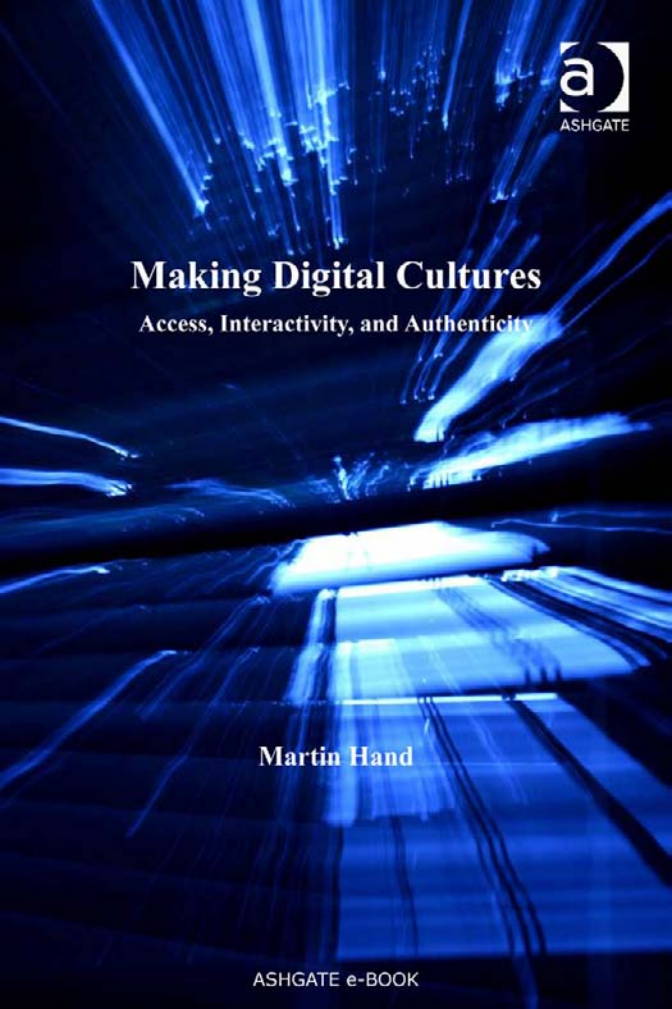
ASHGATE
Making Digital Cultures
Access, Interactivity, and Authenticity
Martin Hand
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MAKING DIGITAL CULTURES

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Making Digital Cultures

Access, Interactivity, and Authenticity

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ASHGATE

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Chapter 1

Making Digital Cultures: An Introduction

Introduction

This book examines how digital technologies and techniques are being enfolded into the fabric of specific institutional and broader cultural environments. It is about the cultural significance of shifts from analogue to digital but it is not about the triumph of digitization in any homogenous sense. It is often about the rather uneasy alliances between analogue and digital objects, practices and processes, and how we might understand this from both the lofty heights of theory and the grounded practices of those directly engaged with taking the digital turn. There is no definitive model of 'digital culture' and as such the book tries to explore and illuminate emerging tendencies at different moments and in different places, and from different theoretical angles. Instead of 'reading backwards' and finding the ends of such efforts, it looks at the digital turn inside three sites – the public library, the business organization, and the national archive – asking what is being made, how this is or is not achieved, and who or what we might consider to be the architects. For some of the advocates and detractors involved, shifting toward digital culture is primarily about the provision of 'access'; in other environments it involves engagements with novel business practices in relation to that 'interactive' digital culture 'out there'; for others it is wrapped in unresolved issues of memory making, authenticity and the possibility of managing histories. In examining the often diverse range of efforts to bring digital cultures into being, to reorganize existing institutional and other environments around sets of digital ideals, this book presents a different take on some of the dynamics of the seemingly inevitable 'convergence culture' in the twenty first century (Jenkins 2006).

To question ubiquity and inevitability might appear a strange way of proceeding in that anecdotally at least those in the west or global north appear to be fully immersed in all things digital. Many people now live in a culture of 24/7 instant messaging, iPods and mp3's, streamed content, blogs, ubiquitous digital images, and Facebook. It is noticeable that many more environments involve digital media of some sort, from the routine gathering of data, the ubiquity of software, to the presence of wireless technologies. It is also the case that increasingly, cultural, social, economic and political issues and concerns involve digital media, where digital media is both the channel *and* forms the central topic of discussion. This is most acute when an 'event' in news journalism becomes both dispersed through digital media (blogs, cameraphone images, web based commentary) and in turn invites reflection upon those media and their role in shaping the event, its reception and its ongoing re-

interpretation. In other words, the popular notion that digitization is having a major impact in almost all areas of everyday life is writ large and needs taking seriously. But we are also surrounded by even more paper, books, telephone calls, and material objects of one kind or another.[1] The juxtaposition of older and newer technological objects and practices is striking and it is this that provides the backdrop to this book. In the book, I bring together recent theorizing of the novelty of the 'digital age' with empirical studies of how different institutions are adopting these technologies in relation to older established technological processes and practices.

There is a plurality of possible understandings of 'digital culture'. But despite such a conventional observation, debates about digital culture do tend to have cohered rather firmly around three central and interrelated issues which form the narrative structure of the book: access, interactivity, and authenticity. I will simply introduce these key 'motifs' here.

Firstly, it has become clear that there are hugely significant social, political and economic resources in digital form but they are differentially located, managed and accessed. Within public policy and among those concerned with developing inclusive social policy it is thought that as many people as possible need *access* to these benefits in order to fully participate in digital culture. Such benefits might be educational and other governmental services, commodities, knowledge resources, popular culture, and so on. Obviously, as I will discuss, there are serious debates about quite what the benefits of digital information are, and how access might be organized, and so on. But there are few in social theory or in public policy who do not advocate universal public access to digital culture. Alongside the simple provision of information there are implications for what kinds of skills and competence are required, on the part of institutions and citizens, and what implications that has for modes of organization and identity.

Secondly, it is commonly argued that what is being accessed and how it is being accessed is qualitatively different from pre-digital resources and media in that it involves a high degree of *interactivity*. Such digitally enabled interactivity is thought to produce different relations between state and citizen, producer and consumer, culture and technology. It arguably transforms the roles of institutions, and is enabling a very different kind of culture to emerge, for good or ill. While there are many models or diagrams of interactivity, as we shall see, its pervasiveness as an idea is remarkable. The relationship between rhetorics, techniques and practices of interactivity are complicated and highly contested.

Thirdly, there seems to be a large question mark over the *authenticity* of digital culture in comparison to pre-digital or non-digital culture. There are complex questions about recognition, originality, truth, history, and knowledge, in relation to the character of digital information culture, when positioned against a model of non-digital culture. This is partly a cyclical argument about 'dumbing down', of

1 To take one example, a recent report by Statistics Canada entitled 'Our Lives in Digital Times' (2007) observes the dramatic rise in paper, telephone, mail, business travel, and physical retail space over the last twenty years, alongside equally dramatic rises in ICT use. This simple observation raises important questions regarding the relations between analogue and digital objects, practices and processes on the ground.

'banalization' and so on, but there is more to it than that. While the general metaphor of 'information overload' is less common today, the idea that the increasing quantity of information in whatever form has a detrimental effect on the quality of cultural content is a continual theme whether in entertainment, education, politics or contemporary art. Moreover, the idea of originality is thought anachronistic in an age of ubiquitous manipulation.

