04_309

Belluzzo, R. C. B. (2007). *Construção de mapas: desenvolvendo competências em informação e comunicação (Construction of Maps: developing information and communication literacy).* Bauru: Cá Entre Nós.

Belluzzo, R. C. B. (2007). *Construção de mapas: desenvolvendo competências em informação e comunicação.* Bauru: Cá Entre Nós.

Belluzzo, R. C. B. (2018). Competência em informação (CoInfo) e midiática: inter-relação com a Agenda 2030 e os Objetivos de Desenvolvimento Sustentável (ODS) sob a ótica da educação contemporânea (Information and media literacy (IML): connection with Agenda 2030 and the goals of sustainable growth focused on current education). *Folha de Rosto*, *4*(1), 15–24.

Benevenuto, F., Magno, G., Rodrigues, T., & Almeida, V. (2010). Detecting Spammers on Twitter. *Proceedings of the 7th Annual Collaboration, Electronic Messaging, Anti-Abuse and Spam Conference (CEAS)*, 10.

Benkler, Y., Faris, R., & Roberts, H. (2018). *Network Propaganda. Manipulation, Disinformation, and Radicalisation in American Politics*. Oxford U. Press.

Benkler, Y., Faris, R., & Roberts, H. (2018). *Network propaganda: manipulation, disinformation, and radicalization in American politics*. Oxford, UK: Oxford University Press. doi:10.1093/oso/9780190923624.001.0001

Bennett, B. (2019). *The ultimate collection of over 300 logical fallacies*. Retrieved June 30, 2019, from https://www.logicallyfallacious.com/tools/lp/Bo/LogicalFallacies/3/Book-Contents

Benson, R. (2014). *Challenging the 'new descriptivism' – talk from QualPolComm preconference*. Retrieved from: https://qualpolicomm.wordpress.com/2014/06/05/challenging-the-new-descriptivism-rod-bensons-talk-from-qualpolcomm-preconference/

Benson, R. (2013). *Shaping immigration news: A French-American comparison*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9781139034326

Berghel, H. (2017). Alt-News and Post-Truths in the "Fake News" Era. *Computer*, *50*(4), 110–114. doi:10.1109/MC.2017.104

Bergstrom, C., & West, J. (2017). *Calling Bullshit: Data Reasoning for the Digital Age*. Retrieved from http://callingbullshit.org/index.html

Berners-Lee, T. (2017, March 12). I invented the web. Here are three things we need to change to save it. *The Guardian*. Retrieved from https://www.theguardian.com/technology/2017/mar/11/tim-berners-lee-web-inventor-save-Internet

Best, R. M., Floyd, R. G., & McNamara, D. S. (2008). Taxonomy of educational objectives. Handbook 1: Cognitive domain. *Reading Psychology*, *29*(2), 137–164. doi:10.1080/02702710801963951

Biggs, J. B., & Collis, K. F. (2014). *Evaluating the quality of learning: The SOLO taxonomy (Structure of the Observed Learning Outcome)*. New York, NY: Academic Press.

Bischoff, L. A. (2019, October 21). With millions at stake, fight over Ohio energy bill takes ugly turn. *Dayton Daily News*. Retrieved October 28, 2019, from https://www.daytondailynews.com/news/local/with-millions-stake-fight-over-ohio-energy-bill-takes-ugly-turn/pybZYrQ9XW2uY6bgOMpgJI/

Blair, A. (2011, March). *Information overload's 2300 year old history*. Retrieved from https://hbr.org/2011/03/information-overloads-2300-yea.html

Blair, A. (2003). Reading strategies for coping with information overload. *Journal of the History of Ideas*, *64*, 11–28. PMID:12841169

Blakeslee, S. (2004). The CRAAP test. *LOEX Quarterly*, *31*(3), 6–7.

Blank, G., Bolsover, G., & Dubois, E. (2014). *A New Privacy Paradox: Young People and Privacy on Social Network Sites*. SSRN Electronic Journal.

Borges, E. V. E. (2018). *Apropriação da informação: os elementos, o processo e a materialização da informação (Information Appropriation: elements, processes and materialization of information)* (Doctoral Thesis). Retrieved from https://repositorio.unesp.br/handle/11449/180438

Bounegru, L., Gray, J., Venturini, T., & Mauri, M. (2018). *A field guide to "fake news" and other information disorders: A collection of recipes for those who love to cook with digital methods*. Amsterdam: Public Data Lab. doi:10.2139srn.3097666

Bourdieu, P. (1996/1998). *On Television*. New York, NY: New Press.

Bourdieu, P. (2005). The political field, the social science field, and the journalistic field. In R. Benson & E. Neveu (Eds.), *Bourdieu and the journalistic field* (pp. 29–48). Cambridge, UK: Polity Press.

Bovet, A., & Makse, H. A. (2019). Influence of fake news in Twitter during the 2016 US presidential election. *Nature Communications*, *10*(7). Retrieved from https://www.nature.com/articles/s41467-018-07761-2 PMID:30602729

Boyce, C., & Neale, P. (2006). *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input.* Pathfinder International. Monitoring and Evaluation, 2.

Brandimarte, L., Acquisti, A., & Loewenstein, G. (2013). Misplaced Confidences: Privacy and the Control Paradox. *Social Psychological & Personality Science*, *4*(3), 340–347. doi:10.1177/1948550612455931

Brandtzaeg, P. B., & Følstad, A. (2017). Trust and distrust in online fact-checking services. *Communications of the ACM*, *60*(9), 65–71. doi:10.1145/3122803

Branscomb, A. W. (1981). Knowing how to know. *Science, Technology & Human Values*, *6*(36), 5–9. doi:10.1177/016224398100600302

Brenan, M. (2019, September 26). *Americans' Trust in Mass Media Edges Down to 41%*. Retrieved October 28, 2019, from Gallup.com website: https://news.gallup.com/poll/267047/americans-trust-mass-media-edges-down.aspx

Brignull, H. (2019). *Dark Patterns—Types of Dark Pattern*. Retrieved July 2, 2019, from Dark Patterns website: https://www.darkpatterns.org

Brignull, H., & Darlo, A. (n.d.). *Dark patterns*. Retrieved December 5, 2019, from http://www.darkpatterns.org/

Brisola, A., & Bezerra, A. C. (2018) *Desinformação e circulação de "fake news": distinções, diagnóstico e reação.* Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/102819

Brisola, A. C., & Romeiro, N. L. (2018). *A competência crítica em informação como resistência: uma análise sobre o uso da informação na atualidade*. Revista Brasileira de Biblioteconomia e Documentação, Online First.

Brookes, B. C. (1980). The foundations of information science: part I: philosophical aspects. *Journal of Information Science*, *2*(3–4), 125–133. doi:10.1177/016555158000200302

Broom, D. (2019, March 19). More than half of the global population is now online. *World Economic Forum*. Retrieved from https://www.weforum.org/agenda/2019/03/chart-of-the-day-more-than-half-of-the-global-population-is-now-online/

Brown, W. (2019). *In the ruins of neoliberalism: The rise of antidemocratic politics in the West*. New York, NY: Columbia University Press. doi:10.7312/brow19384

Bruce, C. (2004) Information literacy as a catalyst for educational change. A background paper. In *Proceedings Lifelong learning: Whose responsibility and what is your contribution?", the 3rd International Lifelong Learning Conference* (pp. 8-19). Yeppoon: Queensland. Retrieved from http://eprints.qut.edu.au/4977/

Bruce, C. S. (1999). Workplace experiences of Information literacy. *International Journal of Information Management*, *19*(1), 33–47. doi:10.1016/S0268-4012(98)00045-0

Brueck, H. (2018). Switzerland has a stunningly high rate of gun ownership — here's why it doesn't have mass shootings. *Business Insider*. Retrieved January 14, 2019, from https://www.businessinsider.com/switzerland-gun-laws-rates-of-gun-deaths-2018-2

Buck, C., Horbel, C., Germelmann, C. C., & Eymann, T. (2014). *The Unconscious App Consumer: Discovering and Comparing the Information-seeking Patterns among Mobile Application Consumers*. ECIS.

Buckland, M. K. (2005). The Philosophy of Information. *The Journal of Documentation*, *61*(5), 684–686. doi:10.1108/00220410510625921

Budd, J. M., & Stewart, K. N. (2018). News, Fake News, and Critical Authority. In Information Literacy in the workplace. Springer.

Bulut, E., & Yörük, E. (2017). Mediatized Populisms| Digital Populism: Trolls and Political Polarization of Twitter in Turkey. *International Journal of Communication*, *11*, 4093–4117.

Bump, P. (2019, October 21). The most loyal Trump allies are Republicans who watch Fox News. *The Washington Post*. Retrieved October 25, 2019, from https://www.washingtonpost.com/politics/2019/10/21/most-loyal-trump-allies-are-republicans-who-watch-fox-news/

Bundy, A. (2004). *Australian and New Zealand Information Literacy Framework: principles, standards and practice, 2004*. Available at: http://archive.caul.edu.au/info-literacy/InfoLiteracyFramework.pdf

Bundy, A. (Ed.). (2004). *Australian and New Zealand Information Literacy Framework: Principles, Standards and Practice* (2nd ed.). Adelaide: Australian and New Zealand Institute for Information Literacy.

Buolamwini, J., & Gebru, T. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. *Conference on Fairness, Accountability and Transparency*, 77–91.

Burgess, C. (2015). Teaching students, not standards: The new ACRL information literacy framework and threshold crossing for instructors. *Partnership: The Canadian Journal of Library and Information Practice and Research*, *10*(1), 1–6. doi:10.21083/partnership.v10i1.3440

Canada, House of Commons. (2019). *International committee on big data, privacy, and democracy*. Report of the Standing Committee on Access to Information, Privacy and Ethics. Retrieved from: https://www.ourcommons.ca/DocumentViewer/en/42-1/ETHI/report-20/page-5

Canbek, G., & Sağıroğlu, Ş. (2006). Bilgi, Bilgi Güvenliği ve Süreçleri Üzerine Bir İnceleme. *Politeknik Dergisi, 9*(3), 165-174. Retrieved from http://www.politeknik.gazi.edu.tr/index.php/PLT/article/view/299

Capurro, R. (2003). Epistemologia e ciência da informação. In *Anais do Encontro Nacional de Pesquisa em Ciência da Informação, 2003 Belo Horizonte*. Belo Horizonte: UFMG. Retrieved from http://www.capurro.de/enancib_p.htm

Carr, N. (2011). *The shallows: What the Internet is doing to our brains*. Norton & Company.

Castells, M. (2010). *The information age Economy, society and culture*. Oxford, UK: Wiley-Blackwell.

Catts, R., & Lau, J. (2008). *Towards Information Literacy Indicators*. Academic Press.

Chaffey, D. (2019, September 10). *Average display advertising clickthrough rates*. Retrieved October 29, 2019, from Smart Insights website: https://www.smartinsights.com/Internet-advertising/Internet-advertising-analytics/display-advertising-clickthrough-rates/

Chang, C. (2003). Party bias in political-advertising processing. *Journal of Advertising*, *32*(2), 55–67. doi:10.1080/00913367.2003.10639129

Chapter 1 History of Fake News. (2017). *Library Technology Reports, 53*(8). Retrieved from https://link-gale-com.ezproxy.biblioottawalibrary.ca/apps/doc/A521876900/AONE?u=otta35732&sid=AONE&xid=31c98c1b

Chauí, M. (2014). *A ideologia da competência [The ideology of competence]*. São Paulo: Fundação Perseu Abramo/Autêntica.

Chee, F. Y. (2019, February). *Google, Facebook, Twitter fail to live up to fake news pledge*. Retrieved from https://www.reuters.com/article/us-eu-tech-fakenews/google-facebook-twitter-fail-to-live-up-to-fake-news-pledge-idUSKCN1QH1O5

Chen, I., Johansson, F. D., & Sontag, D. A. (2018). *Why Is My Classifier Discriminatory?* In Advances in Neural Information Processing Systems. NIPS.

Chen, Y., Conroy, N. J., & Rubin, V. L. (2015). News in an online world: the need for an automatic crap detector. *Proceedings of the 78th ASIS&T Annual Meeting: Information Science with Impact: Research in and for the Community. American Society for Information Science*, 81. 10.1002/pra2.2015.145052010081

Cheruiyot, D., & Ferrer-Conill, R. (2018). "Fact-Checking Africa" Epistemologies, data and the expansion of journalistic discourse. *Digital Journalism*, *6*(8), 964–975. doi:10.1080/21670811.2018.1493940

Cho, C., & Cheon, H. J. (2004). Why do people avoid advertising on the Internet? *Journal of Advertising*, *33*(4), 89–97. doi:10.1080/00913367.2004.10639175

Cho, D., & Acquisti, A. (2013). The More Social Cues, The Less Trolling? An Empirical Study of Online Commenting Behavior. *Twelfth Workshop on the Economics of Information Security (WEIS 2013)*, 8.

Choi, J. H., Watt, J. H., & Lynch, M. (2006). Perceptions of news credibility about the War in Iraq: Why war opponents perceived the Internet as the most credible medium. *Journal of Computer-Mediated Communication*, *12*(1), 209–229. doi:10.1111/j.1083-6101.2006.00322.x

Choy, M., & Chong, M. (2018, March 31). *Seeing through misinformation: A framework for identifying fake online news*. arXiv:1804.03508

Compilation of References

Cialdini, R. B. (2007). *Influence: The Psychology of Persuasion*. New York: Harper Collins.

Citation machine. (n.d.). Retrieved July 23, 2019, from http://www.citationmachine.net/apa/cite-a-website

Coddington, M. (2015). Clarifying Journalism's Quantitative Turn. *Digital Journalism*, *3*(3), 331–348. doi:10.1080/2 1670811.2014.976400

Coe, K., Tewksbury, D., Bond, B. J., Drogos, K. L., Porter, R. W., Yahn, A., & Zhang, Y. (2008). Hostile news: Partisan use and perceptions of cable news programming. *Journal of Communication*, *58*(2), 201–219. doi:10.1111/j.1460-2466.2008.00381.x

Communications Decency Act (CDA) of. 1996. Section 230. (47 U.S.C. § 230). (n.d.). Retrieved August 10, 2019 from: https://uscode.house.gov/view.xhtml?req=(title:47%20section:230%20edition:prelim)%20OR%20(granuleid:USC-prelim-title47-section230)&f=treesort&edition=prelim&num=0&jumpTo=true

Comparato, F. K. (2003). *A afirmação histórica dos direitos humanos [Historical discussion about human rights]*. São Paulo: Saraiva.

Confessore, N., & Bank, J. (2019, August 21). Big tech, a conservative provocateur and the fight over disinformation. *The New York Times*. Retrieved from: https://www.nytimes.com/2019/08/21/us/facebook-disinformation-floyd-brown. html?action=click&module=Top%20Stories&pgtype=Homepage

Connell, M. (1997). New Ways to Reach Voters and Influence Public Opinion on the Internet. *Campaigns and Elections*, *18*, 64–68.

Cook, C., Schaafsma, J., & Antheunis, M. (2018). Under the bridge: An in-depth examination of online trolling in the gaming context. *New Media & Society*, *20*(9), 3323–3340. doi:10.1177/1461444817748578 PMID:30581367

Cooke, N. A. (2017). Posttruth, Truthiness, and Alternative Facts: Information Behavior and Critical Information Consumption for a New Age. *The Library Quarterly: Information, Community and Policy, 87*(3).

Cooke, N. (2017). Posttruth, truthiness, and alternative facts: Information behaviour and critical information consumption for a new age. *The Library Quarterly*, *87*(3), 211–221. doi:10.1086/692298

Cooke, N. (2018). *Fake News and Alternative Facts: Information literacy in a post-truth era*. Chicago: American Library Association.

Council of Australian University Librarians. (2001). *Information Literacy Standards*. Canberra: Council of Australian University Librarians.

Craig, R., & Wiebe, T. (2018). *Not Another Fake News Lesson Plan: Inspiring Critical Information Literacy*. WILU 2018 – Atelier annuel sur la formation documentaire // WILU 2018 – Workshop on Instruction in Library Use, Ottawa, Canada.

Cramer, K. J. (2016). *The politics of resentment: Rural consciousness in Wisconsin and the rise of Scott Walker*. Chicago, IL: University of Chicago Press. doi:10.7208/chicago/9780226349251.001.0001

Creswell, J. (2013). *Qualitative inquire & research design: choosing among five approaches* (3rd ed.). Los Angeles, CA: SAGE Publications.