Of course, while these motifs have a contemporary resonance they also have longer histories partly related to disciplinary orientations and agendas in the social sciences and humanities. The theme of access is firmly tied to ongoing debates about the relationships between technology and democracy, both in the realm of political empowerment and cultural production. The notion of interactivity – especially between human and machine – can be located within computer and information science but also has a longer history within museology and literary criticism. Authenticity, and the more general concern about the fate of meaning under technology, has been an ongoing preoccupation, particularly within critical theories of modernity, technology and culture. So, there's nothing new about these concerns when considered in a rather general sense, but they do take new forms, in relation to novel and not so novel circumstances. It is the specific ways in which these are assembled, disassembled, and re-assembled – 'reshuffled' to borrow from Latour (2005) – that is of interest here. In other words, how digital cultures are being 'made' in this sense is the primary occupation.

What Does Digital Mean?

Digital information exists as binary digits of information, either 0s or 1s, sequences of which are usually called binary code or bytes. Digitization, then, refers to the process of converting different forms of information – and this might include sounds, images, texts, and so on – into this code. This information can then be stored, delivered, and received in digital form. Staying with this 'technical' definition there are some immediate implications. One is that the information has, apparently, no particular relationship to the system within which it is stored or through which it moves. The same sound recording can be stored via compact disc or mp3 file, played through streaming media player, iPod, and so on. A second implication is that in theory all information becomes 'the same' and can be produced and distributed on a scale and with a rapidity that is unprecedented. A third implication is the high level of rewriting or manipulation that can occur when there is an underlying code. The concepts of 'encoding' and 'decoding' in cultural studies take on a radically different hue in this regard. But even these claims to technical novelty are hotly disputed from the outset in media theory. Where some argue that the discrete nature of digital media is novel, others suggest that this is no different from cinema. Some claim the convergence of multiple media to be novel; others cite the medieval manuscript as not so far removed. What is also immediately apparent is how such claims are wrapped in broader cultural promises and threats which relate to the histories of computing and media and to the imaginary futures of digital culture promoted by various actors. In this sense, I take digital culture to be far more than the switch from analogue

formats to digital ones. Digitization is a cultural problematic in the broadest sense: it concerns the technicality of contemporary politics, society and culture. There is scarcely an aspect of contemporary culture that has not been discussed in terms of digitization.

Stating that there is no definitive model of digital culture but that we need to nonetheless explore it requires further explanation. We can begin with the general idea that 'culture' in a number of senses is increasingly digitally mediated, and that many digital technologies are increasingly 'cultural' in their form and effects – processes so central to much institutional discourse and practice that the moniker 'digital cultures' is thought to be justified as a description. Indeed, some have argued that new digital media have, in part, redefined what culture is:

> Digitality can be thought of as a marker of culture because it encompasses both the artefacts and the systems of signification and communication that most clearly demarcate our contemporary way of life from others (Gere 2002: 12).

In a more sociological vein, there has been an explosion of interest in the 'digital age', 'information age', 'technoculture', and so on in recent years. Information and communication technologies, the internet in particular, are commonly associated with a variety of dramatic social and cultural changes. This is often most acute in discussions about the impact of digital technologies upon traditional institutional identities and practices, and the consequences for citizenship and selfhood more generally. We hear of the irrevocable disembedding and deterritorialization of existing social relations within the generalized 'flows' of global information culture (Castells 1996; Lash 2002; Poster 2006).

One of the key problematics of emerging digital cultures is that they are mostly concerned with establishing the relations between analogue and digital materials, ideals and practices. The precise ways in which these relations are being organized and managed forms the core of this book. This is at odds with both 'revolutionary' accounts of celebration or lament, and the 'continuity' accounts of conservation or degradation. So, why call them 'digital cultures'? Well, the emphasis is upon '*making* digital cultures', and in a way this is what is being attempted, experiments in becoming more digital less analogue. It is argued that sets of ideals that have become attached to digital technology are informing institutional change. But, it does not suggest that this is being achieved in any simple manner or at all necessarily, and certainly not that there is any clear consensus as to what is being achieved and what the effects might be. This leads to the question of what 'culture' is taken to be in this book.

What is Culture?

Most academic texts about 'culture' begin with the observation that it is an especially difficult concept to define, going on to cite Williams (1983: 87) famous observation in *Keywords* that 'culture' is thought to be 'one of the two or three most complicated words in the English language'. Without simply repeating etymological senses or well-worn debates here it is necessary to offer an initial clarification of the senses in

which the term is to be used in this book, although these will be fully articulated in Chapters 2 and 3. I use the term in its more anthropological sense of 'forms of life', encompassing all aspects of our lived experience whether they be deemed 'ordinary' or 'sublime'. This is in contrast to definitions that refer to 'the arts' or to the aesthetic components of symbolic exchange and would encompass all institutional and ordinary conduct, structures and modes of organization. In particular, I see ordinary and often invisible conventions and routines as equally constitutive and meaningful as the more conspicuous aspects of cultural display, identity, and so on. I want to stress and elaborate two further orientations here. First, such forms of life are more or less 'produced' and 'organized' in a Foucauldian sense; our lived experiences are technically shaped and ordered through historically specific machineries. Second, such forms of production and ordering are uneven and have a specificity that needs to be empirically grounded, where as Latour has argued 'Culture does not act surreptitiously behind the actor's back. The most sublime production is manufactured at specific places and institutions' (2005: 175). I will elaborate briefly on these issues here, and how they relate to questions of digitization.

Culture is Technology Made Durable

Throughout the book I draw upon literature that theorizes culture as always a question of technology. Culture is a contingent arrangement of artefacts, knowledge, discourses, and practices within a given site. Sandywell (1996) emphasizes the point here in historical terms:

> In short, knowledge systems and technologies must be approached as reflexive media of human evolution…At all costs we must avoid technologism or the romanticism which rejects artefacts and instruments as alienating the human spirit. In historical fact we both act and think only by means of implicit or explicit technical logics – understanding that the vast sphere indexed by the Greek word 'techne' represents a complex history of reflexive self-definition (Sandywell 1996: 33).

In Sandywell's account, then, culture is the available descriptive repertoires and everyday competencies of actors made possible, in part, through existing technical arrangements (institutional and organizational forms of life). That is, we should think of social and cultural life as the *available apparatuses* of definition, exploration and experience as 'every aspect of human reality…are historical events mediated by cultural systems embodied in the stock of available technologies and corresponding interpretation systems (Sandywell 1996: 33). Or as Don Idhe states 'the technological form of life is part and parcel of culture, just as culture in the human sense inevitably implies technologies' (1990: 20). In its post-Foucauldian variant, there are only 'cultural technologies' which are governmental in that they actively shape or guide the possibilities of everyday conduct. Nikolas Rose (1995: 300) has argued convincingly that the history of who we think we are is not so much a matter of ideas but of technologies. By this he means technologies as 'instruments', which may be intellectual discourses as much as practical devices which shape the ways in which we can be human. When we isolate an aspect of technology, such as digital code for example, we ignore the other elements which constitute it; the ways of doing

things that are coupled with it, the roles humans are expected to play in relation to it, the practices of the self which orientate around it, and so on. For Rose (1999) and others such as Dean (1999) and Barry (2001) technologies conceived in this way are inextricably cultural and governmental. They do nothing less than enable 'things to be thought' and skills to be learned. As Foucault observed, a range of technologies work together in producing culture as increasingly governmentalized forms of life (Foucault 1988: 18). This emphasis on the technicality of culture has also found its home within Cultural Studies. I draw upon this conception of culture in terms of the detailed routines and operating practices of cultural institutions as used by Bennett (1998):

> …since cultural resources are always caught up in, and function as parts of, cultural technologies which, through the ordering and shaping of human relations they effect, play an important role in organizing different fields of human conduct (82).

I will argue that many institutions are currently preoccupied with the promises and threats of digitization. If, as suggested above, technologies are inseparable from institutional and organizational cultures then we would expect digitization to bring alternative cultural conventions and practices into being. This is be explored though two related dimensions in Chapters 2 and 3. The first is the narrative positioning of digitization within intellectual discourse. This has a number of significant elements to it. One is theoretical, concerned with how digital culture has been positioned in contrast to analogue culture, in terms of the dominant metaphors and tropes used to signify such differences. Another is historical; to do with how academic thinking about digital culture has itself shifted in relation to the pace and proliferation of digital machines. Indeed, for some, Foucauldian analyses of this kind are outmoded as more cultural objects and practices become informationalized (see Lash 2002).

The issue of narrative is significant throughout as I go on to argue that dominant tropes do not simply live in the academy: they 'script' digitization in particular ways, and operate as rhetorical vehicles for institutional actors seeking to embrace and implement digitization for locally specific ends. In that sense, these 'narratives of promise and threat' tells us something about digital culture at a general level and are also performative in the sense of providing some of the conceptual resources through which people make sense of what is going on 'out there'. As has been recently argued by Gere:

> But technology is only one of a number of sources that have contributed to the development of our current digital culture. Others include techno-scientific discourses about information and systems, avant-garde art practice, counter-cultural utopianism, critical theory and philosophy (Gere 2002: 14).

The second dimension is the character of digital experimentation and invention occurring within relatively bounded institutional cultures. In post-Foucauldian analyses there is a contingency but often a stasis and solidity implied in both the arrangements which constitute cultural technologies but also in the forms of engagement that might take place. We rarely learn, for example, about the ways in which practitioners of various kinds go about assembling and maintaining such

arrangements or how subject positions may or may not be taken up. I will argue that digital cultures have to be 'made', and this involves *ongoing* efforts to force together disparate elements into a coherent scheme within a given set of historically constituted boundaries. In the cases highlighted here, institutional cultures are being reorganized around *contested* notions of the digital. These are moments where some of the elements making up these sites are temporarily 'reshuffled' (Latour 2005), where specific innovations make visible the often invisible role of technologies and objects in the constitution of social order (Shove et al 2007). The important point is that ideals, technologies and practices have to be configured to make them durable, and that this takes *work*.

Culture is Local and Contingent

In this book I pay a lot of attention to accounts of culture as they are used by institutional actors of one kind and another. There are some important aspects to this. Firstly, the forms of positioning and guiding emphasized within post-Foucauldian analyses need to be supplemented with actual forms of engagement. The assertion of digital culture as a distinctive formation, whether in theory or empirically, involves the constitution of a prior culture taken to be real. Its disappearance is often then 'regretted'. This is what critical theory is about. But the same is often true of cultural practitioners where there are significant points of agreement and disagreement about what 'culture' is (especially in its 'high' and 'low' variants), what its relation to technology is, could or should be, and what kinds of strategies should be employed as a result. In this sense, I want to remain open to what institutional actors define as cultural and as technical, and so on. In institutional sites we have to be sensitive to (often contradictory or contested) definitions and accounts of 'culture'; these are often positioned distinctively against 'the digital'. The organization as a set of internally differentiated cultures is important here, particularly in terms of how actors within that site whether they be human or nonhuman are assigned roles and functions which are subject to reconfiguration and redefinition in terms of digital cultural ideals and expectations. The senses of new-ness or novelty in digital culture are not to be decided by theory or historiography alone – the ways in which the new and old are designated by practitioners, the forms of enabling and constraint rendered by these, the forms of closure and normalization at work, are all significant aspects of cultural production here.

Secondly, in drawing upon work in both new media theory and science and technology studies the intention is to question ideas about agency in relation to culture and technology. In new media theory, culture is most often seen as the outcome of media technology. Print media produce national culture, the modern state and citizen, and reflective subject of modernity, and so on (see Poster 1990). Broadcasting extends these capacities, and digitization radically unsettles and reconfigures institutions and the subject. Postmodern culture is thought to be largely an outcome of shifts in technical apparatuses. In science and technology studies there is also a strong account of technical agency and the production of culture, but these are cast in terms of 'relational materialism' and are local empirical questions. In pulling aspects of new media theory into STS inspired research there are three sets of

broad relationships which are explored throughout the book. The relations between accounts of digital technologies (their form, content and 'effects') and current ideals of institutional reorganization (becoming 'interactive', empowering users, becoming 'direct', and so on). How modern social and cultural institutions (libraries, financial organizations, and archives) are appropriating digital technologies such as Web pages, HTML text, databases, record keeping and imaging techniques, and the reciprocal transformations involved in such processes. The relationships between digital technologies and other artefacts, such as paper, forms of writing, telephones, and so on, as elements within the material culture of institutions. Taken together, the studies here take the technologies themselves seriously and look at them in some detail, but they are always technologies *in local use*, hence the focus then upon the institutional locations of the 'same' technologies and techniques.

Each of the institutional sites explored in the book provides a range of angles from which to look at digital culture in-the-making in the above senses. The library, financial services, and the archive can all be considered cultural technologies in the Foucauldian sense. They are contingent arrangements of ideals, artefacts and practices which order forms of knowledge and seek to guide practices of learning, securitization, and knowledge acquisition. There are some other important dimensions to these particular sites. First, there is a temporal distance between the analyses offered in the book, and I am suggesting that these speak to three significant moments: in the first case where access is all, and where there is little mobility of devices; in the second where commerce appears boundless and immateriality rampant; and in the third where Web 2.0 is ascendant and materiality seems to become more important again. These are not technologically determinist in nature; they are matters of taking both the objects and the accounts of practitioners seriously. Second, there are also public and private sector differences in each case, especially in light of the notion that such a boundary is collapsing in relation to digitization and convergence. Third, there are differences in the cultural sector between libraries and archives which are significant in relation to the idea that digitization is 'the great leveller'. Fourth, there are important differences in focus and concern within each site which provide some insight into the contested nature of digital ideals or myths on the ground, and also raise questions as to how specific concerns 'trump' others in these locations. These differences do not 'cover' digital culture as such, but are three different angles on important local differences and tell us something about continuities and discontinuities within and across institutionally defined digital cultures.

The Chapters

The book takes as it starting point the dominant narratives of the 'digital age' and the concomitant implications for the transformation or reinforcement of existing political, social and cultural arrangements. Chapter 2 provides a detailed discussion of key ideas and concepts drawn from social and cultural theory concerning what the 'digital turn' might involve and is organized around what I have called 'narratives of promise and threat'. In historical terms, new technologies (especially those considered to be technologies of mediation) have generally been articulated within

a wholly positive framework initially, followed by more negative discourses as initial promises fail to materialize. Indeed, this does seem to be an institutionalized form of sociotechnical discourse; a broadly utopian/dystopian framework operating chronologically (Heim 1999; Winston 1998). The articulation of the Web and associated digital technologies within such a dialogue seems remarkable in a sense; one would have at least anticipated a decline in the utopian predictions surrounding new technologies over the course of the 20th century (Woolgar 2002). But, the Internet and the Web has been discursively constructed within a benign framework, as a technology of 'world transformation' and democratization, if regulated and governed in the appropriate manner (or not at all). Accordingly, we have also seen the emergence of its antagonist, a dystopian discourse of total technologization, articulated in wholly negative terms. This has, in part, been an historical event or a 'realist' reaction to diverse forms of 'network idealism' (Heim 1999). While engaging in this debate and situating it in relation to the changing status of 'culture' over the last ten years, the discussions are organized around three interrelated themes.