Crowley, U. (2009). Genealogy, method. In International Encyclopedia of Human Geography (pp. 341-344). Amterdam: Elsevier. doi:10.1016/B978-008044910-4.00443-0

D'Alessio, D. (2003). An experimental examination of readers' perceptions of media bias. *Journalism & Mass Communication Quarterly*, *80*(2), 282–294. doi:10.1177/107769900308000204

Dada, E. G., Bassi, J. S., Chiroma, H., Abdulhamid, S. M., Adetunmbi, A. O., & Ajibuwa, O. E. (2019). Machine learning for email spam filtering: Review, approaches and open research problems. *Heliyon (London)*, *5*(6), e01802. doi:10.1016/j. heliyon.2019.e01802 PMID:31211254

Dale, D. (2017, December 22). Donald Trump has spent a year lying shamelessly. It hasn't worked. *The Toronto Star*.

Dale, D., & Subramaniam, T. (2019, July 18). Trump made 20 false claims at his North Carolina rally. *CNN Politics*. Retrieved July 21, 2019, from https://www.cnn.com/2019/07/18/politics/trump-false-claims-in-greenville-north-carolina-rally/index.html

Danaher, J. (2004). The Laws of Thought. *The Philosopher, 92*(1). Retrieved from http://www.the-philosopher. co.uk/2004/05/the-laws-of-thought-2004.html

Dastin, J. (2018, October 10). Amazon scraps secret AI recruiting tool that showed bias against women. *Reuters*. Retrieved from https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G

Dathan, M. (2019, July 14). Schools to teach students how to spot fake news under new government plans. *The Sun*. Retrieved from https://www.thesun.co.uk/news/9506818/schools-fake-news-government-plans-matt-hancock-damian-hinds/

Davis, J. H. (2019, July 16). House condemns Trump's attack on four congresswomen as racist. *New York Times*. Retrieved July 21, 2019, from https://www.nytimes.com/2019/07/16/us/politics/trump-tweet-house-vote.html

Davis, J. H., & Chokshi, N. (2018, May 17). Trump defends 'animals' remark, saying it referred to MS-13 gang members. *New York Times*. Retrieved September 13, 2018, from https://www.nytimes.com/2018/05/17/us/trump-animals-ms-13-gangs.html

Davisson, A. (2013). Google search: Hyper-visibility as a means of rendering black women and girls invisible. *Journal of Digital and Media Literacy*, *1*(2).

Dawkins, R. (1976). *The selfish gene*. Oxford University Press.

De Keersmaecker, J., & Roets, A. (2017). 'Fake news': Incorrect, but hard to correct. The role of cognitive ability on the impact of false information on social impressions. *Intelligence*, *65*, 107–110. doi:10.1016/j.intell.2017.10.005

De Keersmaecker, J., & Roets, A. (2019, June 1). Is there an ideological asymmetry in the moral approval of spreading misinformation by politicians? *Personality and Individual Differences*, *143*, 165–169. doi:10.1016/j.paid.2019.02.003

de Tocqueville, A. (1988). *Democracy in America.* Harper and Row. (Original work published 1850)

Debunking false stories archives. (2019, July 19). Retrieved July 21, 2019, from https://www.factcheck.org/fake-news/

Dedebali. (2018). Bilgi okuryazarlığı. In A. D. Öğretir Özçelik & M. N. Tuğluk (Eds.), *Eğitimde ve endüstride 21. yüzyıl becerileri içinde* (pp. 53-70) Ankara: Pegem Akademi.

Del Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., & Caldarelli, G. Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(3), 554–559. 10.1073/pnas.1517441113

DeLong, J. C. (n.d.). Parmenides of Elea (Late 6th cn.—Mid 5th cn. B.C.E.). In *Internet Encyclopedia of Philosophy*. Retrieved from https://www.iep.utm.edu/parmenid/

Demasson, A., Partridge, H., & Bruce, C. (2016). Information literacy and the serious leisure participant: variation in the experience of using information to learn. *Information Research, 21*(2).

Derakhshan, M., & Singh, D. (2011). Integration of information literacy into the curriculum: A meta-synthesis. *Library Review*, *60*(3), 218–229. doi:10.1108/00242531111117272

Derrida, J. (1944). *Of Grammatology* (G. C. Spivak, Trans.). Motilal Banarsidass Publishers.

Descartes, R. (2003). *Discourse on method and meditations* (E. S. Haldane & G. R. T. Ross, Trans.). Mineola, NY: Dover Publications.

Despres, G. (2016*). Fact denial and the record under threat brandies records manager*. Brandeis Records Manager. Retrieved from https://blogs.brandeis.edu/records/2016/12/21/fact-denial-and-the-record-under- threat/

Deuze, M., & Witschge, T. (2018). Beyond journalism: Theorizing the transformation of journalism. *Journalism*, *19*(1), 165–181. doi:10.1177/1464884916688550 PMID:29417952

Deweese-Boyd, I. (2017). Self-deception. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Fall 2017 ed.). Retrieved April 24, 2018, from https://plato.stanford.edu/entries/self-deception/

Di Ventra, M. (2018). *The Scientific Method: Reflections from a Practitioner*. Oxford, UK: Oxford University Press. doi:10.1093/oso/9780198825623.001.0001

Dickson, E. J. (2019, July 3). QAnon followers think JFK Jr. is coming back on the 4th of July. *Rolling Stone*. Retrieved December 5, 2019, from https://www.rollingstone.com/culture/culture-features/qanon-jfk-jr-conspiracy-theory-854938/

Dinali, D. J., Quadros, M. C. S. D., & França, M. G. L. (2018). *O direito na sociedade da pós-verdade [The law in the Post-Truth Society]*. Rio de Janeiro: Lumen Juris.

Dings, R. (2017, December). Social strategies in self-deception. *New Ideas in Psychology*, (47), 16-23.

DiResta, R. (2018). *The tactics and tropes of the Internet Research Agency*. New Knowledge (Organization), United States. Congress. Senate. Select Committee on Intelligence.

Doctor, K. (2016, November 16). The fake news wars go viral with Melissa's List. *NiemanLab*. Retrieved from: https://www.niemanlab.org/2016/11/the-fake-news-wars-go-viral-with-melissas-list/?utm_source=Daily+Lab+email+list&utm_campaign=6dfc9c5984-dailylabemail3&utm_medium=email&utm_term=0_d68264fd5e-6dfc9c5984-395961829

Dogrulukpayi. (2019). Retrieved June 01, 2019, from https://www.dogrulukpayi.com/~Degerlendirme-Kriterleri

Doxing. (2019). In *Wikipedia*. Retrieved June 9, 2019, from https://en.wikipedia.org/wiki/Doxing

Doyle, C. S. (1994). *Information literacy in an information society: A Concept for the information age*. Academic Press.

Doyle, A. (2018). Ideologia e Competência Crítica em Informação: um olhar para movimentos de biblioteconomia crítica [Ideology and Critical Literacy: an approach of library movements]. *Folha de Rosto*, *4*(1), 25–33.

Dreyfus, S. (2019, March 12). Mad man Trump has PDS-Projection Derangement Syndrome. *The Daily Kos*. Retrieved from https://www.dailykos.com/stories/2019/3/12/1841456/-Mad-Man-Trump-has-PDS-Projection-Derangement-Syndrome

Drobnic Holan, A. (2016, December 13). 2016 Lie of the Year: Fake news. *Politifact*. Retrieved from https://www.politifact.com/truth-o-meter/article/2016/dec/13/2016-lie-year-fake-news. /

Dudziak, E. A. (2003) Information literacy: princípios, filosofia e prática. *Ciência da Informação, Brasília, 32*(1), 23-35. Available in: http://www.scielo.br/pdf/ci/v32n1/15970.pdf

Dudziak, E. A. (2003). Information literacy: Princípios, filosofias e práticas. *Ciência da Informação, Brasília*, *32*(1), 23–35.

Dumenco, S. (2016, September 20). New NRA ad plays like a horror movie: 'Don't let Hillary Clinton leave you defenseless.' *AdAge*. Retrieved July 15, 2019, from https://adage.com/article/campaign-trail/nra-ad-hillary-clinton-leave-defenseless/305929

Dunaway, M. (2011). Web 2.0 and critical information literacy. *Public Services Quarterly*, *7*(3/4), 149–157. doi:10.1080/15228959.2011.622628

Duncan, R. D. (2018, December). *Influence Versus Manipulation: Understand The Difference*. Retrieved June 27, 2019, from Forbes website: https://www.forbes.com/sites/rodgerdeanduncan/2018/12/21/influence-vs-manipulation-understand-the-difference/

Duus, R., & Cooray, M. (2015). *Information overload is killing our ability to make decisions*. Retrieved from https://www.businessinsider.com/information-overload-is-killing-our-ability-to-make-decisions-2015-7

Eastin, M. S. (2001). Credibility assessments of online health information: The effects of source expertise and knowledge of content. *Journal of Computer-Mediated Communication*, *6*(4), 0. Retrieved from http://jcmc.indiana.edu/vol6/issue4/eastin.html. doi:10.1111/j.1083-6101.2001.tb00126.x

eBizMBA. (2019, September 1). *Top 15 Most Popular News Websites | September 2019*. Retrieved October 28, 2019, from eBizMBA website: http://www.ebizmba.com/articles/news-websites

Edelman. (2019). *2019 Edelman Trust Barometer: Global Report*. Retrieved June 03, 2019, from https://www.edelman.com/sites/g/files/aatuss191/files/2019-03/2019_Edelman_Trust_Barometer_Global_Report.pdf?utm_source=website&utm_medium=global_report&utm_campaign=downloads

EDPS. (2018). *Online manipulation and personal data*. Retrieved from European Data Protection Supervisor website: https://edps.europa.eu/sites/edp/files/publication/18-03-19_online_manipulation_en.pdf

EEAS Press Team. (2018). *Action Plan against Disinformation*. Retrieved June 01, 2019, from https://eeas.europa.eu/headquarters/headquarters-homepage/54866/action-plan-against-disinformation_en

Efthimion, P. G., Payne, S., & Proferes, N. (2018). *Supervised Machine Learning Bot Detection Techniques to Identify Social Twitter Bots*. Academic Press.

Eichler, V. A., Kalsing, J., & Gruszynskig, A. (2018). O ethos do jornal O Globo e a campanha contra as fake news. *Media & Jornalismo, 18*(32), 139-154. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S2183-54622018000100011&lng=pt&tlng=pt

Eilders, C. (2006). News factors and news decisions: Theoretical and methodological advances in Germany. *Communications*, *31*(1), 5–24. doi:10.1515/COMMUN.2006.002

Eisenberg, M. B., Lowe, C. A., & Spitzer, K. L. (2005). Information literacy: Essential skills for the information age. *The Library Quarterly*, *75*(3), 381–383.

Ekici. (2018). Yeni Medya Okuryazarlığında Kütüphanecilerin Rolleri. In *Kamusal Alan Olarak Bilgi Merkezleri ve Yenilikçi Yaklaşımlar*. Hiperlink.

El Rayess, M., Chebl, C., Mhanna, J., & Hage, R. (2018). Fake news judgement. *RSR. Reference Services Review*, *46*(1), 146–149. doi:10.1108/RSR-07-2017-0027

Ellis, M. (2019, September 30). The 8 best fact-checking sites for finding unbiased truth. *MUO*. Retrieved October 16, 2019, from https://www.makeuseof.com/tag/true-5-factchecking-websites

Elmborg, J. (2012). Critical information literacy: definitions and challenges. In C. W. Wilkinson & C. Bruch (Eds.), *Transforming Information Literacy Programs: Intersection Frontiers of Self, Library Culture, and Campus Community* (pp. 75–95). Chicago: Association of College and Research Libraries.

Eminağaoğlu, M., & Gökşen, Y. (2009). Bilgi Güvenliği Nedir,Ne Değildir, Türkiye'de Bilgi Güvenliği Sorunları ve Çözüm Önerileri. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 11*(4), 1-15. Retrieved from http://www.sbe.deu.edu.tr/dergi/cilt11.say%C4%B14/Eminagao%C4%9Flu%20Goksen%2011.4.pdf

Eng, T.R. (2001). *The eHealth Landscape: A Terran Map of Emerging Information and Coummunication Technologies in Health and Health Care*. Princeton, NJ: The Robert Wood Johnson Foundation.

Esmer, Y. (2019). Identity Politics: Extreme Polarization and the Loss of Capacity to Compromise in Turkey. In U. van Beek (Ed.), *Democracy under Threat. Challenges to Democracy in the 21st Century*. Cham: Palgrave Macmillan. doi:10.1007/978-3-319-89453-9_5

Evans, G. E., & Saponaro, M. Z. (2012). *Collection Management Basics* (6th ed.). Santa Barbara, CA: Libraries Unlimited.

Everts, S. (2016). *Information Overload.* Retrieved from https://www.sciencehistory.org/distillations/magazine/information-overload

Fake news. (2019). In *Wikipedia*. Retrieved July 3, 2019, from https://en.wikipedia.org/wiki/Fake_news

Fake news. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Fake_news

Fallis, D. (2014). The varieties of disinformation. In L. Floridi & P. Illari (Eds.), *The Philosophy of Information Quality. Synthese Library 358*. Springer International Publishing. doi:10.1007/978-3-319-07121-3_8

Fante, A., Silva, T. M., & Graça, V. (2019). Fake News e Bakthin: Gênero Discursivo e a (Des)Apropriação da Notícia. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

Faris, H., Al-Zoubi, A. M., Heidari, A. A., Aljarah, I., Mafarja, M., Hassonah, M. A., & Fujita, H. (2019). An intelligent system for spam detection and identification of the most relevant features based on evolutionary Random Weight Networks. *Information Fusion*, *48*, 67–83. doi:10.1016/j.inffus.2018.08.002

FCC fairness doctrine. (2019). In *Wikipedia*. Retrieved September 15, 2018, from https://en.wikipedia.org/wiki/FCC_fairness_doctrine

Fedeli, S., & Matsa, K. E. (2018, July 17). *Use of smartphones or tablets to get news grows again in 2017 in U.S.* Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2018/07/17/use-of-mobile-devices-for-news-continues-to-grow-outpacing-desktops-and-laptops/

Ferrara, E. (2018). Measuring Social Spam and the Effect of Bots on Information Diffusion in Social Media. In S. Lehmann & Y.-Y. Ahn (Eds.), *Complex Spreading Phenomena in Social Systems: Influence and Contagion in Real-World Social Networks* (pp. 229–255). doi:10.1007/978-3-319-77332-2_13

Ferraris, M. (2019). *Post vérité et autores énigmes.* Paris: Puf.

Ferreira, A., Carvalho, T., Andaló, F., & Rocha, A. (2019). Counteracting the contemporaneous proliferation of digital forgeries and fake news. *Anais da Academia Brasileira de Ciências, 91*(Suppl. 1). doi:10.1590/0001-3765201820180149

Ferreira, A., & Teles, S. (2019). Persuasion: How phishing emails can influence users and bypass security measures. *International Journal of Human-Computer Studies*, *125*, 19–31. doi:10.1016/j.ijhcs.2018.12.004

Fico, F., Richardson, J. D., & Edwards, S. M. (2004). Influence of story structure on perceived story bias and news organization credibility. *Mass Communication & Society*, *7*(3), 301–318. doi:10.120715327825mcs0703_3

Finn, R. L., Wright, D., & Friedewald, M. (2013). Seven Types of Privacy. In S. Gutwirth, R. Leenes, P. de Hert, & Y. Poullet (Eds.), *European Data Protection: Coming of Age* (pp. 3–32). doi:10.1007/978-94-007-5170-5_1

Fisher, M., & Taub, A. (2019, August 11). How YouTube radicalized Brazil. *New York Times*. Retrieved August 29, 2019, from https://www.nytimes.com/2019/08/11/world/americas/youtube-brazil.html

Fisher, M., & Taub, A. (2019, February 12). When facebook spread hate, one cop tried something unusual. *New York Times*. Retrieved October 22, 2019, from https://www.nytimes.com/2019/02/12/world/europe/facebook-germany-hate-speech.html

Flamini, D., & Funke, D. (2019). *A guide to the anti-misinformation actions around the world*. Retrieved from https://www.poynter.org/ifcn/anti-misinformation-actions/

Fletcher, R., & Park, S. (2017). The Impact of Trust in the News Media on Online News Consumption and Participation. *Digital Journalism*, *5*(10), 1281–1299. doi:10.1080/21670811.2017.1279979

Flick, C. (2016). Informed consent and the Facebook emotional manipulation study. *Research Ethics Review*, *12*(1), 14–28. doi:10.1177/1747016115599568

Foça, M. A. (2017). *Teyit.org*. Retrieved June 01, 2019, from https://Teyit.org/google-Teyit-org-analizlerini-arama-sonuclarinda-onceliklendirmeye-basladi/

Foça, M. A. (2019). *Teyit.org*. Retrieved June 03, 2019, from https://Teyit.org/bu-hesabin-arkasinda-bir-adminden-fazlasi-var/

Fogg, B. J., Soohoo, C., Danielson, D. R., Marable, L., Stanford, J., & Tauber, E. R. (2003). How do users evaluate the credibility of web sites? A study with over 2,500 participants. *Proceedings of the Conference on Designing for user experiences*. doi:10.1145/997078.997097

Forgas, J. P., & Baumeister, R. F. (2019). Homo credulous: On the social psychology of gullibility. In *The Social Psychology of Gullibility: Conspiracy Theories, Fake News and Irrational Beliefs*. Routledge. Retrieved from https://ebookcentral.proquest.com

Fornacciari, P., Mordonini, M., Poggi, A., Sani, L., & Tomaiuolo, M. (2018). A holistic system for troll detection on Twitter. *Computers in Human Behavior*, *89*, 258–268. doi:10.1016/j.chb.2018.08.008

Foucault, M. (1967). *On the ways of writing history* (R. Hurley, Trans.). In FaubionJ. D. (Ed.), *Aesthetics, Method and Epistemology. The Essential Works of Michel Foucault 1954–1984* (vol. 2, pp. 279–295). Harmondsworth, UK: Allen Lane, Penguin.