Firstly, the idea that the circulation or movement of digital information around the globe constitutes a radical shift in social and cultural organization. This invokes concepts of networking, flattening, and the de-differentiation of institutional structures through the primacy of the network and of information flows. There are new forms of circulation emerging which override or replace older modern structures, where culture has in a sense replaced the social, or where networks are thought to be the dominant mode of organization. Secondly, the notion that new kinds of territory have emerged is discussed. This includes processes of 'extra', 'de' and 're' territorialization, in terms of 'lifted out' cyberspaces and new modes of inclusion and exclusion. There are new relations between persons and environments in terms of data, which may be increasingly local and regional as well as global. Thirdly, issues of what it means to participate in digital culture are raised in two senses. One has to do with new kinds of persona imagined in relation to the rise of the Web, especially in relation to citizenship. The second thread concerns debates around the meaning of interactive digital cultural objects and practices, often understood in terms of the march of the brand, commodification and the simulation of culture.

A second intellectual debate is traced in Chapter 3. The implicit theories of technology in the dominant narratives of digitalization discussed above are explored. If digital culture is primarily framed through a pervasive dualism of revolutionary change versus continuity then, I argue, subtle forms of determinism underlie both types of accounts. Indeed, ongoing work in science and technology studies or the 'anthropology of technology' suggests that much social science has failed to understand the complexity and reflexivity immanent to sociotechnical processes. Rather than provide an overview of this work (see Sismondo 2004), the aim is to show how such theories of technology have shifted from varieties of essentialism to models of performativit*y* and how this changes our understanding of digital technology in practice. In doing this, the chapter identifies three kinds of ontological commitment in relation to digital technology found in the above accounts: essentialism, abstraction, relational materiality. It is argued that these arise through broader commitments to modes of theorizing, namely modern, post-modern and non-modern (or 'post-human') orientations to theorizing culture. It is the latter

set of accounts which is taken as the most productive in its ability to both avoid an ontological commitment to either side of the dualism apparent in Chapter 2, *and* to treat this dualism as a key constituent in the 'materials of digital culture'.

The second part of the book looks at three quintessentially modern institutions: the public library, the business organization, and the national archive. Chapter 4 explores key debates and practices around what has been called 'digital citizenship', in relation to public access to digital culture in the form of knowledge. The ubiquitous narrative of public information *access* associated with digital technologies acts as the central motif here, in terms of how this has been constituted within government policies regarding models of e-citizenship (in the UK and North America) and within specific cultural institutions charged with delivering these promises. With some similarity to the ongoing anticipation of a 'paperless office', the end of the 'paper library' has been continually predicted since at least 1964 (Lesk 1999; Samuel 1964). The emergence of the so-called 'digital library' represents the latest future imaginary within this institution. In a progressive narrative, the digital library will replace the need for print-based information resources, translated into digital formats to be accessed via the screen. Information will be set free of its restrictive print format and a truly democratized public information service will emerge.[2] The narratives of digitization in the library shifts learning from 'instruction' to 'empowerment', entailing an institutional move from custodialism to interfacing, and a promotion of citizen engaged in indefinite learning. In this sense, the Web (as the latest information machine) has become a powerful set of cultural discourses about the traditional purposes, functions, and effects of public libraries in contemporary information cultures.[3] After providing a concise review of the major governmental rationale of public information access, the chapter focuses upon how public libraries have been responding to both the generic narrative of becoming 'information interfaces', specific government policies, and the perceived 'needs' of their users. A documentary and interview based case study of the development of *The People's Network* in the UK is the primary empirical research used here. I critically engage with both the discursive and material processes involved in attempts to shift the image, function and use of public libraries in relation to digitalization. Digitalization has become the rhetorical and material 'vehicle' of earlier ideas associated with library postmodernization (access, empowerment, and participation), but is subject to ongoing contestation in unusual ways and in relation to the cultural-ethical specificities of the institution.

Of course, the technologization of the public library is not an unprecedented phenomenon; in fact, the public library has continually been at the forefront of information technology implementation. This has most often been associated with improvements in service and efficiency. However, the relationships between public libraries and new technologies have always produced more dystopian speculations

2 This image bears a striking similarity to Vannevar Bush's imaginary 'memex' system, which also envisaged a democratized repository of information/knowledge.

3 We can find similar discourses of empowerment and self-directed learning and 'improvement' within, for example, contemporary museums. See for example: Bennett (1998); Boswell and Evans (1999); MacDonald and Fyfe (1996*);* Hooper-Greenhill (1994).

concerning the inevitable obsolescence of the traditional library as a public space, and most importantly, the demise of specific practices of learning 'about culture':

> Book learning is almost entirely superseded by radio, the cinema and television, and all public libraries report a steady falling-off both in the number of borrowers and in the average number of books borrowed by each.[4]

The second motif of 'interactivity' is explored in relation to ecommerce. In Chapter 5 I go inside a major financial services company to track an attempt to produce digital interactivity between company and consumer. Why might we look at financial services in a book about digital culture? A simple reason might be that business organizations do not only 'have a culture' but as suggested above are cultural entities in their own right as configurations of meaningful ideals, technologies and practices (Morgan 1993; Thrift 2005). Further to that, many such organizations are increasingly involved in the production of explicitly cultural goods and services in the form of software based objects and services, especially in relation to their own branding processes. As Lash and Lury contend:

> …cultural objects are everywhere as information, as communications, as branded products, as financial services, cultural entities are no longer the exception: they are the rule (2007: 4; see also Lury 2004).

In terms of the broader cultural environment and its relation to governmentality, over the last 20 years or so deregulated financial services have become increasingly significant as cultural technologies as they construct ever more risk activities and provide the 'solutions' to them through their provision of products which seek to order the life course (Beck 1999; Lash 2002; Lyon 2001).[5] In this latter respect, insurance industries, along with pension funds and other related financial techniques and instruments are at the forefront of the 'risk society' (Beck 1992, 1999). Substantively, the chapter looks at the creation of 'digital products'. Where Chapter 4 focused upon external public access to digital services, this chapter explores attempts to integrate different software (integrating a variety of databases, HTML documents, and external 'links') 'inside' the business organization with a view to delivering 'interactive' and immaterialized digital products and services. The specific focus is the financial services industry in the UK, and their attempts to digitize their organizational form, delivery and product. The chapter provides a concise account

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4 'The Library Service', *Local Government Journal*, 23 January, 1932, cited in Black (2000) p. 157.

5 UK Financial Service industries underwent economic deregulation during the 1980s, producing a highly competitive environment for insurance provision. The sector is now self-regulated by the *Financial Services Authority* (FSA). There are many other agencies providing 'personal finance' and 'personal finance education'. For example, *the Personal Finance Education Group*, *DSS Pensions education working group*, *Money Management Council*, and a plethora of consumer interest groups and 'watchdogs'. There are now many companies offering financial services (in the form of assurance, insurance, loans, mortgages, credit cards, and so forth) not previously associated with this sector. Moreover, insurance has become associated with a range of previously unrelated services.

of the notion that digital technologies enable corporations to simply dispense with intermediaries between producer and consumer – becoming more 'direct'. On the inside, this is further articulated in terms of the shift from web marketing to an 'imperative to connect' (cf. Green et al 2005) and further toward an imperative to produce seamless producer/consumer *interactivity*. This is given substance here in terms of how different teams within a specific organization attempt to 'force' digital software into their own frames of reference and vision of the economic future. Attempts to integrate digital and non-digital techniques ultimately fail in this case, where the removal of human intermediaries both creates a chronic awareness of the web as medium and reveals how older media such as writing embody and 'perform' cultural values of trust and recognition. Organizations such as this are forced to multiply non-digital elements rather than erase them.

In Chapter 6 I consider the significance of authenticity in relation to modern memory in the digitization of national archives at the present time. The modern archive can be viewed as a cultural technology in a number of ways. Firstly, much like the museum, acquisition involves the selection of material culture deemed significant for the construction of national memory. This has occurred in the context of governmentality and the requirement of more detailed information on populations, territories and the categories of knowledge themselves (Foucault 2000). The relation between the regulated housing of documents in the archive site and the possible forms of political power has been theorized in terms of how what is contained in the archive delimits what it is possible to know and say (Foucault 1972; cf. Featherstone 2000). Secondly, the archive has sought to establish culturally specific epistemological credibility through the employment of classification systems (diplomatics) which conceptualize the precise components of a record in order to judge its reliability and authenticity. Thirdly, accounts of national culture and memory are made available through the development of storage systems and retrieval techniques which can locate records and their relation to other records, maintaining the integrity of their content (reliability) and their unaltered meaning (authenticity). In these ways, the culture in the archive is a set of organized and organizing technologies and practices which 'produce' memory through both classification and the practices of historical research as much as 'preserve' it. Changes in the nature of such technologies and associated practices produce different forms of memory, in that different 'things' are remembered and they may be remembered differently.[6]

In this light, it has recently been suggested that the archive, as a largely private storehouse of public documents, is becoming 'unbound'. The digitization of culture reverses modern archival practice by publicizing private life through the participatory technologies of Web 2.0 (Beer and Burrows 2007; Gane and Beer 2008). The archive

6 In this vein much has been said in recent years about history coming to an end. This narrative has taken a variety of forms: the end of economic history after the post-industrial revolution (Fukuyama 1999); the end of human history after recognition of the non-human and the biosciences (Hayles 1999); and the end of historicism itself as an effect of postmodern theorizing and the transformation of knowledge (Lyotard 1984); among others. The latter account has been relatively influential among some archivists keen to jettison their Enlightenment doctrines.

theory and politics of Michel Foucault (1972) and Jacques Derrida (1995) is thought outmoded by the shift from texts to digital collages, 'mash-ups' and mobile multi-mediated cultural forms. Where the archive existed as a technology of written memory, it is outmaneuvered by networked memory traces readily accessible to anyone, anytime and anywhere (Poster 2006).[7] For some, this means a loss of the previous 'texture' and granularity of cultural forms, where memory-objects become data and that data is simply a surface. Where there has been an explosion of alternative memory practices, the authenticity of the archived cultural form appears problematized. I take a different route by examining what is actually happening in this context *inside* the archive site, in this case the 'total archive' of *Library and Archives Canada* in Ottawa. Foucault and Derrida may appear outpaced, if indeed their abstractions ever really got to the heart of archiving as an art or practice, but what of the archivist and the infrastructure of the archive? What happens when the national archives are expected to become digital cultures?

In the final chapter I signal some broad connecting arguments around information and materiality, forms of subject positioning across these sites, and finally the issues of loss and recovery in digital culture.

7 Moreover, from this point of view sociology itself, as an institution and an innovative method, is thought to be outmanoeuvred by the speed of cultural digitization and the rise of 'commercial sociology' (Gane 2006; Beer and Burrows 2007; Lash 2002; Savage and Burrows 2006).

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Chapter 2

Hardware to Everyware: Narratives of Promise and Threat

Introduction: Planetary Information Culture

In this chapter, I will map the dominant narratives of digital culture at the broadest level – including economic, social, and political dimensions – and identify their key metaphors and tropes. It has become a commonplace to describe the current era in terms of a global or even planetary information culture, made possible by the development of information networks such as the Internet (for example Lash 2002; Poster 2006). There is more digitally produced information in the world, it is circulated at great speed in various forms on a global scale, and it appears infinitely variable and insecure. The Web and burgeoning digital devices of one kind or another are thought to enable significant connections between, and transformations of, previously local temporal and spatial boundaries, physical resources and relations. The global or planetary developments labelled 'information age', 'reflexive modernity', 'informational capitalism', 'new information order', and 'liquid modernity' among other designations, are also represented as novel fusions of distinctive cultural systems and processes with new technical artefacts. Most commonly, narratives of digital culture imbricate western models of democratization with enthusiastic accounts of information technologies. For some, such technology is instrumental in broader restructurings of modern society, replacing structure with flow, state with network, hierarchical knowledge with horizontal information, and perhaps even human with 'post-human' (cf. Gane 2004). For others, the use of the term 'information age' or 'digital culture' is hasty or simple determinism, reifying either information or technology as great levellers, an ideological rhetoric which has the effect of glossing an increased penetration and 'hardening' of global capitalism.[1] In the former case, digitization is conceived as indicative of a break with particular modernities, in terms of socioeconomic structures and/or cultural objects and practices where information flows take precedence over structural forms such that 'The information order is inescapable' (Lash 2002: xii). In the latter case, the Web is viewed as augmenting the continuously dominant structures of capitalism:

> [T]he information highway will be grafted onto a global capitalist system already characterised by vast and growing inequality, economic stagnation, market saturation,

1 For literary critiques see Jameson 1990 and Eagleton 1998; see also Golding 1998 and Mansell 1999. Change is thought inseparable from the *material* bases of so-called postmodern culture, and the relations between networked information, capital, and monopolies of power.

> financial instability, urban crisis, social polarisation, graded access to information, ecological degradation, etc. (Dawson and Foster 1998: 63).

In both cases digital technologies are now *the* engines of promise and threat in a global information culture. For populist celebrants (including government departments, corporate bodies, journalists, academics, and activists) the digital information revolution will not only massively extend the volume and flow of information exchanges across traditional boundaries and divisions, but also by necessity create new institutions and identities, strengthening the forces of democratic 'interactive' culture. The Web, in this framework, is regarded as an increasingly important force for social inclusion and empowerment, interactive citizenship, and participatory democracy in the post-postmodern world (cf. Dyson 1998; Leadbeater 1999; Rheingold 1994; Rifkin 2001). The global armatures of the Web will, it has been repeatedly claimed, revolutionize the processes of deliberative democracy and help build a genuinely communitarian civic culture, constituting a 'brave new world where heart and soul are restored to the body politic by giving voice to the voiceless and public space to the individual' (Odone 1995; see also Leadbeater 1999). In addition, the promise encapsulated by both the media and the message of digital culture is one of affluence for all and an ever-rising spiral of customized consumer choice. With a generalized 'disembedding' of social relations from their local cultural contexts, global mobility and marketization not social division and class struggle are the watchwords of the new cultural landscape (Bauman 2005; Castells 1997; Giddens 1990).

Of course, entanglements of sociopolitical, cultural and technological forms have been central in much of globalization or glocalization theorizing for some time (Featherstone 1995; Held 1995; Robertson 1992; Urry 2003). Globalization and complexity theorists have argued that current digital technology in its convergent forms is implicated in all major political, economic, and cultural changes at every level of the social formation. Contemporary culture has been technologized on a scale and with a speed that is wholly unprecedented. We increasingly live in a world where nation-state boundaries become permeable, if not insignificant, when considered in terms of the flow of digital resources, the interoperable inter-connected infrastructures, and the perpetual interfacing of the screened world. This new order of reflexive or 'soft' capitalism promises a reconstruction of the polity, inaugurating a process of global/glocal civic connection, reconnection, and renewal. Here the new global economy, information culture, and political systems are inseparably entangled within a flattened and convergent 'technological culture' (Lash 2002; Melucci 1999; Ohmae 1994; cf. Thrift 2005).