Foucault, M. (1971). *Nietzsche, genealogy, history* (R. Hurley, Trans.). In FaubionJ. D. (Ed.), *Aesthetics, Method and Epistemology. The Essential Works of Michel Foucault 1954–1984* (vol. 2, pp. 369–391). Harmondsworth, UK: Allen Lane, Penguin.

Foucault, M. (1981). The order of discourse. In R. Young (Ed.), *Untying the Next: A Poststructuralist Reader* (pp. 51–78). Boston: Routledge & Kegan Paul.

Fox News. (n.d.). *Media Bias/Fact Check*. Retrieved April 14, 2019, from https://mediabiasfactcheck.com/fox-news/

Fraser, N. (2017, May 4). Progressive neoliberalism vs. reactionary populism: A Hobson's choice. *The Great Regression*. Retrieved from: http://www.thegreatregression.eu/progressive-neoliberalism-versus-reactionary-populism-a-hobsons-choice/

Frechette, J. (2019). Keeping Media Literacy Critical during the Post-Truth Crisis Over Fake News. *The International Journal of Critical Media Literacy*, *1*(1), 51–65. doi:10.1163/25900110-00101004

Frederiksen, L. (2017). Best of the Literature: Fake News. *Public Services Quarterly*, *13*(2), 103–107. doi:10.1080/15 228959.2017.1301231

Freire, P. (1968). *Pedagogia do oprimido*. São Paulo: Paz e Terra.

Freire, P. (1972). *Pedagogy of the Oppressed*. New York: Herder and Herder.

Fried, O., Tewari, A., Zollhöfer, M., Finkelstein, A., Shechtman, E., Goldman, D. B., … Agrawala, M. (2019). Text-based Editing of Talking-head Video. *ACM Transactions on Graphics, 38*(4), 68:1–68:14.

Froehlich, T. J. (2017). A not-so-brief account of current information ethics: the ethics of ignorance, missing information, misinformation, disinformation and other forms of deception or incompetence. *BiD: Textos Universitaris de Biblioteconomia i Documentació*, 39. Retrieved March 4, 2019, from http://bid.ub.edu/en/39/froehlich.htm

Froehlich, T. J. (2019). The role of pseudo-cognitive authorities and self-deception in the dissemination of fake news. *Open Information Science*, *3*(1), 115–136. doi:10.1515/opis-2019-0009

Fuchs, C. (2010). Alternative media as critical media. *European Journal of Social Theory*, *13*(2), 173–192. doi:10.1177/1368431010362294

Fuller, S. (2017). Prolegomena to a deep history of "information overload.". *Journal of Information Ethics*, *26*, 81–92.

Fuller, S. (2018). *Post truth: knowledge as a power game*. New York: Anthem Press. doi:10.2307/j.ctvgd30v

Galán-García, P., de la Puerta, J. G., Gómez, C. L., Santos, I., & Bringas, P. G. (2014). Supervised Machine Learning for the Detection of Troll Profiles in Twitter Social Network: Application to a Real Case of Cyberbullying. In Á. Herrero, B. Baruque, F. Klett, A. Abraham, V. Snášel, A. C. P. L. F. de Carvalho, … E. Corchado (Eds.), *International Joint Conference SOCO'13-CISIS'13-ICEUTE'13* (pp. 419–428). Springer International Publishing.

Gallagher, K. J. D., & Magid, L. (2017). *Media, literacy and fake news*. Connect Safely and Yale Center for Emotional Intelligence.

Garrett, R. K. (2009). Echo chambers online?: Politically motivated selective exposure among Internet news users. *Journal of Computer-Mediated Communication*, *14*(2), 265–285. doi:10.1111/j.1083-6101.2009.01440.x

Garrett, R. K. (2011). Troubling consequences of online political rumoring. *Human Communication Research*, *37*(2), 255–274. doi:10.1111/j.1468-2958.2010.01401.x

Gaziano, C., & McGrath, K. (1986). Measuring the concept of credibility. *The Journalism Quarterly*, *63*(3), 451–462. doi:10.1177/107769908606300301

Geiger, A. W. (2019, September 11). *Key findings about the online news landscape in America*. Retrieved October 29, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2019/09/11/key-findings-about-the-online-news-landscape-in-america/

Gelfert, A. (2018). Fake news: A definition. *Informal Logic*, *38*(1), 84–117. doi:10.22329/il.v38i1.5068

Ghosh, D., & Scott, B. (2018). *Disinformation is becoming unstoppable*. Retrieved from https://time.com/5112847/facebook-fake-news-unstoppable/

Gigerenzer, G., & Garcia-Retamero, R. (2017). Cassandra's regret: The psychology of not wanting to know. *Psychological Review*, *124*(2), 179–196. doi:10.1037/rev0000055 PMID:28221086

Gil, A. C. (2012). *Métodos e técnicas de pesquisa social* [Methods and Techniques of Social Research]. 6th ed.). São Paulo: Atlas.

Glaser, A. (2019, August 4). 8chan is a normal part of mass shootings now. *Slate.* Retrieved September 1, 2019, from https://slate.com/technology/2019/08/el-paso-8chan-4chan-mass-shootings-manifesto.html

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, NY: Aldine.

Gleick, J. (2011). *The information: A history, a theory, a flood*. Vintage Books.

Goldmacher, S. (2018, December 18). Trump foundation will dissolve, accused of 'shocking pattern of illegality.' *New York Times.* Retrieved from https://www.nytimes.com/2018/12/18/nyregion/ny-ag-underwood-trump-foundation.html

Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information avoidance. *Journal of Economic Literature*, *55*(1), 96–135. doi:10.1257/jel.20151245

Goodman, A., & Goodman, D. (2006). *Static: Government liars, media cheerleaders and the people who fight back*. Hachette Books.

Google Trends. (2019a). Retrieved June 05, 2019, from https://trends.google.com.tr/trends/explore?date=all&q=fake%20news

Google Trends. (2019b). Retrieved June 05, 2019, from https://trends.google.com.tr/trends/explore?date=all&q=post-truth

Gottfried, J., & Shearer, E. (2017, September 7). *Americans' online news use is closing in on TV news use.* Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2017/09/07/americans-online-news-use-vs-tv-news-use/

Government of Canada. (2019). *Canada's Digital Charter: Trust in a digital world*. Retrieved from https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00108.html

Grabe, M. E., Samson, L., Zelankauskiate, A., & Yegiyan, N. (2011). Covering presidential election campaigns: Does reporter gender affect the work lives of correspondents and their reportage? *Journal of Broadcasting & Electronic Media*, *55*(3), 285–306. doi:10.1080/08838151.2011.597470

Graham, D. W. (n.d.). Heraclitus (fl. c. 500 B.C.E.). *Internet Encyclopedia of Philosophy*. Retrieved from https://www.iep.utm.edu/heraclit/

Graves, L., & Cherubini, F. (2016). *The rise of fact-checking sites in Europe*. Oxford, UK: Reuters Institute.

Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., & Toombs, A. L. (2018). The Dark (Patterns) Side of UX Design. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18*, 1–14. 10.1145/3173574.3174108

Gray, J., Chambers, L., & Bounegru, L. (2012). *The data journalism handbook: how journalists can use data to improve the news*. O'Reilly Media, Inc.

Green, J. C., Krayder, H., & Mayer, E. (2005). Combining qualitative and quantitative methods in social inquiry. In B. Somekh & C. Lewin (Eds.), *Research methods in the social sciences* (pp. 275–282). London: Sage.

Greenwood, D. J., & Levin, M. (2003). Reconstructing the relationships between universities and society through action research. SAGE.

Greer, J. D. (2003). Evaluating the credibility of online information: A test of source and advertising influence. *Mass Communication & Society*, *6*(1), 11–28. doi:10.1207/S15327825MCS0601_3

Grinberg, N., Joseph, K., Friedland, L., Swire-Thompson, B., & Lazer, D. (2019). Fake news on Twitter during the 2016 U.S. presidential election. *Science*, *363*(6425), 374–378. doi:10.1126cience.aau2706 PMID:30679368

Grothaus, M. (2019, July 19). Criminals are using deepfakes to impersonate CEOs. *Fast Company*. Retrieved from https://www.fastcompany.com/90379001/criminals-are-using-deepfakes-to-impersonate-ceos

Guera, D., & Delp, E. J. (2018). Deepfake Video Detection Using Recurrent Neural Networks. *2018 15th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS)*, 1–6. 10.1109/AVSS.2018.8639163

Guo, Q. (2012). Perceptions of news value: A comparative research between China and the United States. *China Media Research*, *8*(2), 26–35.

Gu, P., Khatoun, R., Begriche, Y., & Serhrouchni, A. (2017). Support Vector Machine (SVM) Based Sybil Attack Detection in Vehicular Networks. *2017 IEEE Wireless Communications and Networking Conference (WCNC)*, 1–6. 10.1109/WCNC.2017.7925783

Gupta, A., Kumaraguru, P., Castillo, C., & Meier, P. (2014). TweetCred: Real-Time Credibility Assessment of Content on Twitter. In L. M. Aiello & D. McFarland (Eds.), *Social Informatics: 6th International Conference, SocInfo 2014*, *Barcelona, Spain*, *November 11-13, 2014*. *Proceedings* (pp. 228–243). 10.1007/978-3-319-13734-6_16

Gurner, J. (2015). *Information overload is destroying our ability to relate to others*. Retrieved from https://time.com/collection-post/4110976/empathy-decline/

Habermas, J. (1975). *Legitimation crisis*. Boston, MA: Beacon Press.

Habermas, J. (1989). *The structural transformation of the public sphere.* Cambridge, MA: MIT Press.

Habermas, J. (1996). Three normative theories of democracy. In S. Benhabib (Ed.), *Democracy and difference: Contesting the boundaries of the political*. Princeton, NJ: Princeton University Press.

Haklı, T. (2012). *Bilgi güvenliği standartlari ve kamu kurumlari bilgi güvenliği için bir model önerisi. In Yayımlanmamış yüksek lisansn tezi*. Isparta Süleyman Demirel Üniversitesi.

Hallin, D., & Mancini, P. (Eds.). (2012). *Comparing Media Systems beyond the Western World*. New York: Cambridge University Press.

Hallowell, E. (2005, January). *Overloaded Circuits: Why smart people underperform*. Retrieved from https://hbr.org/2005/01/overloaded-circuits-why-smart-people-underperform

Hansell, S. (2003, April 22). TECHNOLOGY; Internet Is Losing Ground in Battle Against Spam. *The New York Times*. Retrieved from https://www.nytimes.com/2003/04/22/business/technology-Internet-is-losing-ground-in-battle-against-spam.html

Hartley, J. (1992). *The politics of pictures: The creation of the public in the age of popular media*. New York, NY: Routledge.

Hassan, S. (2019). *The cult of Trump*. New York: Free Press.

Hathaway, J. (2014, October 10). What is gamergate, and why? An explainer for non-geeks. *Gawker*. Retrieved October 27, 2019, from https://gawker.com/what-is-gamergate-and-why-an-explainer-for-non-geeks-1642909080

Heitin, L. (2016, November 11). Digital literacy: an evolving definition. *Education Week*. Retrieved November 11, 2019) from https://www.edweek.org/ew/articles/2016/11/09/what-is-digital-literacy.html

Hemp, P. (2009, September). *Death by Information Overload*. Retrieved from https://hbr.org/2009/09/death-by-information-overload

Henkoğlu, T., & Yılmaz, B. (2013). Avrupa Birliği (AB) bilgi güvenliği politikaları [European Union (EU) information security policies]. Tür*k Kütüphaneciliği, 27*(3), 451-471. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/Henko%C4%9Flu.pdf

Henshall, A. (2018, September 25). What is digital ethics?: 10 Key Issues Which Will Shape Our Future. *Process Street.* Retrieved November 20, 2019, from https://www.process.st/digital-ethics/

Herman, E. S., & Chomsky, N. (2002). *Manufacturing Consent: The Political Economy of Mass Media*. Penguin Books.

Herold, K. (Ed.). (2004). Philosophy of information. *Library Trends*, *52*(3).

Hertwig, R., & Engle, C. (2016). Homo ignorans: Deliberately choosing not to know. *Perspectives on Psychological Science*, *11*(3), 359–372. doi:10.1177/1745691616635594 PMID:27217249

Heuer, W. (2019). Las tentaciones de la mentira. *Universitas Philosophica*, *36*(72), 53–70. doi:10.11144/Javeriana.uph36-72.tdlm

Higgins, E. (2016, November 30). There's no such thing as a good fake – when publicity stunts go wrong. *Bellingcat.* Retrieved from https://www.bellingcat.com/resources/articles/2016/11/30/theres-no-thing-good-fake-publicity-stunts-go-wrong/

Higgins, K. (2016). Post-truth: a guide for the perplexed. *Nature, 540*(7631), 9. Available in: https://www.nature.com/news/post-truth-a-guide-for-the-perplexed-1.21054

Hilbert, M., & López, P. (2011). The world's technological capacity to store, communicate, and compute information. *Science*, *332*(6025), 60–65. doi:10.1126cience.1200970 PMID:21310967

Hobbs, R., Donnelly, K., Friesem, J., & Moen, M. (2013). Learning to engage: How positive attitudes about the news, media literacy, and video production contribute to adolescent civic engagement. *Educational Media International*, *50*(4), 231–246. doi:10.1080/09523987.2013.862364

Hochschild, A. R. (2016). *Strangers in their own land: Anger and mourning on the American right*. New York, NY: New Press.

Holmes, J. (2018, July 25). Trump's war on the truth has officially gone full Orwell. *Esquire*. Retrieved September 3, 2018, from https://www.esquire.com/news-politics/a22547037/donald-trump-orwellian-truth-reality-eyes-ears/

Holone, H. (2016). The filter bubble and its effect on online personal health information. *Croatian Medical Journal*, *57*(3), 298–301. doi:10.3325/cmj.2016.57.298 PMID:27374832

Hossain, M., Paul, A., Islam, M. H., & Atiquzzaman, M. (2018). Survey of the Protection Mechanisms to the SSL-based Session Hijacking Attacks. *Network Protocols and Algorithms*, *10*(1), 83. doi:10.5296/npa.v10i1.12478

House of Commons (U.K.). (2019). *Disinformation and 'fake news': Final report of the Digital, Culture, Media and Sport Committee*. Retrieved from: https://www.parliament.uk/business/committees/committees-a-z/commons-select/digital-culture-media-and-sport-committee/news/fake-news-report-published-17-19/

How Americans get their news. (2014, March) Retrieved from https://www.americanpressinstitute.org/publications/reports/survey-research/how-americans-get-news/

How to spot fake news. (n.d.). *International Federation of Library Associations (IFLA)*. Retrieved October 27, 2019, from https://www.ifla.org/publications/node/11174

How WhatsApp helped turn an Indian village into a lynch mob. (2018). *BBC*. Retrieved from https://www.bbc.com/news/world-asia-india-44856910

Howard, P. N., Ganesh, B., & Liotsiou, D. (2019). *The IRA, social media and political polarization in the United States, 2012-2018. Report from the Computational Propaganda Research Project.*

Huber, J. T., & Tu-Keefner, F. (2014). *Health Librarianship: An Introduction.* Santa Barbara, CA: Libraries Unlimited.

Hughes, M. (2019, January 31). Study shows we're spending an insane amount of time online. *The Next Web.* Retrieved from https://thenextweb.com/tech/2019/01/31/study-shows-were-spending-an-insane-amount-of-time-online/

Hume, D. (2011). *A Treatise of human nature.* Oxford, UK: Clarendon Press.

Humprecht, E. (2018). Where 'fake news' flourishes: A comparison across four Western democracies. *Information Communication and Society.* doi:10.1080/1369118X.2018.1474241

Huyghe, F.-B. (2016). *La désinformation - Les armes du faux.* Paris: Armand Colin.