The expansion of information technologies on a planetary scale also creates novel threats and specific 'crises' produced by these circulation and flows. For some, as (national) cultures become part of seemingly uncontrollable global circulations of information, the stability and perhaps even the existence of traditional institutions, practices and associated identities undergo processes of 'liquefaction' (Bauman 2000). As Melucci observes, in the context of eroding national identities:

> The circulation of information ties the world system together and raises new trans-national problems over the control, circulation and exchange of information. At the same time, it

> inflates the issues and arenas of conflict into worldwide proportions. The geographical localization of a problem becomes of secondary importance compared with its symbolic impact on the planetary system. The processes of globalisation reactivate ethnic and local conflicts that seek to give a stable and recognizable basis to identity in a space that has lost its traditional boundaries (Melucci 1999: 416).

In the context of informational globalization, *culture*, in terms of shared symbolic and material resources and relations, increasingly circulates *as* information, detached from national institutional structures, modes of representation, and traditional understandings and operations of power (Lash 2002; Lury 2000; Poster 2006). Planetary information culture, produced and exchanged through the capillaries of the Web, is at once dis-embedding and re-embedding cultural objects, relations and structures. For the information theorists, the flows of digital information have actually become the locus of power, the production of both difference and value, and perhaps even critique itself (cf. Castells 1996, 2001; Lash 2002; Sandywell 2003). The Web has become the definitive new media of late or post-modern culture: a largely disorganized and perpetually reflexive culture of information flows and unruly objects. The consequences of information driven reflexivity are that 'culture' is no longer 'out there' as ideological, symbolic or representational, but rather:

> [Culture] is so ubiquitous that it, as it were, seeps out of the superstructure and comes to infiltrate, and then take over, the infrastructure itself. It comes to dominate both the economy and experience in everyday life (Lash and Lury 2007: 4).

While not simply an outcome of digitization, it is argued that digitization enables and intensifies processes of circulation, flattening, de-territorialization, and de-differentiation, and for new kinds of objects, subjects and practices to become emergent and convergent in a transition from analogue to digital cultures. Such a transition, if indeed that is what it is, has significant and even profound implications.

In what follows, I expand on some of these images to develop a broad discussion about this transition from analogue to digital culture. Debates about what is happening and what is at stake have often cleaved into utopian and dystopian narrative clusters (Hand and Sandywell 2002). The debates I will discuss here take many more subtle forms but are primarily concerned with issues of power in relation to culture and technology, most commonly tied to globalization issues. In asking what kinds of broad cultural changes and continuities are thought to relate to digitization, there are two significant material and narrative shifts that remain in the background within this chapter. Most clearly, what was previously visible as the hardware of technoculture and information culture is now increasingly invisible as the *infrastructure* of contemporary digital culture, particularly with regard to developments known as Web 2.0 and the notion of ubiquity where 'the project of everyware is nothing less then the colonization of everyday life by technology' (Greenfield 2006). What we have also seen is a general shift in academic analysis from the largely hopeful to the increasingly negative to the agnostically local and empirical. These three 'waves' of Internet or Web studies began by asserting a new autonomy for culture in the form of cyberspace, moving toward bottom-up analyses of social networking and cultural appropriation, and now primarily centre upon understanding processes of

convergence and ubiquity from a variety of angles. This is perhaps indicative of social and cultural theory engaging in a perpetual but increasingly problematic game of catch-up with the speed of technological change from hardware to software to everyware (Beer and Burrows 2007; Lash 2002; cf. Gane 2006). It is certainly the case that the dominant metaphors of network, fluid, circulation, interactivity, and so forth have a direct resonance with experience on the ground in the contemporary moment, whether for good or ill (Urry 2000).

The discussion is organized around three interrelated themes. Firstly, I discuss the idea that the circulation or movement of digital information around the globe constitutes a radical shift in social and cultural organization. This invokes concepts of networking, flattening, and the de-differentiation of institutional structures through the primacy of the network and of information flows. There are new forms of circulation emerging which override or replace older modern structures, where culture has in a sense replaced the social, or where networks are thought to be the dominant mode of organization. The question of speed is thought to be central in altering the objects and conditions of contemporary capitalism producing scenarios of immediacy, 24/7 communications and the transformation of culture into indifferent information. Such transformations invoke discussions about the texture of digital culture, of democratization but also of uncertainty, loss and disappearance. Narratives of circulation and networks will be discussed primarily in relation to the state.

Secondly, and in partial corrective to overstated accounts of flow and fluid, the notion that new kinds of territory have emerged is discussed. This includes processes of 'extra', 'de' and 're' territorialization. For some, entirely new territories and cartographies have emerged, particularly in the form of 'lifted out' cyberspaces. For others, these cultural-informational environments are weaved into existing materialities and are shaped by their organizational logics, which involve modes of inclusion and exclusion. There are new relations between persons and environments in terms of data, which may be increasingly local and regional as well as global. While there is novelty in digital technology, it may be grafted onto or already is embedded within larger structures of power and domination in the context of 'panoptic, globalized, post-fordist capitalism' (Taylor and Harris 2005). Moreover, the global circulation of information (whether images, text, sound) may result in catastrophic loss – of meaning, of authentic culture, of democratic forms, of community ties, and so on (Bauman 2000).

Thirdly, issues of what it means to participate in digital culture are raised in two senses. One has to do with new kinds of persona imagined in relation to the rise of the Web, especially in relation to citizenship. We hear of new cybercitizens drafting their own laws and fulfilling some of the older promises of democratic representation. For others, however, digitization further atomizes the subject, promoting the citizen-consumer in a world of unparalleled but ultimately meaningless choice. Issues of empowerment and disempowerment in digital culture are paramount in this sphere. The second thread concerns debates around the meaning of interactive digital cultural objects and practices, often understood in terms of the march of the brand, commodification and the simulation of culture.

In discussing what is thought to be at stake for culture as a consequence of digitization I suggest that three key motifs – access, interactivity and authenticity – are continually invoked as central problematics, encompassing a diverse range of intense debates. There is intense cultural preoccupation with, and great disagreement about understandings of access to digital culture, what is meant by interactivity, and how notions of authenticity are problematized in digital cultural life. These themes encompass economic, technical, political and social dimensions which will be weaved together here. As I will argue later, in a sense they have a life of their own as powerful narratives or repertoires which have in part shaped changes 'on the ground'.[2] In other words, a number of the processes identified are important in their own right but are also key to understanding debates *within* institutions and organizations concerning what is happening 'out there' and how best to respond.

Circulation, Networking, Flattening

> Texts, images and sounds now travel at the speed of electrons and may be altered at any point along their course. They are as fluid as water and simultaneously present everywhere (Poster 2006: 24).

Mark Poster's image of an emerging digital culture privileges the circulation of digital cultural objects through information networks, flattening relations of power in the sense that cultural objects are no longer fixed and the previous granularity of production/reception, encoding/decoding, human/machine no longer hold. The hierarchies of modernity or print cultures are thus effaced. Lash (2002) speaks explicitly about circulation and flattening, but more in terms of the explosion of the difference between action and reflection. In what he calls 'technological forms of life', where man/machine interfacing becomes a condition for the possibility of everyday life, reflexivity has become practice and that practice is communication. In other words, any delay or distance between doing something and thinking about it is lost in the global information culture. In both cases the transition from analogue to digital inaugurates a fundamental shift in time-space relations and the end of culture as a representational, super-structural or epiphenomenon.

Notions of this kind are quite different from what we can now call 'first generation' Web studies.[3] In this literature nothing less than an autonomous cultural sphere was thought to have emerged – *cyberspace* (Jones 1995; Rheingold 1994). The important aspect of this was precisely the distance between that (cyber) space and other kinds of (physical) space. Where culture in all its forms is now thought to be thoroughly digitized through the convergence of media, industries and services, cyber culture was theorized as a novel cultural realm which existed somewhere else. In their technophilic forms, cyberspatial theories saw new electronic or digital technologies as a hugely significant technical fix for the structural failings and

2 Perhaps these accounts have some kind of agency in themselves, a 'cultural circuit of digitalism' so to speak (Thrift 2005).

3 Waves are shorter from the perspective of 'Internet time'.

limitations of western democracies. In technophobic form, cyberspace represented an extra-territorial culture, an autonomous realm for elites and self-excluders (Bauman 2001). Following the legacy of McLuhan, many commentators have envisaged the architectures of the Net as producing a democratized model of communication, which necessarily circumvents the traditional institutions of governance:

> The political significance of CMC (Computer Mediated Communication) lies in its capacity to challenge the existing political hierarchy's monopoly on powerful communications media, and perhaps revitalise citizen-based democracy (Rheingold 1994: 14).

While notions of communicative interactivity and citizen empowerment have become central to nation-state governmental thinking, 'grass-roots' democratic movements and new social movements of all persuasions have also appropriated this terminology to conceptualize alternatives to state-orientated governance through more radical forms of democratization. As such, these have become key rhetorics of future governance (and future forms of citizenship), whether global, state, or local forms of institutional or non-institutional governing. For many utopian commentators, the transcendent flows of electronic information described as cyberspace are thought to constitute a paradigmatic change in power relations.[4] At their most simplistic, technophilic accounts of 'electronic', 'cyber', 'tele', and 'digital' democracy perceive new computer networking technologies as simply a technical fix for all the failings of western representative democracies.[5] In this triumphalist narrative, the future is one of expanding virtual communities increasingly impinging upon and reshaping actual communities to create a new cyber-republic of voluntary associations and interest groups:

> One benefit of the Internet is that it allows for the formation of communities independent of geography … [it] will involve a growing portion of the population in this kind of governance, and their feeling of empowerment will spread to other parts of their lives (Dyson 1998: 44-48).

For the *Neterati*, the Internet is thus not merely an efficient medium of rapid communication and message flow, but a force of renewed political communication and even moral and spiritual regeneration. With a computer screen in every home and every home wired up to the Web, the possibilities of interactive civil communication are thought to be unbounded. Hence, the renewed interest in the politics of the lifeworld and civil society and ubiquitous scepticism about the role of centralized state solutions to social problems. What is mooted here is something of a radical sea change with respect to political sensibilities and attitudes toward the authoritative agencies of governance. The Web is an anarchical habitus embodying free-flowing information, which escapes state control and monolithic corporate governance

4 For example, Howard Rheingold's visions of a democratized public sphere, the virtual community, able to construct local/global forms of participatory discourse, outside of state control (1994). Also the concept of cyberspace as an arena in which to re-construct identities (cf. Stone 1996).

5 See Hague and Loader's (1999) useful overview and critique.

(Barlow 1991; Dyson 1998; Poster 1999; Rheingold 1994). From this perspective, 'local governance' in a decentralized polity holds open an image of a necessarily democratic cyber-sphere, founded upon well-informed, technologically empowered citizens. In the new electronic polity, 'the Net will foster activity instead of passivity' (Dyson 1998, 49). In the terms of this story, as the 'virtual' architecture of the Net operates beyond the reach of traditional power elites, all that will be required to ensure the creation of cosmopolitan values is universal access and a 'will to strong democracy' (cf. Sclove 1995).

Of course, such thinking was not and is not confined to those in awe of cyberspace. State and corporate bodies responded to this apparent state of affairs, where the rise of cyberspace was thought to herald a fundamental shift in the nature of power in an information age, especially in relation to the decline of national or sovereign territories and institutions. These responses can be seen as part of the explosion of interest in the democratic potential of utilizing networks of machines and cybernetic media that appear to obliterate the 'obstacles' of time, distance, access, and knowledge, associated with traditional democratic institutions and participatory practices.

The idea of circulation has two key dimensions in relation to political culture. First, digital technology is thought to enable a connecting of the world, so to speak, producing the figures of the world or global citizen and the possibility of imagining a planetary culture. Second, the circulation of digital information and cultural goods in general is thought to decentralize the bases of power and national institutions of cultural communication on a global scale The idea of 'world citizenship' or 'global civil society' in recent social and political theory has most commonly been associated with the emergence of both transnational governmental institutions such as the IMF and World Bank, NATO, the EU and Group of Seven (G7), UNESCO, and a spate of non-governmental organizations (NGO's) for example Greenpeace, and Amnesty International. These institutions, in turn, function in a political-economic space made possible by the world of transnational corporations and digital communications media. The emergence of these two types of transnational system has been interpreted as a consequence of globalization from above and from below respectively (Beck 1992, 1999; Held 1995). If the former represents attempts by political institutions to offset globalized risk (inflation and monetary destabilization, population growth, the influx of 'aliens' into capitalist space from the 'undeveloped world', money laundering, the international trade in drugs, and so on), the latter represent new sub-national forms of action and thinking often summarized by the expression 'new social movements'.

Both these tendencies – the self-conscious creation of transnational forms of political governance and global forms of non-governmental organizations and extra-parliamentary protest movements – are presented as heralding new forms of democratic governance articulated outside the dominant nation-state formats and institutional structures of modern industrialized societies (Held 1995). The articulations between this kind of digitally mediated planetary democratization and the resurgence of interest in the idea of renewing civil society and civic culture and citizenship are explicit. In fact, these two structural developments are typically seen as direct responses to the longer-standing erosion of civil society and the crisis

of legitimacy within western-style representative democracies and capitalist market economies.[6] The call from both sides of this structural division is for a concerted attack on mechanisms of social and cultural exclusion and a vision of society that includes all its members as active participants of a genuine information commonwealth. Of course, the debate about digital citizenship and the transformation of sociopolitical institutions has been conducted primarily in the contexts of declining civility, planetary pollution (drugs trafficking, money laundering, illegal immigration, prostitution and pornography, and so on) and system-manufactured ecological risk. However, the concept of digital media technology and the global circulation of information as a 'tool' for empowerment and democratization has been predominantly appropriated by both nation-state governmental departments (particularly in the UK and USA) and other sub-political organizations (Loader 1999, 2002; Street 1997).

In more instrumental terms, government agencies and corporate bodies have seen that the control and policing of digital information circulation is one of the fundamental forms of political influence and power in the modern world (cf. Leadbeater 1999; Loader 1997; Sklair 1995). It is not simply that globally dispersed information represents a threat to traditional strategies of information ownership and policing (such as copyright, intellectual property, censorship, surveillance), but also that emerging information structures appear to be *replacing* older 'physical' structures, and are therefore increasingly valorized as the new spaces within which novel forms of politics and cultural life will actually operate. As Alberto Melucci suggests, in a world seemingly made of digital information flows:

> …the possibility of exerting power shifts from the contents of communication and social exchanges to the formal structures, to the codes that organise the flow of information. If information is characterized by the speed of its circulation and its rapid obsolescence, it becomes of crucial importance to control the codes by which mutable information is organized and interpreted. Knowledge is therefore less a knowledge of contents and increasingly an ability to codify and to decode messages (1999: 416-7).