Information Literacy Glossary. (2006, September 1). *American Library Association.* Retrieved November 22, 2019, from http://www.ala.org/acrl/issues/infolit/overview/glossary

Ingraham, C. (2019, April 29). *Why conservatives might be more likely to fall for fake news.* Retrieved October 26, 2019, from https://www.washingtonpost.com/news/wonk/wp/2016/12/07/why-conservatives-might-be-more-likely-to-fall-for-fake-news/

International Federation of Library Associations and Institutions (IFLA). (2005). *Beacons of the information society.* Retrieved from https://www.ifla.org/publications/beacons-of-the-information-society-healexandria-proclamation-on-information-literacyadresindenerişildi

International Federation of Library Associations and Institutions (IFLA). (2006). Guidelines on information literacy for lifelong learning. In J. Lau (Ed.), *Mexico: Information Literacy Section.* Retrieved from Http://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-en.pdf

International Federation of Library Associations. (2005). *Beacons of the information society: the Alexandria Proclamation on information literacy and lifelong learning.* Retrieved from https://www.ifla.org/publications/beacons-of-the-information-society-the-alexandria-proclamation-on-information-literacy

İslamoğlu, A. H. (2003). *Bilimsel Araştırma Yöntemleri.* İstanbul: Beta Basım Yayım.

Jack, C. (2017). Lexicon of lies: terms for problematic information. *Data & Society.* Retrieved from https://datasociety.net/pubs/oh/DataAndSociety_LexiconofLies.pdf

Jackson, H. (n.d.). *Experts warn of disinformation during election but say political attack ads within legal limit.* Retrieved from: https://globalnews.ca/news/5907430/canada-election-combating-disinformation/

Jackson, J. D., Nielsen, G., & Hsu, Y. (2011). *Mediated society: A critical sociology of media.* Don Mills, Ontario: Oxford University Press.

Jacobs, R. N. (2018). Journalism After Trump. In Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election. London, UK: Palgrave Macmillan.

Jacobs, T. (2018, June 21). A cult expert finds familiar patterns of behavior in Trump's GOP. *Pacific Standard.* Retrieved April 13, 2019, from https://psmag.com/news/a-sociologist-explains-the-similarities-between-cults-and-trumps-gop

Jacobs, H. L. M. (2014). Pedagogies of possibility within the disciplines. *Communications in Information Literacy*, *8*(2), 192–297. doi:10.15760/comminfolit.2014.8.2.166

Japiassú, H., & Marcondes, D. (2005). Pós Modernidade [Post-Modernity]. In Dicionário básico de filosofia (p.190). Rio de Janeiro: Jorge Zahar Editor.

Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York: New York University Press.

Jentzsch, N., Preibusch, S., & Harasser, A. (2012). *Study on monetising privacy: An economic model for pricing personal information. European Network and Information Security Agency*. ENISA.

Johnson, M. (2010). *This book is overdue! How librarians and cybrarians can save us all*. Harper Collins.

Johnson, T. J., & Kaye, B. K. (1998). Cruising is believing? Comparing Internet and traditional sources on media credibility measures. *Journalism & Mass Communication Quarterly*, *75*(2), 325–340. doi:10.1177/107769909807500208

Johnson, T. J., & Kaye, B. K. (2000). Using is believing: The influence of reliance on the credibility of online political information among politically interested Internet users. *Journalism & Mass Communication Quarterly*, *77*(4), 865–879. doi:10.1177/107769900007700409

Jowett, G. S., & O'Donnell, V. (2015). *What is propaganda, and how does it differ from persuasion? Propaganda & persuasion*. Thousand Oaks, CA: SAGE Publications, Inc.

Judge, A. (2019). *Varieties of fake news and misrepresentation*. Retrieved from https://www.laetusinpraesens.org/docs10s/fakenews.php

Jun, Y., Meng, R., & Johar, G. V. (2017). Perceived social presence reduces fact-checking. *Proceedings of the National Academy of Sciences of the United States of America*, *114*(23), 5976–5981. doi:10.1073/pnas.1700175114 PMID:28533396

Kahne, J., & Bowyer, B. (2016). Educating for democracy in a partisan age: Confronting the challenges of motivated reasoning and misinformation. *American Educational Research Journal*, *54*(1), 3–34. doi:10.3102/0002831216679817

Kaid, L. L. (2002). Political advertising and information seeking: Comparing exposure via traditional and Internet channels. *Journal of Advertising*, *31*(1), 27–35. doi:10.1080/00913367.2002.10673658

Kakutani, M. (2018). *The death of truth: Notes on falsehood in the age of Trump*. New York: Tim Duggan Books.

Kalogeropoulos, A., & Fletcher, R. (2018, June 13). *In the U.S., the left trusts the mainstream media more than the right, and the gap is growing*. Retrieved October 28, 2019, from Nieman Lab website: https://www.niemanlab.org/2018/06/in-the-u-s-the-left-trusts-the-mainstream-media-more-than-the-right-and-the-gap-is-growing/

Kant, E. (1991). *The metaphysics of morals*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511809620.008

Kapitzke, C. (2003). Information literacy: A review and poststructural critique. *Australian Journal of Language and Literacy*, *26*(1), 53–66.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, *53*(1), 59–68. doi:10.1016/j.bushor.2009.09.003

Kapoun, J. (1998). Teaching Web evaluation to undergrads. *College & Research Libraries News*, *59*(7), 522–523.

Kaptan, S. (1989). *Bilimsel araştırma ve gözlem teknikleri*. Ankara: Tekışık Matbaası.

Karl, C. (2008, November 11). *The Two worlds: Plato's two world theory from the Gorgias to the Republic*. Retrieved from https://cameronscottkarl.wordpress.com/2011/01/13/the-two-worlds-plato%E2%80%99s-two-world-theory-from-the-gorgias-to-the-republic/

Compilation of References

Katz, J. E. (1998). Struggle in cyberspace: Fact and friction in the World Wide Web. *The Annals of the American Academy of Political and Social Science*, *560*(1), 194–199. doi:10.1177/0002716298560001015

Kellner, D. (2018). Trump's War Against the Media, Fake News, and Social Media. In C. Happer, A. Hoskins, & W. Merrin (Eds.), *Trump's Media War*. Cham: Palgrave Macmillan.

Kellner, D., & Share, J. (2005). Toward Critical Media Literacy: Core concepts, debates, organizations, and policy. *Studies in the Cultural Politics of Education*, *26*(3), 369–386. doi:10.1080/01596300500200169

Kellner, D., & Share, J. (2019). *The Critical Media Literacy Guide*. Leiden, The Netherlands: Brill Sense. doi:10.1163/9789004404533

Kendall, S. K. (2018). *Health Sciences Collection Management for the Twenty-First Century*. Lanham, MD: Rowman & Littlefield.

Kessler, G., Rizzo, S., & Kelly, M. (2019, April 29). President Trump has made more than 10,000 false or misleading claims. *Washington Post.* Retrieved July 21, 2019, from https://www.washingtonpost.com/politics/2019/04/29/president-trump-has-made-more-than-false-or-misleading-claims/?utm_term=.61f1b93761d3

Kessler, G., Rizzo, S., & Kelly, M. (2019, August 12). President Trump has made 12,019 false or misleading claims over 928 days. *The Washington Post*. Retrieved from: https://www.washingtonpost.com/politics/2019/08/12/president-trump-has-made-false-or-misleading-claims-over-days/

Kiernan, L. (2017). 'Frondeurs' and fake news: how misinformation ruled in 17th-century France. *The Conversation.* Retrieved June 03, 2019, from https://theconversation.com/frondeurs-and-fake-news-how-misinformation-ruled-in-17th-century-france-81196

Kim, H., Theobalt, C., Carrido, P., Tewari, A., Xu, W., Thies, J., ... Zollhöfer, M. (2018). Deep video portraits. *ACM Transactions on Graphics*, *37*(4), 1–14. doi:10.1145/3197517.3201283

Kirby, E. J. (2016, December 5). *The city getting rich from fake news*. Retrieved April 1, 2019, from BBC News website: https://www.bbc.com/news/magazine-38168281

Klein, D., & Wueller, J. (2017). Fake news: A legal perspective. *Journal of Internet Law, 20*(10). Retrieved from https://ssrn.com/abstract=2958790

Knight, W. (2019, February 14). An AI that writes convincing prose risks mass-producing fake news. *MIT Technology Review*. Retrieved from https://www.technologyreview.com/s/612960/an-ai-tool-auto-generates-fake-news-bogus-tweets-and-plenty-of-gibberish/

Knowledge. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Knowledge

Kokolakis, S. (2017). Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon. *Computers & Security*, *64*, 122–134. doi:10.1016/j.cose.2015.07.002

Kovach, B., & Rosenstiel, T. (2014). *The elements of journalism: What newspeople should know and the public should expect*. New York, NY: Three Rivers Press.

Kranich, N. C. (2001). Libraries, the Internet, and democracy. In N. C. Kranich (Ed.), *Libraries and Democracy: The Cornerstones of Liberty*. American Library Association.

Krathwohl, D. R., & Anderson, L. W. (2009). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Krikelas, J. (1983). Information seeking behavior: Patterns and concepts chart. *Drexel Library Quarterly*, *9*(Spring), 5–20.

Külcü, Ö. (2018). *Bilgi Kuramı ve Bilgi Yönetimi*. İstanbul: Hiper Yayın.

Kurbanoğlu, S. (2001). Öğrencilere bilgi okuryazarlığı becerilerinin kazandırılmasının önemi ve okul kütüphanecilerinin bu alandaki rolü. *Bilgi Dünyası, 2*(1), 1-19. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/1-19.pdf

Kurbanoğlu, S. (2010). Bilgi okuryazarlığı: Kavramsal bir analiz. *Türk Kütüphaneciliği, 24*(4), 723-747. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/2253-4361-1-PB.pdf

Kurbanoğlu, S. S. (2010). Bilgi okuryazarlığı: Kavramsal bir analiz. *Türk Kütüphaneciliği*, *24*(4), 723–747.

Kyung-Hee, K., & Youngmin, Y. (2009). The influence of journalists' gender on newspaper stories about women Cabinet members in South Korea. *Asian Journal of Communication*, *19*(3), 289–301. doi:10.1080/01292980903039004

Laclau, E., & Mouffe, C. (2000). Hegemony and socialist strategy: Towards a radical democratic politics. Verso.

Laclau, E. (2005). *On populist reason*. Verso.

Lafond, N. (2018, August 7). Ex-Trumpers confront supporters: lots of 'idiots' voted for trump, including me. *TPM*. Retrieved October 27, 2019, from https://talkingpointsmemo.com/livewire/ex-trumpers-confront-supporters-idiots-voted-trump-including-me

Lamba, S., & Notyananda, V. (2014, August). Self-deceived individuals are better at deceiving others. *PLoS One*, *9*(8), 8. doi:10.1371/journal.pone.0104562 PMID:25162579

Land, C. L., Taylor, L. A., Lavender, H., & McKinnon, B. (2018). Making space for choice, voice and critique: Critical literacy workshop in the era of Trump. *English Teaching*, *17*(1), 28–43. doi:10.1108/ETPC-06-2017-0100

Landers, J. (2018, July 31). Joan Chittister illustrates how mastering humility could save America. *The Chautauquan Daily.* Retrieved January 6, 2019, from http://chqdaily.com/2018/07/joan-chittister-illustrates-how-mastering-humility-could-save-america/

Langlois, S., Sauvageau, F., & Proulx, S. (2019, November 14). Les journalistes, des alliés du peuple. *Le Devoir*. Retrieved from: https://www.ledevoir.com/opinion/idees/566960/medias-les-allies-du-peuple

Lanham, A. R. (1995). Digital Literacy. *Scientific American*, *273*(3), 160–161.

Latour, B. (2007). *Reassembling the social: Introduction to actor network theory*. Oxford University Press.

Latour, B. (2018). Down to earth: Politics in the new climate regime. *Polity*.

Lau, J. (2007). *Diretrizes sobre desenvolvimento de habilidades de informação para a aprendizagem permanente.* The Hague: IFLA.

Laugksch, R. C. (2000). Scientific literacy: A conceptual overview. *Science Education*, *84*(1), 71–94. doi:10.1002/(SICI)1098-237X(200001)84:1<71::AID-SCE6>3.0.CO;2-C

Lau, J. (2007). *Diretrizes sobre desenvolvimento de habilidades de informação para a aprendizagem permanente. The Haague: IFLA, 2007*. Avaiable at http://www.ifla.org/files/assets/information-literacy/publications/ifla-guidelines-pt.pdf

Lee, J. C., & Quealy, K. (2019, May 24). The 598 people, places and things Donald Trump has insulted on twitter: a complete list. *The New York Times*. Retrieved July 22, 2019, from https://www.nytimes.com/interactive/2016/01/28/upshot/donald-trump-twitter-insults.html?_r=0

Lee, C., Shin, J., & Hong, A. (2018). Does social media use really make people politically polarized? Direct and indirect effects of social media use on political polarization in South Korea. *Telematics and Informatics*, *35*(1), 245–254. doi:10.1016/j.tele.2017.11.005

Leetaru, K. (2019, July 7). *A reminder that fake news is an information literacy problem not a technology problem.* Retrieved from https://www.forbes.com/sites/kalevleetaru/2019/07/07/a-reminder-that-fake-news-is-an-information-literacy-problem-not-a-technology-problem/#70c046966a6f

Lefevre-Gonzalez, C. (2013). Restoring historical understandings of the "public interest" standard of American broadcasting: An exploration of the Fairness Doctrine. *International Journal of Communication*, *7*, 89–109.

Lefort, C. (1988). *Democracy and political theory* (D. Macey, Trans.). Polity in association with Basil Blackwell.

Lehtonen, T. (2018). The Concept of alternative facts. In L. Kääntä, M. Enell-Nilsson, & N. Keng (Eds.), *Työelämän viestintä: VAKKI-symposiumi XXXVIII*. Retrieved from: http://www.vakki.net/publications/no9_fin.html

Lessig, L. (2012, February 29). Code is law. *Harvard Magazine.* Retrieved November 20, 2019, from https://harvard-magazine.com/2000/01/code-is-law-html

Levitin, D. J. (2015). *Why the modern world is bad for your brain*. Retrieved from https://www.theguardian.com/science/2015/jan/18/modern-world-bad-for-brain-daniel-j-levitin-organized-mind-information-overload

Levitin, D. J. (2014). *The organized mind: Thinking straight in the age of information overload*. Canada: Penguin.

Levtisky, S., & Ziblat, D. (2018). *How democracies die*. Random House.

Lewandowsky, S., Ecker, U. K., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the "post-truth" era. *Journal of Applied Research in Memory and Cognition*, *6*(4), 353–369. doi:10.1016/j.jarmac.2017.07.008

Lewis, H. (2016). *The Politics of Everybody: Feminism, Queer Theory and Marxism at the Intersection*. London: Zed Books.

Library Bill of Rights. (n.d.). *American Library Association*. Retrieved October 10, 2019, from http://www.ala.org/advocacy/intfreedom/librarybill

Lloyd, A. (2017). Information literacy and literacies of information: A mid-range theory and model. *Journal of Information Literacy*, *11*(1), 91–105. doi:10.11645/11.1.2185

Logan, R. K. (1995). *The Fifth Language: Learning a Living in the Computer Age*. Toronto, ON: Stoddart.

Lorcu, F. (2015). *Örneklerle Veri Analizi SPSS Uygulamalı*. Ankara: Detay Yayıncılık.

Lou, L. (2017, June 23). *Spot the flaw in a politician's argument with this guide to logical fallacies*. Retrieved from https://lifehacker.com/spot-the-flaw-in-a-politicians-argument-with-this-guide-1796333209

Luke, A. (2018). Critical literacy in Australia: A matter of context and standpoint. In A. Luke (Ed.), *Critical literacy, schooling, and social justice: The selected works of Allan Luke* (pp. 168–188). New York: Routledge. (Original work published 2001) doi:10.4324/9781315100951-7

Lunden, I. (2018, June 20). *Blinkist raises 18.8 M for its condensed reading platform for non-fiction books*. Retrieved from https://techcrunch.com/2018/06/20/blinkist-raises-18-8m-for-its-condensed-reading-platform-for-non-fiction-books/

Lurie, N. H. (2004). Decision-making in information-rich environments: The role of information structure. *The Journal of Consumer Research*, *30*(4), 473–486. doi:10.1086/380283

Lynch, K. (2016). Willful ignorance and self-deception. *Philosophical Studies*, *173*(2), 505–523. doi:10.100711098-015-0504-3

Mackey, T. P., & Jacobson, T. E. (2014). *Metaliteracy: reinventing iformation literacy to empower learners*. Chicago: Neal-Schuman.

MacRitchie, F. (2018). *The Need for Critical Thinking and the Scientific Method*. Boca Raton, FL: CRC Press; doi:10.1201/9781351255875

Magallón Rosa, R. (2019). Verificado México 2018: Desinformación y fact-checking en campaña electoral. *Revista de Comunicación*, *18*(1), 234–258. doi:10.26441/RC18.1-2019-A12

Magoto, M. (2017, December 4). *Journalism under attack: the phenomenon of fake news and challenges of account-ability in the new media*. Talk given to the speaker series *Truth and Democracy: Journalism, Politics and Social Science*. Concordia Center for Broadcasting and Journalism Studies. Concordia University.

Mahaffey, D. (2016, June 29). *How to improve productivity by managing information overload*. Retrieved from https://www.forbes.com/sites/forbescoachescouncil/2016/06/29/how-to-improve-productivity-by-managing-information-overload/#5855c6af7840

Maia, M., Furnival, A. C., & Martinez, V. C. A. (2018). *Competência informacional e fake news: uma reflexão sob a perspectiva do marco civil da Internet e de ignacio ramonet*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/103726

Majetic, C., & Pellegrino, C. (2014). When science and information literacy meet: An approach to exploring the sources of science news with non-science majors. *College Teaching*, *62*(3), 107–112. doi:10.1080/87567555.2014.916650

Malgieri, G., & Custers, B. (2018). Pricing privacy – the right to know the value of your personal data. *Computer Law & Security Review*, *34*(2), 289–303. doi:10.1016/j.clsr.2017.08.006

March, E., & Marrington, J. (2019). A Qualitative Analysis of Internet Trolling. *Cyberpsychology, Behavior, and Social Networking*, *22*(3), 192–197. doi:10.1089/cyber.2018.0210 PMID:30720370

Marcondes, D., & Japiassu, H. (2015). *Dicionário básico de filosofia*. São Paulo: Jorge Zahar.

Martínez-Ávila, D. & Zandonade, T. (2017). *Social epistemology: still the best framework for LIS?* Presented at Social epistemology as theoretical foundation for information science: supporting a cultural turn, Copenhagen, Denmark.

Martínez-Ávila, D. (2012). Problems and Characteristics of Foucauldian Discourse Analysis as a Research Method. In R. P. Smiraglia & H.-L. Lee (Eds.), *Cultural frames of knowledge* (pp. 99–110). Würzburg, Germany: Ergon.

Mast, J., & Alexander, J. (Eds.). (2018). *Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election*. London, UK: Palgrave Macmillan.

Mathur, A., Acar, G., Friedman, M., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites [Draft].

Matthews, D. (2018, July 9). We asked a cult deprogramming expert how to talk your friends out of voting for Donald Trump. *Splinter*. Retrieved April 14, 2019, from https://splinternews.com/we-asked-a-cult-deprogramming-expert-how-to-talkyour-f-1793857315

McCumber, J. (2005). *Assessing and managing security risk in IT systems*. Washington, DC: CRC.

McGee, L. (2007). Participation, identity, and social support in a spiritual community. *University of Texas at Arlington*. Retrieved from http://hdl.handle.net/10106/473

McGregor, J. (2016, December 29). When telling the truth is actually dishonest. *Washington Post*. Retrieved April 11, 2019, from https://www.washingtonpost.com/news/on-leadership/wp/2016/12/29/when-telling-the-truth-is-actually-dishonest/?utm_term=.5b7a76aa69c1

McIntyre, L. (2018). *Post-truth*. MIT Press. doi:10.7551/mitpress/11483.001.0001

Compilation of References

McKinney, M. S., & Gaddie, K. C. (2000, November). *The medium and the message: TV vs. Internet viewing of a presidential primary debate*. Paper presented at the meeting of National Communication Association, Seattle, WA.

McNiff, J., & Whitehead, J. (2006). *All you need to know about action research*. SAGE.

Media Cloud. (2017). Retrieved June 05, 2019, from https://topics.mediacloud.org/#/topics/1539/summary?focusId&q&snapshotId=1477&timespanId=39849

Media literacy @ your library. (2017, October 2). *American Library Association*. Retrieved November 22, 2019, from http://www.ala.org/tools/programming/media-literacy-your-library

Media literacy defined. (2010, April 6). *National Association for Media Literacy Education*. Retrieved November 22, 2019, from https://namle.net/publications/media-literacy-definitions/

Media literacy: five core concepts. (n.d.). *Young African Leaders Initiative.* Retrieved November 1, 2019, from https://yali.state.gov/media-literacy-five-core-concepts/

MediaSmarts. (n.d.). *Our mission & beliefs*. Retrieved from https://mediasmarts.ca/about-us/our-mission-beliefs

Medical Library Association. (2019). *For Health Consumers and Patients*. Retrieved November 11, 2019, from http://www.mlanet.org/page/find-good-health-information

Merzeau, L. (2009). Présence numérique: les médiations de l'identité. *Les Enjeux de l'information et de la communication, 2009*(1), 79-91. Available in: . doi:10.3917/enic.009.0079

Messing, S., & Westwood, S. J. (2014). Selective exposure in the age of social media: Endorsements Trump Partisan source affiliation when selecting news online. *Communication Research*, *41*(8), 1042–1063. doi:10.1177/0093650212466406

Mihailidis, P. (2014). *Media literacy and the emerging citizen: Youth, engagement and participation in digital culture*. New York, NY: Peter Lang.

Mitchell, A., Barthel, M., Shearer, E., & Gottfried, J. (2016, July 7). News sources and audience loyalty. *Pew Research Center Journalism and Media.* Retrieved from https://www.journalism.org/2016/07/07/loyalty-and-source-attention/

Mitchell, A., Gottfried, J., & Barthel, M. (2017, January 18). Trump, Clinton voters divided in their main source for election news. *Pew Research Center Journalism and Media.* Retrieved April 14, 2019, from https://www.journalism.org/2017/01/18/trump-clinton-voters-divided-in-their-main-source-for-election-news/

Mitchell, A., Matsa, K. E., Gottfried, J., & Kiley, J. (2014, September 21). Political polarization & media habits. *Pew Research Center Journalism and Media.* Retrieved April 14, 2019, from https://www.journalism.org/2014/10/21/political-polarization-media-habits/

Mitchelstein, E., & Boczkowski, P. J. (2009). Between tradition and change: A review of recent research on online news production. *Journalism*, *10*(5), 562–586. doi:10.1177/1464884909106533

Monateri, P. G. (2015). *Political sublime. Heterodoxy and jurisdiction at the origin of modernity*. Retrieved from. https://ssrn.com/abstract=266328. 4

Moody, K. E. (2009). A Constructivist Approach To Media Literacy Education: The Role Of The Library. *World Library And Information Congress: 75th IFLA General Conference And Council*, 23-27.

Moore, M. (2019, March 11). White House calls on Dems to condemn 'abhorrent' comments about Israel. *New York Post.* Retrieved June 30, 2019, from https://nypost.com/2019/03/11/white-house-calls-on-dems-to-condemn-abhorrent-comments-about-israel/

Moradpoor, N., Clavie, B., & Buchanan, B. (2017, July). *Employing machine learning techniques for detection and classification of phishing emails*. doi:10.1109/SAI.2017.8252096

Mora, N. (2008). Medya ve Kültürel Kimlik. *Uluslararası İnsan Bilimleri Dergisi*, *5*(1), 1–14.

Moreira, W., & Martínez-Ávila, D. (n.d.). Concept Relationships in Knowledge Organization Systems: Elements for Analysis and Common Research Among Fields. Cataloging & Classification Quarterly, 56(1), 19–39.

Morin, R., & Cohen, D. (2018, August 19). Giuliani: 'Truth isn't truth.' *Politico*. Retrieved September 4, 2018, from https://www.politico.com/story/2018/08/19/giuliani-truth-todd-trump-788161

Morris, J. S. (2007). Slanted objectivity? Perceived media bias, cable news exposure, and political attitudes. *Social Science Quarterly*, *88*(3), 707–728. doi:10.1111/j.1540-6237.2007.00479.x

Morrison, P. (2018, November 7). How the 'propaganda feedback loop' of right-wing media keeps more than a quarter of Americans siloed. *Los Angeles Times*. Retrieved October 26, 2019, from https://www.latimes.com/opinion/op-ed/la-ol-patt-morrison-yochai-benkler-20181107-htmlstory.html

Mosco, V. (2017). *Becoming digital: Toward a post-Internet society*. Bingley, UK: Emerald Publishers. doi:10.1108/9781787432956

Mouffe, C. (2018). *For a left populism*. Verso.

Moura, A. R. P., Furtado, R. L., & Belluzzo, R. C. B. (2019). Desinformação e competência em informação: Discussões e possibilidades na arquivologia. *Ciência da Informação em Revista*, *6*(1), 37–57. doi:10.28998/cirev.2019v6n1c

MSNBC. (n.d.). *Media Bias/Fact Check*. Retrieved April 14, 2019, from https://mediabiasfactcheck.com/msnbc/

Mueller, R. (2019). *Report On the investigation into Russian interference in the 2016 presidential election* (Vols. 1-2). Washington, DC: Academic Press.

Mulhern, M., & Gunding, B. (2011). What's critical about critical literacy? *English Quarterly Canada (Online)*, *42*(1), 6–23.

Müller, P., & Denner, N. (2017). *Was tun gegen "Fake News"? Friedrich-Naumann-Stiftung für die Freiheit*. Berlin: COMDOK GmbH.

Muramatsu, Y. (1990, August). *Of women, by women, for women? Toward new hopes for television in Japan*. Paper presented to the Conference of the International Association of Mass Communication Research, Bled, Yugoslavia.

Mutz, D. C. (2018, May 8). Status threat, not economic hardship, explains the 2016 presidential vote. *Proceedings of the National Academy of Sciences (PNAS)*. Retrieved June 30, 2019, from https://www.pnas.org/content/115/19/E4330

Nakamura, D. (2017, May 17). Trump claims 'no politician in history' has been 'treated worse or more unfairly.' *Washington Post.* Retrieved March 3, 2019, from https://www.washingtonpost.com/politics/2017/live-updates/trump-white-house/trump-comey-and-russia-how-key-washington-players-are-reacting/trump-says-no-president-has-been-treated-more-unfairly/?utm_term=.b36a3819ddf9

Natale, S. (2016). *Supernatural entertainments: Victorian spiritualism and the rise of modern media culture*. University Park, PA: Pennsylvania State University Press.

National Telemedia Council. (1992). Media literacy gains momentum. *Telemedium*, *28*, 12.

National: 'fake news' threat to media; editorial decisions, outside actors at fault. (2018, April 2). *Monmouth University Poll.* Retrieved April 14, 2019, from https://www.monmouth.edu/polling-institute/documents/monmouthpoll_us_040218.pdf/

New York Times. (2019). Who Will Tell the Truth about The Free Press. *Editorial Board*. Retrieved from: https://www.nytimes.com/interactive/2019/11/30/opinion/editorials/fake-news.html?action=click&module=Opinion&pgtype=Homepage

Newman, N., Fletcher, R., Kalogeropoulos, A., & Nielsen, R. K. (2019). *Reuters Institute Digital News Report.* Reuters Institute for the Study of Journalism. Retrieved June 16, 2019, from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2019-06/DNR_2019_FINAL_0.pdf

Newman, N., Fletcher, R., Kalogeropoulos, A., Levy, D., & Nielsen, R. K. (2017). *Reuters Institute Digital News Report 2017* (SSRN Scholarly Paper No. ID 3026082). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=3026082

Newport, F. (2009, June 12). *Women more likely to be Democrats, regardless of age*. Retrieved from http://www.gallup.com/poll/120839/women-likely-democrats-regardless-age.aspx

NewsLabTurkey. (2018). Retrieved June 05, 2019, from https://www.newslabturkey.org/gulin-cavus-toplumun-yarisi-diger-yarisinin-ne-okudugundan-haberdar-degil/

Newswhip. (2019). *Partisan publishers and political content*. Retrieved from: http://go.newswhip.com/rs/647-QQK-704/images/Hyper-Partisan%20Final.pdf

Nield, D. (2019, May 26). Samsung's Creepy New AI Can Generate Talking Deepfakes From a Single Image. *ScienceAlert*. Retrieved from https://www.sciencealert.com/samsung-s-ai-can-now-generate-talking-heads-from-a-single-image

Nielsen, G. M. (2009). Framing immigration in the New York Times. *Aether: The Journal of Media Geography*. *4*, 37-57.

Nielsen, G. M. (2016). Critical theory and journalism: Expanding the implied audience. In M. Gasher, C. Brin, C. Crowther, G. King, E. Salamon, & S. Thibault (Eds.), *Journalism in Crisis: Bridging Theory and Practice for Democratic Media Strategies in Canada*. Toronto, Ontario: University of Toronto Press. doi:10.3138/9781442625198-006

Nietzsche, F. W. (1917). *Thus spoke Zarathustra*. New York: Modern Library.

Nietzsche, F. W. (1918). *The genealogy of morals*. New York: Boni and Liveright.

Nietzsche, F. W. (2019). *The will to power*. Mineola, NY: Dover Publications.

Nijboer, J., & Hammelburg, E. (2009). Extending Media Literacy: A New Direction For Libraries. *New Library World*, *111*(1/2), 36–45. doi:10.1108/03074801011015676

Norman, C. D., & Skinner, H. A. (2006). eHealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research*, *8*(2), e9. doi:10.2196/jmir.8.2.e9 PMID:16867972

O'Dell, J. (2011, March 14). *For the First Time, More People Get News Online Than From Newspapers*. Retrieved October 28, 2019, from Mashable website: https://mashable.com/2011/03/14/online-versus-newspaper-news/

O'Dell, C., & Hubert, C. (2011). *The new edge in knowledge*. American Productivity & Quality Centre.

Ochs, E. (1992). Acquisition of Competence. In *Oxford Encyclopedia of Linguistics* (Vol. 1, pp. 358–361). New York: Oxford University Press.

Ognianova, E., & Endersby, J. (1996). Objectivity revisited: A spatial model of political ideology and mass communication. *Journalism and Mass Communication Monographs*, *159*, 1–36.

Oldroyd, J. B., & Morris, S. S. (2012). Catching falling stars: A human resource response to social capital's detrimental effect of information overload on star employees. *Academy of Management Review*, *37*(3), 396–418. doi:10.5465/amr.2010.0403

Oliveira, M. L. P., & Souza, E. D. (2018). *A competência crítica em informação no contexto das fake news: os desafios do sujeito informacional no ciberespaço*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB, 2018. Disponível em: http://hdl.handle.net/20.500.11959/brapci/102566

Oliveira, S. M. P. (2018). *Disseminação da informação na era das fake news*. Múltiplos Olhares em Ciência da Informação, n. Especial EREBD. Disponível em: http://hdl.handle.net/20.500.11959/brapci/106362

Olivier, B. (2012). *Foucault on the functioning of discourse in society*. Retrieved from https://thoughtleader.co.za/bertolivier/2012/03/19/foucault-on-the-functioning-of-discourse-in-society/

Olivieri, A., Shabani, S., Sokhn, M., & Cudré-Mauroux, P. (2019, January). Creating task-generic features for fake news detection. In *Proceedings of the 52nd Hawaii International Conference on System Sciences* (pp. 1-10). Maui, HI: HICSS. 10.24251/HICSS.2019.624

Olsen, H. (2019, August 16). Yes, undocumented immigrants take jobs from Americans. Here's the proof. *Washington Post.* Retrieved October 27, 2019, from https://www.washingtonpost.com/opinions/2019/08/16/yes-undocumented-immigrants-take-jobs-americans-heres-proof/

Orlandi, E. (1994). Discurso, imaginário social e conhecimento [Discourse, Social Imagination and Knowledge]. In *Em Aberto* (pp. 52-59). Brasília. Retrieved from <http://emaberto.inep.gov.br/index.php/emaberto/article/viewFile/1943/1912&gt

Orlikowski, W. J. (2007). Sociometric practices: Exploring technology at work. *Organization Studies*, *28*(9), 1435–1448. doi:10.1177/0170840607081138

Osatuyi, B., Passerini, K., Ravarini, A., & Grandhi, S. A. (2018). "Fool me once, shame on you… then, I learn." An examination of information disclosure in social networking sites. *Computers in Human Behavior*, *83*, 73–86. doi:10.1016/j.chb.2018.01.018

Ottonicar, S. L. C., Valentim, M. L. P., & Feres, G. G. (2016). Competência em informação e os contextos educacional, tecnológico, político e organizacional. *Revista Ibero-Americana de Ciência da Informação, 9*(1), 124-142. DOI: . doi:10.26512/rici.v9.n1.2016.2203

Ottonicar, S. L. C., Valentim, M. L. P., Jorge, L. F., & Mosconi, E. (2019). Fake News, Big Data e o Risco à democracia: novos desafios à competência em informação e midiática. *E-prints in Library and Information Science.* Retrieved from: http://eprints.rclis.org/34337/

Oxford Dictionaries. (2019). *Post-truth.* Retrieved June 05, 2019, from https://en.oxforddictionaries.com/definition/post-truth

Oxford English Dictionary. (2019). Available from https://www.oed.com/

Pacepa, I. M., & Rychlak, R. J. (2013). *Disinformation: former spy chief reveals secret strategy for undermining freedom, attacking religion and promoting terrorism.* WND Books.

Pak, J., & Zhou, L. (2014). Social structural behavior of deception in computer-mediated communication. *Decision Support Systems*, *63*, 95–103. doi:10.1016/j.dss.2013.08.010

Pangrazio, L. (2018). What's new about 'fake news'? Critical digital literacies in an era of fake news, post-truth and clickbait. *Páginas de Educación*, *11*(1), 6–22. doi:10.22235/pe.v11i1.1551

Pariser, E. (2011). *The filter bubble: how the new personalized web is changing what we read and how we think*. New York: Penguin Press.

Pariser, E. (2011). *The Filter Bubble: What the Internet is Hiding from You*. New York: Penguin.

Pavleska, T., Školkay, A., Zankova, B., Ribeiro, N., & Bechmann, A. (2018). Performance analysis of fact-checking organizations and initiatives in Europe: a critical overview of online platforms fighting fake news. *Social Media and Convergence, 17.*

Pennycook, G., Cannon, T. D., & Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of Experimental Psychology: General, 147*(12), 1865-1880. http://dx.doi.org.proxy.library.kent.edu/10.1037/xge0000465

Pérez-Rosas, V., Kleinberg, B., Lefevre, A., & Mihalcea, R. (2017). *Automatic detection of fake news.* Retrieved from http://arxiv.org/pdf/1708.07104.pdf

Pernice, K. (n.d.). *Banner Blindness Revisited: Users Dodge Ads on Mobile and Desktop*. Retrieved October 29, 2019, from Nielsen Norman Group website: https://www.nngroup.com/articles/banner-blindness-old-and-new-findings/

Perry, S. D., Jenzowsky, S. A., Hester, J. B., King, C. M., & Yi, H. (1997). The influence of commercial humor on program enjoyment and evaluation. *Journalism & Mass Communication Quarterly*, *74*(2), 388–399. doi:10.1177/107769909707400210

Perry, S. D., Trunnell, D., Ellis, C., & Kazoleas, D. (2009). Commercial quality influence on perceptions of television news. *Electronic News*, *3*(1), 32–51. doi:10.1080/19312430802631517

Peters, J. D. (1999). *Speaking into the air: A history of the idea of communication*. Chicago, IL: University of Chicago Press. doi:10.7208/chicago/9780226922638.001.0001

Peters, M. A., Rider, S., Hyvönen, M., & Besley, T. (Eds.). (2018). *Post truth, fake news: Viral modernity and higher education*. Singapore: Springer. doi:10.1007/978-981-10-8013-5

Peterson, E., Goel, S., & Iyengar, S. (2018). *Echo chambers and partisan polarization: Evidence from the 2016 presidential campaign.* Unpublished manuscript. Retrieved June 01, 2019, from https://5harad. com/papers/selecfive-exposure.pdf

Pettigrew, T. F. (2017). Social psychological perspectives on Trump supporters. *Journal of Social and Political Psychology,* (5). Retrieved August 18, 2017, from https://jspp.psychopen.eu/index.php/jspp/article/view/750/html

Pew Research Center. (2010). *How news happens: A study of the news ecosystem of one American city*. Retrieved from: https://www.journalism.org/2010/01/11/how-news-happens/

Pew Research Center. (2019). *For local news, Americans embrace digital but still want strong community connection.* Retrieved from: https://www.journalism.org/2019/03/26/for-local-news-americans-embrace-digital-but-still-want-strong-community-connection/

Pew Research Center. (2019a, June 12). *Internet/Broadband Fact Sheet*. Retrieved October 28, 2019, from Pew Research Center website: https://www.pewInternet.org/fact-sheet/Internet-broadband/

Pfleeger, P. (1997). The fundamentals of information security. *Software, IEEE*, *14*(1), 14. doi:10.1109/52.566419

Plato. (1989a). Meno. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Plato. (1989b). Republic. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Plato. (1989c). Theaetetus. In Plato: the collected dialogues. Princeton, NJ: Princeton University Press.

Polletta, F., & Callahan, J. (2018). Deep stories, nostalgia narratives, and fake news: Storytelling in the Trump Era. In J. Mast & J. Alexander (Eds.), *Politics of meaning/Meaning of politics: Cultural Sociology of the 2016 U.S. presidential election* (pp. 55–75). London, UK: Palgrave Macmillan.

Ponzetto, S. P., & Strube, M. (2007, July). Deriving a large scale taxonomy from Wikipedia. In *Proceedings of the 22nd national conference on artificial intelligence* (pp. 1440–1445). Vancouver, British Columbia, Canada: AAAI.

Popper, K. R. (1979). *Objective knowledge: An Evolutionary Approach* (Revised Edition). Oxford, UK: United.

Posetti, J., & Matthews, A. (2018, July 23). *A Short Guide to the History of 'Fake News' and Disinformation: A New ICFJ Learning Module*. Retrieved April 4, 2019, from International Center for Journalists website: https://www.icfj.org/news/short-guide-history-fake-news-and-disinformation-new-icfj-learning-module

Powell, R., Cantrell, S., & Adams, S. (2001). Saving Black Mountain: The promise of critical literacy in a multicultural democracy. *The Reading Teacher*, *54*(8), 772–781.

Poynter. (2019). *Poynter is a thought leader*. Retrieved June 01, 2019, from https://www.poynter.org/poynter-thought-leader/

Presidential committee on information literacy: Final report. (2006, July 24). *American Library Association*. Retrieved November 11, 2019, from http://www.ala.org/acrl/publications/whitepapers/presidential

Primo, A., & Zago, G. (2015). Who and what do journalism? *Digital Journalism*, *3*(1), 38–52. doi:10.1080/21670811.2014.927987

Public Policy Forum. (2017). *The Shattered Mirror – News, Democracy and Trust in the Digital Age*. Retrieved from: https://shatteredmirror.ca/

Quinnipiac/poll. (2018). *Women drive dems to 12-pt. lead in u.s. house races, Quinnipiac University national poll finds; voters split on confirming Kavanaugh*. Retrieved from: https://poll.qu.edu/images/polling/us/us07252018_uytw29.pdf/

Quinn, M. J. (2014). *Ethics for the Information Age* (6th ed.). Addison-Wesley Professional.

Rao, R. S., & Pais, A. R. (2018). Detection of phishing websites using an efficient feature-based machine learning framework. *Neural Computing & Applications*. doi:10.100700521-017-3305-0

Rawls, J. (2001). *Justice as fairness: A restatement* (E. Kelly, Ed.). Harvard University Press.

Reale, G., & Antiseri, D. (1990). *História da Filosofia do humanismo a Kant* [The History of Humanism Philosophy to Kant]. 5th ed.). São Paulo: Paulus.

Recuero, R., & Gruzd, A. (2019). Cascatas de Fake News Políticas: Um estudo de caso no Twitter. *Galáxia (São Paulo)*, *41*(41), 31–47. doi:10.1590/1982-25542019239035

Redlawsk, D. P., Civettini, A. J., & Emmerson, K. M. (2010). The affective tipping point: Do motivated reasoners ever "get it"? *Political Psychology*, *31*(4), 563–593. doi:10.1111/j.1467-9221.2010.00772.x

Reid, G., & Norris, S. P. (2016). Scientific media education in the classroom and beyond: A research agenda for the next decade. *Cultural Studies of Science Education*, *11*(1), 147–166. doi:10.100711422-015-9709-1

Renda, A. (2018). *The legal framework to address "fake news": possible policy actions at the EU level*. CEPS Research Report.

Rezende, A. (2018). *Curso de Filosofia [Philosophy Course]*. Rio de Janeiro: Zahar.

Ribeiro, B. C. M. S., Franco, I. M., & Soares, C. C. (2018). Competência em informação: as fake news no contexto da vacinação. *Múltiplos Olhares em Ciência da Informação*. Retrieved from: http://hdl.handle.net/20.500.11959/brapci/106451

Richards, D. (n.d.). Digital ethics. *Writing commons.* Retrieved November 20, 2019, from https://writingcommons.org/digital-ethics

Riley, D. (2018). What is Trump? *New Left Review*, *114*, 5–31.

Rimmer, T., & Weaver, D. (1987). Different questions, different answers? Media use and media credibility. *The Journalism Quarterly*, *64*(1), 28–36. doi:10.1177/107769908706400104

Robinson, M. J., & Kohut, A. (1988). Believability and the press. *Public Opinion Quarterly*, *52*(2), 174–189. doi:10.1086/269093

Romano, A. (2011, March 22). How ignorant are Americans? *Newsweek.* Retrieved October 28, 2019, from https://www.newsweek.com/how-ignorant-are-americans-66053

Romm, T. (2019, October 17). Zuckerberg: Standing for voice and free expression. *The Washington Post.* Retrieved October 25, 2019, from https://www.washingtonpost.com/technology/2019/10/17/zuckerberg-standing-voice-free-expression/

Roozenbeek, J., & van der Linden, S. (2019). The fake news game: Actively inoculating against the risk of misinformation. *Journal of Risk Research*, *22*(5), 570–580. doi:10.1080/13669877.2018.1443491

Rosenberg, D. (2003). Early modern information overload. *Journal of the History of Ideas*, *64*(1), 1–9. doi:10.1353/jhi.2003.0017

Roskos-Ewoldsen, D. R., Roskos-Ewoldsen, B., & Carpentier, F. D. (2009). Media priming: An updated synthesis. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 74–93). New York, NY: Routledge.

Rouse, W.B., & Rouse, S. H. (1984). Human information seeking and design of information systems. *Information Processing and Management, 20*(1,2), 129-138.

Rowe, N. (2006, March). A taxonomy of deception in cyberspace. In *International Conference on Information Warfare and Security* (pp. 173–181). Princess Anne, MD: Naval Postgraduate School.

Rubin, V. L., Chen, Y., & Conroy, N. J. (2015). Deception detection for news: Three types of fakes. *ASIST2015.* Available in: https://asistdl.onlinelibrary.wiley.com/doi/epdf/10.1002/pra2.2015.145052010083

Ryfe, D. (2012). *Can journalism survive? An inside look at American newsrooms*. London, UK: Polity.

Ryfe, D. (2017). Journalism and the public. *Polity*.

Saba, J. (2010). Web gets sticky. *Editor & Publisher*, *143*(1), 18–22.

Sackett, D. L. (1989). Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest*, *95*(2Suppl), 2S–4S. doi:10.1378/chest.95.2_Supplement.2S PMID:2914516

Sadeque, F., Rains, S., Shmargad, Y., Kenski, K., Coe, K., & Bethard, S. (2019). Incivility Detection in Online Comments. In *Proceedings of the Eighth Joint Conference on Lexical and Computational Semantics (*SEM 2019)*, (pp. 283–291). Minneapolis, MN: Association for Computational Linguistics. 10.18653/v1/S19-1031

Sahingoz, O. K., Buber, E., Demir, O., & Diri, B. (2019). Machine learning based phishing detection from URLs. *Expert Systems with Applications*, *117*, 345–357. doi:10.1016/j.eswa.2018.09.029

Salahdine, F., & Kaabouch, N. (2019). Social Engineering Attacks: A Survey. *Future Internet, 11*.

Sallot, L. M., Steinfatt, T. M., & Salwen, M. B. (1998). Journalists' and public relations practitioners' news values: Perceptions and cross-perceptions. *Journalism & Mass Communication Quarterly*, *75*(2), 366–377. doi:10.1177/107769909807500211

Sampaio, D. B., Lima, I. F., & Oliveira, H. P. C. (2018). *Estratégias fact-checking no combate à fake news: análises informacional e tecnológica no e-farsas e boatos.org*. Encontro Nacional de Pesquisa em Ciência da Informação, n. XIX ENANCIB. Retrieved from: http://hdl.handle.net/20.500.11959/brapci/103103

Santora, J. (2019, June 17). The 10 essential SEO ranking factors you need to rank #1 in 2019. *Optinmonster*. Retrieved July 10, 2019, from https://optinmonster.com/seo-ranking-factors/

Santos, M. C. (2019). Desconexão e Reconexão Algorítmica: Contágio e Limiar Social como Lógicas de Influência no Ambiente Digital. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

Sauvegeau, F., Thibault, S., & Trudel, P. (Eds.). (2018). Les fausses nouvelles, nouveau visages, nouveau défis: Comment détrerminer la valeur de l'information dans les sociétés démocratiques? Québec: Presse de l'université de Laval.

Scarabelli, A. C. P. (2019, November 2). How did fake news run voters' opinions in the Brazilian elections? *Digitt Magazine*. Retrieved from: https://www.diggitmagazine.com/articles/fake-news-brazilian-elections

Schenck v. United States, 249 U.S. 47 (1919).

Scheufele, D. A., & Krause, N. M. (2019). Science audiences, misinformation, and fake news. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(16), 7662–7669. doi:10.1073/pnas.1805871115 PMID:30642953

Schmitt, B. H. (1994). Contextual priming of visual information in advertisements. *Psychology and Marketing*, *11*(1), 1–14. doi:10.1002/mar.4220110103

SCONUL Working Group on Information Literacy. (2001). *The SCONUL Seven Pillars of Information Literacy: Core Model for Higher Education*. Society of College, National and University Libraries.

Seo, H., Xiong, A., & Lee, D. (2019). *Trust It or Not: Effects of Machine-Learning Warnings in Helping Individuals Mitigate Misinformation*. doi:10.1145/3292522.3326012

Serres, A. (2012). Problématiques de la trace à l'heure du numérique. *Sens-Dessous, 10*(1), 84-94. . doi:10.3917des.010.0084

Shankar, A., & Shetty, R. (2019). A Review on Phishing Attacks. *International Journal of Applied Engineering Research*, *14*(9), 2171–2175.

Shao, C., Ciampaglia, G. L., Flammini, A., & Menczer, F. (2016). Hoaxy: A Platform for Tracking Online Misinformation. *Proceedings of the 25th International Conference Companion on World Wide Web - WWW '16 Companion*, 745–750. 10.1145/2872518.2890098

Shearer, E. (2018, December 10). *Social media outpaces print newspapers in the U.S. as a news source*. Retrieved October 28, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2018/12/10/social-media-outpaces-print-newspapers-in-the-u-s-as-a-news-source/

Shearer, E., & Eva Matsa, K. (2018). *News use across social media platforms 2018*. Retrieved from https://www.journalism.org/2018/09/10/news-use-across-social-media-platforms-2018/

Shin, L. (2014, November 14). *10 steps to conquering information overload*. Retrieved from https://www.forbes.com/sites/laurashin/2014/11/14/10-steps-to-conquering-information-overload/#75ee192a7b08

Shoemaker, P. J., & Reese, S. D. (2013). *Mediating the message in the 21st century: A media sociology perspective*. New York, NY: Routledge. doi:10.4324/9780203930434

Silva, J. A. D. (2000). *Curso de Direito Constitucional Positivo [Positive Constitution Law Course]*. São Paulo: Malheiros Editores.

Silva, R. G. (2004). Análise do discurso: princípios e aspectos gerais [Discourse Analysis: principles and general aspects]. In *Congresso Brasileiro de Hispanistas*. Florianópolis: UFSC.

Silver, L. (2019). *Misinformation and fears about its impact are pervasive in 11 emerging economies.* Pew Research Center. Retrieved June 05, 2019, from https://www.pewresearch.org/fact-tank/2019/05/13/misinformation-and-fears-about-its-impact-are-pervasive-in-11-emerging-economies/

Silverman, C. (2013). *Verification handbook.* Retrieved June 05, 2019, from http://verificationhandbook.com/

Silverman, C. (2016). *This Analysis Shows How Viral Fake Election News Stories Outperformed Real News On Facebook.* BuzzFeed. Retrieved June 01, 2019, from https://www.buzzfeednews.com/article/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook

Silverman, C. (2016, November 16). This Analysis Shows How Viral Fake Election News Stories Outperformed Real News On Facebook. *BuzzFeed News.* Retrieved from https://www.buzzfeednews.com/article/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook#.fvLPVppXj

Simmons, M. H. (2005). Librarians as disciplinary discourse mediators: Using genre theory to move towards critical information literacy. *Libraries and the Academy*, *5*(3), 297–311. doi:10.1353/pla.2005.0041

Singer, J. B. (2003). Who are these guys? The online challenge to the notion of journalism professionalism. *Journalism*, *4*, 139–163.

Slater, M. D., & Rouner, D. (1996). How message evaluation and source attributes may influence credibility assessment and belief change. *Journalism & Mass Communication Quarterly*, *73*(4), 974–991. doi:10.1177/107769909607300415

Smith, A., & Duggan, M. (2012). *Online Political Videos and Campaign 2012* (Pew Research Center Report). Retrieved from Pew Internet & American Life Project website: http://pewInternet.org/~/media//Files/Reports/2012/PIP_State_of_the_2012_race_online_video_final.pdf

Smith, A., Anderson, M., & Caiazza, T. (2018). *Social Media Use in 2018.* Retrieved from Pew Research Center website: http://assets.pewresearch.org/wp-content/uploads/sites/14/2018/03/01105133/PI_2018.03.01_Social-Media_FINAL.pdf

Smith, T. (2019). *Foxocracy: inside the network's playbook of tribal warfare*. New York, NY: Diversion Books.

Social media. (2019). In *Wikipedia*. Retrieved June 30, 2019, from https://en.wikipedia.org/wiki/Social_Media

Sparrow, B., Liu, J., & Wegner, D. M. (2011, August 5). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, *333*(6043), 776–778. doi:10.1126cience.1207745 PMID:21764755

Spinello, R. A. (2011). *Privacy and Social Networking Technology*. Academic Press.

Staddon, J. (2018). *Scientific Method: How Science Works, Fails to Work, and Pretends to Work*. New York: Routledge. doi:10.4324/9781315100708

Stanley, J. P. (2016). *How spiritualism spread*. Retrieved from https://www.publicbooks.org/how-spiritualism-spread/#fn-1493-4

Starkey, L. H., & Calogero, G. (2011). *Eleaticism. Encyclopedia Britannica*. Retrieved from https://www.britannica.com/topic/Eleaticism

Stella, M., Ferrara, E., & De Domenico, M. (2018). Bots increase exposure to negative and inflammatory content in online social systems. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(49), 12435–12440. doi:10.1073/pnas.1803470115 PMID:30459270

Stocker, B. (2019). *Foucault on Parrhesia: Liberty and Speech*. Retrieved from: https://www.academia.edu/2413321/Foucault_on_Parrhesia_Liberty_and_Speech

Stocker, B. (n.d.). *Foucault on Parrhesia: Liberty and Speech*. Retrieved from https://www.academia.edu/2413321/Foucault_on_Parrhesia_Liberty_and_Speech

Stockinger, P. (1999). Les nouveaux produits d' information: Conception et sémiotique du document. ParisL *Hermes*.

Storksdieck, M. (2016). Critical information literacy as core skill for lifelong STEM learning in the 21st century: Reflections on the desirability and feasibility for widespread science media education. *Cultural Studies of Science Education*, *11*(1), 167–182. doi:10.100711422-015-9714-4

Stray, J. (2011). *A Computational Journalism Reading List*. Retrieved June 01, 2019, from http://jonathanstray.com/a-computational-journalism-reading-list

Stroud, F. (2017). *Fake news*. Retrieved July 3, 2019, from http://www.webopedia.com/TERM/F/fakenews.html

Such, J. M., & Criado, N. (2018). Multiparty Privacy in Social Media. *Communications of the ACM*, *61*(8), 74–81. doi:10.1145/3208039

Sullivan, M. C. (2018). Why librarians can't fight fake news. *Journal of Librarianship and Information Science*. doi:10.1177/0961000618764258

Sundar, S. S. (2016, December 8). There's a psychological reason for the appeal of fake news. *New Republic*. Retrieved from https://newrepublic.com/article/139230/theres-psychological-reason-appeal-fake-news

Sundar, S. S. (1999). Exploring receivers' criteria for perception of print and online news. *Journalism & Mass Communication Quarterly*, *76*(2), 373–386. doi:10.1177/107769909907600213

Svärd, M., & Rumman, P. (2017). *Combating disinformation: Detecting fake news with linguistic models and classification algorithms* (Unpublished bachelor's thesis). KTH Royal Institute of Technology, Stockholm, Sweden.

Swan, J., & Peattie, N. (1989). The freedom to lie: a debate about democracy. Jefferson, NC: McFarland & Co., Inc. Publishers.

Swanson, E. S. (2015). *Science and Society: Understanding Scientific Methodology, Energy, Climate, and Sustainability*. Heidelberg, Germany: Springer. doi:10.1007/978-3-319-21987-5

Swanson, T. A. (2004). Applying a critical pedagogical perspective to information literacy standards. *Community & Junior College Libraries*, *12*(4), 65–77. doi:10.1300/J107v12n04_08

Sweeny, K., Melnyk, D., Miller, W., & Shepperd, J. A. (2010). Information avoidance: Who, what, when, and why. *Review of General Psychology*, *14*(4), 340–353. doi:10.1037/a0021288

Sydell, L. (2016, November 23). We Tracked Down A Fake-News Creator In The Suburbs. Here's What We Learned. *NPR*. Retrieved from https://www.npr.org/sections/alltechconsidered/2016/11/23/503146770/npr-finds-the-head-of-a-covert-fake-news-operation-in-the-suburbs

Synnott, J., Coulias, A., & Ioannou, M. (2017). Online trolling: The case of Madeleine McCann. *Computers in Human Behavior*, *71*, 70–78. doi:10.1016/j.chb.2017.01.053

Tavani, H. T., & Moor, J. H. (2001). Privacy protection, control of information, and privacy-enhancing technologies. *ACM SIGCAS Computers and Society*, *31*(1), 6–11. doi:10.1145/572277.572278

Taylor, A. (2019, April 18). Before 'fake news,' there was Soviet 'disinformation.' *The Washington Post.* Retrieved October 22, 2019, from https://www.washingtonpost.com/news/worldviews/wp/2016/11/26/before-fake-news-there-was-soviet-disinformation/

Terrasi, J. (2019, April 10). Ethics are the latest analog phenomenon getting an online reboot. *Lifewire*. Retrieved November 21, 2019, from https://www.lifewire.com/what-are-digital-ethics-4587289

Tewell, E. (2015). A decade of critical information literacy. *Communications in Information Literacy*, *9*(1), 14–43. doi:10.15760/comminfolit.2015.9.1.174

Tewell, E. (2016). Toward the resistant reading of information: Google, resistant spectatorship, and critical information literacy. *portal. Libraries and the Academy*, *16*(2), 289–310. doi:10.1353/pla.2016.0017

Teyit.org. (2019). Retrieved June 05, 2019, from https://Teyit.org/Teyit-stickerlari-ile-whatsapp-ve-instagramda-yanlis-bilgi-paylasanlari-uyarin/

The Alexandria Manifesto on Libraries: The Infsormation Society In Action. (2005). *Australian Library Journal, 54*(4), 415.

The SCONUL Seven Pillars of Information literacy. (2011). *Core Model for Higher education*. Retrieved from https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf

The Washington Post's guide to manipulated video. (2019, June 25). *The Washington Post*. Retrieved July 23, 2019, from https://www.washingtonpost.com/graphics/2019/politics/fact-checker/manipulated-video-guide/

Thoman, E., & Jolls, T. (2008). 21. Yüzyıl Okuryazarlığı. (Çev. Cevat Elma ve Alper Kesten) *Ekinoks Yayınları*. Retrieved from http://www.kff. org/entmedia/upload/Key-Facts-Media-Literacy.pdf

Thorne, J., & Vlachos, A. (2018). Automated Fact Checking: Task Formulations, Methods and Future Directions. *Proceedings of the 27th International Conference on Computational Linguistics*, 3346–3359. Retrieved from https://www.aclweb.org/anthology/C18-1283

Tollison, R. (Ed.). (1985). *Smoking and society: Toward a more balanced assessment*. Lanham, MD: Lexington Books.

Torabi Asr, F., & Taboada, M. (2019). Big Data and quality data for fake news and misinformation detection. *Big Data & Society*, *6*(1), 205395171984331. doi:10.1177/2053951719843310

Törnberg, P. (2018). Echo chambers and viral misinformation: Modeling fake news as complex contagion. *PLoS One*, *13*(9), 1–21. doi:10.1371/journal.pone.0203958 PMID:30235239

Toynbee, P. (2019). *The anti-EU lies are back to exploit Britain's weak spot again.* Retrieved from https://www.theguardian.com/commentisfree/2019/mar/04/anti-eu-brexit-fake-news

Truthiness. (2019). In *Wikipedia*. Retrieved March 24, 2019, from https://en.wikipedia.org/wiki/Truthiness

Tsikerdekis, M. (2018). Real-Time Identity-Deception Detection Techniques for Social Media: Optimizations and Challenges. *IEEE Internet Computing*, *22*(5), 35–45. doi:10.1109/MIC.2017.265102442

Tsikerdekis, M., & Zeadally, S. (2014). Online deception in social media. *Communications of the ACM*, *57*(9), 72–80. doi:10.1145/2629612

Tucker, J. A., Guess, A., Barbera, P., Vaccari, C., Siegel, A., Sanovich, S,. Stukal, D., & Nyhan, B. (2018). Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature. *SSRN*. doi:10.2139srn.3144139

Tufekci, Z. (2018, March 10). YouTube, the great radicalizer. *New York Times.* Retrieved August 29, 2019, from https://www.nytimes.com/2018/03/10/opinion/sunday/youtube-politics-radical.html

Tushnet, R. (2008). Power without responsibility: intermediaries and the First Amendment. *Georgetown Law: Faculty working papers*. Retrieved August 12, 2019, from https://scholarship.law.georgetown.edu/fwps_papers/76/

Uçak, N. Ö. (1997). Bilgi gereksinimi ve bilgi arama davranışı. *Türk Kütüphaneciliği, 11*(4), 315-325. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/1475-2949-1-PB.pdf

Uçak, N. Ö. (2010). Bilgi: Çok yüzlü bir kavram [Information: A multi-faceted concept]. *Türk Kütüphaneciliği, 24*(4), 705-722. Retrieved from http://www.bby.hacettepe.edu.tr/e-bulten/dosyalar/file/mart2011/ucak_TK24(4).pdf

Uçak, N. Ö., & Güzeldere, Ş. O. (2006). Bilişsel yapının ve işlemlerin bilgi arama davranışı üzerine etkisi [The impact of cognitive structure and processes on information seeking]. *Türk Kütüphaneciliği, 20*(1), 7-28. Retrieved from http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/1994-3966-1-PB.pdf

UNESCO. (2003). *Prague Declaration*. Towards an Information Literate Society.

UNESCO. (2019). *Building Knowledge Societies*. Retrieved Nov. 12 2019 from https://en.unesco.org/themes/building-knowledge-societies

Uzuner, Y. (2005). Özel eğitimden örneklerle eylem araştırmaları. *Ankara Üniversitesi Eğitim Fakültesi Özel Eğitim Dergisi, 6*(2).

Vaccine myths debunked. (2019, October 24). *Public Health*. Retrieved October 28, 2019, from https://www.publichealth.org/public-awareness/understanding-vaccines/vaccine-myths-debunked/

Vaidhyanathan, S. (2019, October 18). Mark Zuckerberg doesn't understand free speech in the 21st century. *The Guardian.* Retrieved October 25, 2019, from https://www.theguardian.com/commentisfree/2019/oct/18/mark-zuckerberg-free-speech-21st-century

Valentine, A., & Wukovitz, L. (2013). Using the filter bubble to create a teachable moment. *Pennsylvania Libraries: Research & Practice*, *1*(1), 24–34. doi:10.5195/PALRAP.2013.18

Valverde, M. (2019). Confesión y autenticidad en el discurso populista de hoy. *CS, 27,* 143-165. doi:10.18046/recs.i27.3435

van der Stock, A., Glas, B., Smithline, N., & Gigler, T. (2017). *OWASP Top 10 - 2017 The Ten Most Critical Web Application Security Risks*. Retrieved from OWASP website: https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project

Vance, J. D. (2016). *Hillbilly elegy: A memoir of a family and culture in crisis*. Harper Collins.

Vasquez, V. M. (2017). *Curriculum and pedagogy, educational purposes and ideals, educational theories and philosophies. Oxford Research Encyclopedia of Education*.

Vaughan, M. (2014) *Know your limits, your brain can only take so much.* Retrieved from https://www.entrepreneur.com/article/230925

Vergeer, M. (2018). Incorrect, fake, and false. Journalists' perceived online source credibility and verification behavior. *Observatorio, 12*(1), 37-52. Recuperado em 16 de julho de 2019, de http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S1646-59542018000100003&lng=pt&tlng=en

Vitorino, M. M., & Renault, D. (2019). A Irrupção da Fake News no Brasil: uma Cartografia da Expressão. In Big Data e Fake News na sociedade do (des)conhecimento. Aveiro: Ria Editoral.

Volovich, K. (2019). *What's a Good Clickthrough Rate? New Benchmark Data for Google AdWords.* Retrieved October 29, 2019, from HubSpot website: https://blog.hubspot.com/agency/google-adwords-benchmark-data

Von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Sciences*, *34*(1), 1–16. doi:10.1017/S0140525X10001354 PMID:21288379

Vosoughi, S., Roy, D., & Aral, S. (2018, March 9). *The spread of true and false news online.* Retrieved from https://science.sciencemag.org/content/359/6380/1146

Vosoughi, S., Roy, D., & Aral, S. (2018, March 09). The spread of true and false news online. *Science*, *359*(6380), 1146–1151. doi:10.1126cience.aap9559 PMID:29590045

Waisbord, S. (2018). Truth is What Happens to News. *Journalism Studies*, *19*(13), 1866–1878. doi:10.1080/1461670X.2018.1492881

Walliss, J. (2001). Continuing bonds: Relationships between the living and the dead within contemporary Spiritualism. *Mortality*, *6*(2), 127–145. doi:10.1080/13576270120051811

Walsh, J. (2010). Librarians and controlling disinformation: Is multi-literacy instruction the answer? *Library Review*, *59*(7), 498–511. doi:10.1108/00242531011065091

Wardle, C. (2016, November 18). 6 types of misinformation circulated this election season. *Columbia Journalism Review*. Retrieved from https://www.cjr.org/tow_center/6_types_election_fake_news.php

Wardle, C. (2017, February 12). Fake news: It's complicated. *First Draft News*. Retrieved from https://medium.com/1st-draft/fake-news-its-complicated-d0f773766c79

Wardle, C., & Derakhshan, H. (2017). *Information disorder: Toward an interdisciplinary framework for research and policy making*. Council of Europe report Available in: https://rm.coe.int/information-disordertoward-an-interdisciplinary-framework-for-researc/168076277c

Wardle, C., & Derakhshan, H. (2017). *Toward an interdisciplinary framework for research and policymaking*. Strasbourg: Council of Europe. Retrieved from http://scholar.google.com.br/scholar_url?url=http://www.theewc.org/content/download/2105/18430/file/INFORMATION%2520DISORDER.pdf&hl=pt-BR&sa=X&scisig=AAGBfm3KVfwwfvXHacu2WJzkTfpca5U-g&nossl=1&oi=scholarr

Warnick, B. (2002). *Critical Literacy in a Digital Era: Technology, Rhetoric and the Public Interest*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Wasserman, T. (2011, August 19). *Google: Click-Through Rates Fell in 2010* [STUDY]. Retrieved October 29, 2019, from Mashable website: https://mashable.com/2011/08/19/google-click-through-rates-fell-in-2010-study/

Waters, A., & Hargadon, S. (2017, Spring). Mind the misinformation. *Northwestern Campus Life*. Retrieved August 18, 2017, from http://www.northwestern.edu/magazine/spring2017/campuslife/mind-the-misinformation-david-rapp-explains-appeal-of-fake-news.html

Watson, R.A. (2016). Cartesianism. In *Encyclopedia Britannica.* Retrieved from https://www.britannica.com/topic/Cartesianism.

Weinberger, D. (2014). *Too big to know: Rethinking knowledge now that the facts aren't facts, experts are everywhere, and the smartest person in the room is the room*. Basic Books.

Weisberg, B. (2004). *Talking to the dead: Kate and Maggie Fox and the rise of spiritualism*. New York: HarperCollins Publishers Inc.

Wemple, E. (2019, April 11). Yes, Fox News matters. A lot. *Washington Post*. Retrieved April 14, 2019, from https://www.washingtonpost.com/opinions/2019/04/11/yes-fox-news-matters-lot/?noredirect&utm_term=.8ad57d66b52f

Westbrook, L. (1993). User needs: A synthesis and analysis of current theories for the practitioner. *Reference Quarterly*, *32*(Summer), 541–549.

Wiggins, G., & McTighe, J. (2004). *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development. Retrieved from https://www.ascd.org/ASCD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf

Wilson, L. A. (2001). Information literacy: Fluency across and beyond the university. In B. I. Dewey (Ed.), Library User Education: Powerful Learning, Powerful Partnerships (pp. 1-17). London: Scarecrow Press.

Wilson, P. (1983). *Second-hand knowledge: an inquiry into cognitive authority*. Westport, CT: Greenwood Press.

Wilson, P. (1983). *Second-hand knowledge: An Inquiry into cognitive authority*. Westport, CT: Greenwood Press.

Wilson, T. D. (1981). User studies and information needs. *The Journal of Documentation*, *3*(March), 3–15. doi:10.1108/eb026702

Wilson, T. D. (1996). *Models in information behavior search*. Sheffield, UK: University of Sheffield, Department of Information Studies.

Wintersieck, A. L. (2017). Debating the Truth: The Impact of Fact-Checking During Electoral Debates. *American Politics Research*, *45*(2), 304–331. doi:10.1177/1532673X16686555

Woolley, S. C., & Howard, P. N. (2018). *Computational propaganda worldwide: Executive summary* (Working Paper No. 2017.11). University of Oxford Computational Propaganda Project. Retrieved from USAToday website: https://www.usatoday.com/story/news/politics/2019/11/15/impeachment-full-text-marie-yovanovitchs-opening-statement/4202648002/

Wordsworth, W. (1802). Preface to Lyrical Ballads, with Pastoral and Other Poems. In (Eds.), Introduction to Theory and Criticism, (pp. 559-579). New York: Norton & Company.

Xu, H., Luo, X., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems*, *51*(1), 42–52. doi:10.1016/j.dss.2010.11.017

Yafushi, C. A. P. (2015). *A Competência em informação para a construção de conhecimento no processo decisório: estudo de caso na Duratex de Agudos (SP)* [Information literacy to construct knowledge in the decision-making process: a case study at Duratex Agudos (SP)] (Master's Dissertation). Retrieved from: https://repositorio.unesp.br/handle/11449/126599

Yang, H., & Oliver, M. B. (2004). Exploring the effects of online advertising on readers' perceptions of online news. *Journalism & Mass Communication Quarterly*, *81*(4), 733–749. doi:10.1177/107769900408100402

Yang, K.-C., Varol, O., Davis, C. A., Ferrara, E., Flammini, A., & Menczer, F. (2019). Arming the public with artificial intelligence to counter social bots. *Human Behavior and Emerging Technologies*, *1*(1), 48–61. doi:10.1002/hbe2.115

Yang, P., Zhao, G., & Zeng, P. (2019). Phishing Website Detection Based on Multidimensional Features Driven by Deep Learning. *IEEE Access: Practical Innovations, Open Solutions*, *7*, 15196–15209. doi:10.1109/ACCESS.2019.2892066

Yang, Z., Wilson, C., Wang, X., Gao, T., Zhao, B. Y., & Dai, Y. (2014). Uncovering Social Network Sybils in the Wild. *ACM Transactions on Knowledge Discovery from Data*, *8*(1), 1–29. doi:10.1145/2556609

Yi, Y. (1990a). Cognitive and affective priming effects of the context for print advertisements. *Journal of Advertising*, *19*(2), 40–48. doi:10.1080/00913367.1990.10673186

Yi, Y. (1990b). The effects of contextual priming in print advertisements. *The Journal of Consumer Research*, *17*(2), 215–222. doi:10.1086/208551

Young, K. (2017). *Bunk. The rise of hoaxes, humbug, plagiarists, phonies, post-facts, and fake news*. Minneapolis, MN: Graywolf Press.

Yu, J., Hu, P. J.-H., & Cheng, T.-H. (2015). Role of Affect in Self-Disclosure on Social Network Websites: A Test of Two Competing Models. *Journal of Management Information Systems*, *32*(2), 239–277. doi:10.1080/07421222.2015.1063305

Zattar, M. (2017). Competência em informação e desinformação: um olhar para os critérios de avaliação de fontes de informação [Information Literacy and Misinformation: a focus on evaluation criteria of information sources]. *Liinc em Revista*, *13*(2), 285–293. doi:10.18617/liinc.v13i2.4075

Zhou, X., & Zafarani, R. (2018). *Fake news: A Survey of research, detection methods, and opportunities.* Available in: https://arxiv.org/pdf/1812.00315.pdf

Zhou, Z., Guan, H., Bhat, M. M., & Hsu, J. (2019, January 5). *Fake news detection via NLP is vulnerable to adversarial attacks*. arXiv:1901.09657

Zhou, Z., Guan, H., Bhat, M., & Hsu, J. (2019). *Fake News Detection via NLP is Vulnerable to Adversarial Attacks*. doi:10.5220/0007566307940800

Zhuk, D., Tretiakov, A., Gordeichuk, A., & Puchkovskaia, A. (2018). Methods to Identify Fake News in Social Media Using Artificial Intelligence Technologies. In D. A. Alexandrov, A. V. Boukhanovsky, A. V. Chugunov, Y. Kabanov, & O. Koltsova (Eds.), *Digital Transformation and Global Society* (Vol. 858, pp. 446–454). Cham: Springer International Publishing. doi:10.1007/978-3-030-02843-5_36

Ziebell, W. (2018, June 9). Australia forms task force to guard elections from cyber attacks. *Reuters*. Retrieved from https://www.reuters.com/article/us-australia-security-elections/australia-forms-task-force-to-guard-elections-from-cyber-attacks-idUSKCN1J506D

Zuccari, P., & Belluzzo, R. C. B. (2016). A competência em informação e o perfil empreendedor no âmbito das organizações. *Perspectivas em Gestão & Conhecimento, João Pessoa*, *6*, 61–71.

Zur Institute. (n.d.). *What is digital ethics?* Retrieved November 20, 2019, from https://www.zurinstitute.com/clinical-updates/digital-ethics-101/

Zurkowski, P. (1974). *The Information Service Envirnomnet: Relationships and Priorities*. Washington, DC: National Commission on Libraries and Information Science.

About the Contributors

Kimiz Dalkir is an Associate Professor and Director of the School of Information Studies at McGill University. She has a Ph.D. in Educational Technology, an MBA in Management Science and Management Information Systems and a B.Sc. in Human Genetics. Dr. Dalkir wrote Knowledge Management in Theory and Practice (MIT Press, 3rd Ed published 2017), which has had an international impact on KM education and on KM practice. She recently published Intelligent Intelligent learner modeling in real-time and co-edited Utilizing Evidence-Based Lessons Learned for Enhanced Organizational Innovation and Change. Dr. Dalkir's recent research focused on success factors for collaboration in a shared economy for the aeronautical sector as well as the application of KM processes to archival research. Prior to joining McGill, Dr. Dalkir was Global Practice Leader KM for Fujitsu Consulting and she worked in the field of knowledge transfer and retention for 17 years with clients in Europe, Japan and North America.

Rebecca Katz is currently a doctoral candidate in the McGill University School of Information Studies. She holds a Master of Laws from the University of Ottawa and a BCL/LLB from McGill and has worked with the Ontario Ministry of Education and the Library of Parliament as well as in administration with McGill University. Rebecca teaches and conducts research at the intersection of law, policy, and information studies.

* * *

Esma Aïmeur is Professor at the Department of Computer Science at the University of Montréal. She is the Director of the Artificial Intelligence for Cybersecurity Lab. She works on privacy and security, applying artificial intelligence techniques to manage personal data in e-Learning, e-commerce and medicine. Her most recent research focuses on the ethics of artificial intelligence, social networks, security awareness, recommender systems, and privacy preserving. She was Program Chair of the 24 World Wide Web Conference 2016 workshops, In 2017, she has co-chaired MCETECH Conference on e-Technologies. In 2019, she has co-chaired the "Privacy Fairness and Transparency" track of the ACM UMAP conference. She is currently co-editor of the International Journal of Privacy and Health Information Management, associate editor for IEEE Transactions on Big Data and for Artificial Intelligence for Human Learning and Behavior Change. In addition Representative of the NSERC for the Panel Committee of the Canada-UK Artificial Intelligence Initiative: "building competitive and resilient economies and societies through responsible AI".

Salma Mariam Ayad studied media and communication at East Tennessee State University, where she focused her research on the effects of advertising on news reader perceptions.

Joan Bartlett is Associate Professor in the School of Information Studies at McGill University, and a member of the McGill Centre for Bioinformatics. Her research focuses on information behaviour and information interaction, particularly in the biomedical domain. She teaches in the areas of biomedical information and information literacy.

Mark Chong is Associate Professor of Communication Management (Practice) at Singapore Management University. An award-winning teacher, he writes and speaks widely about communication and is the co-author of Brainfruit: Turning Creativity into Cash from East to West (2011, McGraw-Hill) and Corporate Reputation Strategies: Lessons from the Asia Pacific (2012, McGraw-Hill). He is also associate editor of the SAGE Encyclopedia of Corporate Reputation (2016, Sage). Dr. Chong received his Ph.D. from Cornell University. Prior to joining academia, he worked for close to a decade in corporate and marketing communication.

Murphy Choy has over a decade's experience in data analytics and machine learning. His expertise lies in the use of data to develop solutions and products and drive business results. He has held senior management positions in data science, technology and operations. His work in the area of data refinery and analytics won him an award for best industry solution. He was also a former instructor at Singapore Management University, where he won a teaching award. In addition, he has extensive consulting experience with banks, financial institutions, logistics companies, airport, sea ports and governments. Dr. Choy holds a Doctorate of Professional Studies in Business Analytics from Middlesex University London, Master of Finance from University College Dublin, and Bachelor of Statistics from National University of Singapore. He also holds a Diploma of Economics from University of London and a Post Graduate Certificate in Business Research from Heriot-Watt University.

Mehmet Fatih Çömlekçi is a lecturer (Ph.D.) at Kirklareli University. His Ph.D. thesis is an ethnographic research on political communication strategies of the social movement organizations. Also, he is lecturing on new media communications and new media technologies. He is currently working on the social and cultural impacts of new communication technologies.

Lorena de Paula is an adjunct professor at the School of Information Science, Federal University of Minas Gerais (ECI / UFMG).

Nicole Delellis, after completing her Master's of Library and Information Science (LIS), is starting her PhD in LIS at the University of Western Ontario and joining Dr. Rubin's LiT.RL lab in fall 2019. Her undergraduate honours degree in English and Psychology at the University of Western Ontario has influenced her research endeavours to use a critical approach in examining human behaviour. With Professor Rubin as her supervisor, Nicole lead a two-term guided research project during her MLIS. Her research project was both an exploration of information literacy teaching methodologies, and an examination of perceptions about the incorporation of segments dedicated to 'fake news' within information literacy curriculum. After her pilot research experience, Nicole is now reassured in her desire to pursue her doctorate study in LIS.

Robert Andrew Dunn is assistant chair for the Department of Media and Communication at East Tennessee State University. He is also an associate professor and head of the journalism program. He teaches both journalism and mass communication courses. Academically, Dunn holds a Ph.D. in mass communication from the University of Alabama, a master's degree in mass communication from Florida State University, and a bachelor's degree in mass communication from Auburn University Montgomery. Professionally, Dunn worked in newspapers for nearly a decade. He served primarily as an education reporter and occasional legislative reporter for both the Tallahassee Democrat in Tallahassee, Florida, and The Ledger in Lakeland, Florida. He has also served as an instructor for Florida Southern College and the University of Alabama. Dunn's research focuses on avatars, virtual identity, mediated identity, media psychology, media effects, fandom, and communication technology. He also has a strong interest in journalism and media convergence. He is an avid gamer, dedicated sports fanatic, expert comic collector, enthusiastic sci-fi/fantasy devotee, frequent fan convention attendee, and Belgian beer buff.

Thomas J. Froehlich, Ph.D., is Professor Emeritus, School of Information, Kent State University (27 years). The majority of his published work is concerned with ethical considerations in the information professions, evolving in part from his philosophy background (Ph.D., Duquesne University). Dr. Froehlich taught in the areas of information science, ethics, network and software resources, online searching, and user interface design, and created and managed a Masters program in Information Architecture and Knowledge Management (2001-2011). He has provided workshops, training, seminars or presentations in 26 countries, primarily in the areas of online searching and the ethical concerns of information professionals. He has created and taught a course on the Age of Disinformation in Spring, 2018 with a reprise in Spring, 2019. His recent publications include: "A Not-So-Brief Account of Current Information Ethics: The Ethics of Ignorance, Missing Information, Misinformation, Disinformation and Other Forms of Deception or Incompetence," BiD: textos universitaris de biblioteconomia i documentació, December, 2017, available at: http://bid.ub.edu/en/39/froehlich.htm. His latest publication is "The role of pseudo-cognitive authorities and self-deception in the dissemination of fake news," that has been published in Open Information Science, 3: 115-136, 2019. Available at: https://doi.org/10.1515/opis-2019-0009.

Hicham Hage is currently an Assistant Professor of Computer Science at the Department of Computer Science, Notre Dame University – Louaize. He holds a Ph.D. in computer Science from the Université de Montréal, where he was part of the HERON laboratory, which conducts multidisciplinary studies in the fields of artificial intelligence, cognitive science, education, knowledge management and e-commerce. E-learning, Intelligent Tutoring Systems, Artificial Intelligence, Data Mining, as well as Security and Privacy constitute his principal research interests. In addition to his academic experience, Dr. Hage has several years of professional experience in software design and development, and in IT management.

Kristy A. Hesketh received her Masters in Library and Information Studies from McGill University's School of Information Studies and specialized in Knowledge Management. She is currently a Knowledge Management Specialist at Shopify, a Canadian ecommerce company, where she develops tailored information architecture and taxonomy solutions and presents workshops on knowledge sharing and content management.

Özgür Külcü is a professor at Hacettepe University, Department of Information Management. He has MS and PhD degree on Records Management in Hacettepe University Department of Information

Management, Turkey. He completed three post doctorial programs at UBC SLAIS Canada, UNC SILS and UC Berkeley iSchools. Dr. Külcü has been participated to the several international projects as InterPARES 3 Project, InterPARES Trust Projects (on long term preservation of electronic records as the Director of Team Turkey), EU AccessIT Project (on digitization and digital content management in the context of Europeana and LoCloud Project (on lightweight solutions for harvesting, aggregating and cloud solution for the digital cultural heritage resources like Mint, MORE and OMEKA). He has currently some graduate and undergraduate courses on organizational information and records management at Hacettepe University iSchool. His research interests are organizational information philosophy, information systems, electronic archiving and records management and social media researches. Dr. Külcü has 5 books and more than 30 research articles that some of them published in SSCI covered periodicals like International Journal of Information Management, ASLIB Proceedings, the Electronic Library, Canadian Journal of Library and Information Management. Dr. Külcü gives lessons at the levels of undergraduate, graduate and doctoral degrees on information systems and records management and manages postgraduate theses.

Stephen W. Marshall, Ph.D., is an Associate Professor and Chair of the Department of Media and Communication at East Tennessee State University. He is an expert on brand communication and digital marketing communication and actively consults for companies such as Coca-Cola and Adobe.

Daniel Martínez-Ávila is Assistant Professor at the Department of Library and Information Science, Universidad Carlos III de Madrid (UC3M), Spain, where he is a member of the Institute for Gender Studies (IEG), and a permanent professor the Graduate School of Information Science, São Paulo State University (UNESP), Marília, Brazil. His main research interests are knowledge organization, classification, and epistemology. He is a member of the ISKO Scientific Advisory Council and he collaborates and serves as International Coordinator at the Satija Research Foundation for Library and Information Science (SRFLIS), in India.

Mariana Mello is Masyer's Candidate in Information Science at Sao Paulo State University.

Maria Moura is a full professor at Federal University of Minas Gerais (UFMG).

Greg M. Nielsen is Professor of Sociology at Concordia University, Montreal. He is author of The Norms of Answerability: Social Theory Between Bakhtin and Habermas (Albany: SUNY Press); and Le Canada de Radio-Canada: sociologie critique et dialogisme culturel (Toronto: Editions GREF), co-author of Mediated Society: A Critical Sociology of Media. (Oxford University Press); Co-editor of Acts of Citizenship (London: Zed Books); and Revealing Democracy: Religion and Secularism in Liberal Democratic States. (Peter Lang).

Victoria Rubin is an Associate Professor at the Faculty of Information and Media Studies (www.fims.uwo.ca), and the Director of the Language and Information Technologies Research Lab (LiT.RL, http://publish.uwo.ca/~vrubin/lab/index.html) at the University of Western Ontario. She received her Ph.D. in Information Science and Technology in 2006 as well as her M.A. in Linguistics in 1997 from Syracuse University, and her B.A. in English, French, and Interpretation from Kharkiv National University, Ukraine in 1993. Victoria's research interests are in information organization and information

technology. She specializes in information retrieval and natural language processing techniques that enable analyses of texts to identify, extract, and organize structured knowledge.

Dana Tessier has designed and implemented knowledge management strategies for high tech companies in fast-paced and high-growth environments in locations such as the Philippines, the United States, and Canada. She is currently the Director of Knowledge Management at Shopify, where she is improving the knowledge resources for both the internal support team and for Shopify's customers. She is a graduate of McGill University's Library and Information Studies program where she specialized in Knowledge Management. She has published and presented on e-learning, information architecture, information seeking behaviour, knowledge sharing, and knowledge management strategy.

Index