Not surprisingly, as we shall see in Chapters 4 and 6, given their short-term policy horizons, governments and states have tended to assume a practical and instrumental attitude toward digital technologies and cultural change, asking questions of immediate access, users and cultural productivity. On the one hand, governmental departments visualise a 'frictionless' functioning of the parliamentary process, whereby citizens are technologically empowered to participate more regularly through Internet voting and continuous 'interactive' feedback with government. For

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6 The theme of legitimation crisis in modern state forms is associated with the writings of Jürgen Habermas; the theme of new social movements is also drawn from Habermas' writings and has been popularized by Ulrich Beck (1992, 1999: 19-48). The complex web of problems associated with the impact of the Internet upon 'civil society' – across its many levels, macro-institutional, meso-structural, and micro-interactional – remains to be analyzed in depth. Suffice to say at this point that this problematic will undoubtedly centre upon an analysis of the disputed zones of action that are an inheritance of the erosion of nation-state governmental systems and the failure of 'spontaneous' civil cultures in filling the political vacuum left with the decline of major players in the international political scene.

example, the older definitions of poverty have been redefined to include dimensions of social exclusion and 'exclusion' in turn now includes information and cultural deprivation (Lash 2002). In governmental circles, it is thought that digitization will help overcome the fragmentation, dislocation and anomie of contemporary civic life. General access to computers, information technology and digital communication systems is increasingly seen as a precondition for a healthy civil society. The mutual obligations that hold together the new 'stakeholding society' (Blair's and Giddens' 'Third Way', Etzioni's 'communitarian polity', and the 'deliberative democracy' of American neo-liberals and neo-conservatives) are to be embedded in and reproduced through digitally-mediated forms of civil interaction. Societal membership, opinion formation, and moral and political responsibility need not be confined to face-to-face relationships. On the other hand, sub-political organisations and non-governmental organisations (NGOs) claim that the digital revolution allows people to literally *escape* the restrictive demands of modern citizenship imposed by the centralized apparatuses of the nation-state, and become local/global democratic subjects of an autonomous, informational public sphere. Thus, Third-World Aid organizations, environmental movements, peace movements and other activist or single-issue interest groups wish to use the Web as a strategic instrument of information dissemination, real-time coordination, and organization. At the same time, control of the Web is even more important to the operation of reflexive capitalism as it extends its grip over the global market in finance and banking, insurance, media, leisure, tourism as well as in the traditional sectors of extraction, manufacture and transport. In sum, governing classes are directly and self-consciously involved in reshaping political, social, and cultural institutions in the new millennium around sets of digital ideals. At the forefront of these ideals has been the 'network'.

Networks

Much has been made of this decline in governing power of nation-state agencies and institutions, commonly perceived to be a direct consequence of the globalization of socioeconomic and political organizations and processes (Albrow 1996; Beck 1992; Castells 1996; Featherstone 1990; Soja 2000). In other words, it is simply no longer possible for national governments to govern through 'top-down' intervention, where the very legitimacy of nation-state institutions is in question and the metaphor of the 'vertical' no longer appears adequate (Urry 2000). Our societal and cultural institutions are now required to be both global and local, or *glocal* in Robertson's terminology (Robertson 1992). The cultural disjunctures produced by the emergence (and resurgence) of increasingly localized identities and interests, in tandem with a globalized sensibility and awareness among disparate communities, have precipitated new ways of thinking about culture, identity, community, civility, and responsibility within late or post-modernity (cf. Beck 1992, 1999; Featherstone 1995; Giddens 1992; Stevenson 2001; Turner 2001). For many, we have seen a shift from formal structures to networks and interfaces as the dominant models of social, political, economic and cultural processes and relations.

To take one very influential example, according to Manuel Castells (1996, 1997, 1997a), the dynamic complexities of the information age are giving rise

to both new forms of state organization – the 'network state' – and new forms of societal organization – the 'network society'. In both cases, although the Internet and associated technologies are not conceived as simple causal mediums of change, they are certainly central in enabling these to emerge in this particular formation. In Castellian terms, issues of global culture should be seen in the context of wider historically rooted transformations in national, transnational and societal order, particularly in terms of novel connections through networks, and reconnections through informational empowerment and interactivity. In essence, where the older communications networks of the nation-state system were vertical, hierarchical and one-directional, the digital information industries made possible by the Net promise horizontal and inter-actional patterns of circulation and flow. Where the traditional state shaped its 'satellite' regions through controlling taxation from the centre and dominating the peripheries through bureaucratic apparatuses, the digitally democratized state will be multi-centred, networked and decentralized in form. As *informationalism* becomes the axial principle of the network society, the previously demarcated spheres of culture, society, technology and politics become de-differentiated when reproduced through the 'logic of the network'. In other words, the network is now the unit (Castells 1996).

According to Castells, the overarching feature of the information age is that industrialized societies are increasingly structured around a bipolar opposition between the 'Net' and the 'Self', or between *function* and *meaning*. The Net refers not only to (inter)networks of computers, but more generally to the abstract universal instrumentalism which constitutes the functioning of networked information flows. Pitted against this 'force' are historically rooted, particularized identities.[7] In this sense, information technology does not constitute a force in itself, but is configured within a wider technologically revolutionary paradigm, encompassing many forms of networking, information flows, and socioeconomic activity. Whereas for Daniel Bell (1973) science and technology themselves were the driving forces for dramatic social-structural change, both materially and theoretically, for Castells it is information itself that drives these developments. Castells uses the term 'information revolution' to describe the actions of information (technologies) upon the material bases of societies, fundamentally reshaping them. There are five essential features of this revolutionary information technology paradigm that form the material basis for the information society. Castells outlines these as: (1) new technologies act upon information itself; (2) all processes of human existence are shaped by this medium; (3) there is a 'networking logic' which can be implemented within all kinds of organisations; (4) this logic is essentially flexible, and can be re-assembled in many ways; (5) there is a convergence or blurring of technological practices, previously differentiated (1996: 61-62). To simplify, in the industrial revolution the mode of development was the introduction of new energy sources that determined

7 The resurgence of nationalism and religious fundamentalism characteristic of late modernity. This tension between global infrastructural networks of power and powerful localized identities has been well documented elsewhere as an axial feature of globalization (Robertson 1992).

the production process. In the information revolution, the mode of development is the ability to utilize information processing and symbolic communication.

In sociopolitical terms, the primary goals of this restructuring are manifesting themselves through governmental efforts to deregulate, privatize, and dismantle the social contract between capital and labour. According to Castells, there is an underlying logic to these processes – the logic of networking – which pervades every societal sphere. However, for Castells, unlike Daniel Bell, the 'information technology revolution' in no sense implies homogeneity of benefit throughout societies. The multimedia world will be stratified at the most general level by the 'interacting' and the 'interacted'. There will be those who are able to choose between multi-directional circuits of communication, and those who will be provided with only pre-specified packages. The networking logic will constitute the new social morphology of our societies, with the 'power of flows' taking precedence over the 'flows of power' (1996: 469). The effect of this will be that the social stratification of presence/absence within the flows takes precedence over any form of 'social action' within the power of flows.

In this account of the information revolution, the Net is implicated in potentially radical transformations of power in two key ways. Firstly, the notion of the 'network' is becoming central to all forms of sociopolitical restructuring. That is, we are seeing both nation-state institutions and sub-political organizations becoming more 'networked' and 'interactive' in form. So, both traditional and novel governance agents increasingly operate through decentralized and transactional structures, involving more dispersed ties and partnerships, and a wider geographical architecture attempting to govern flows of digital information. Secondly, societal governance itself – in terms of socioeconomic, political and cultural order – is increasingly structured *through* relations to information networks. That is, access to and exclusion from information networks forms the basis for an emerging social structure – the 'network society' (see also Lash 2002). For Castells and others, the network society does offer the possibility of a radical democratization of power relations. The state (both nation-state and inter-state institutions) as a political entity is forced to become a more participatory, open and flexible mode of government,[8] plus there are infinite opportunities for the proliferation and expansion of alternative forms of governance, particularly through globalized, virtual democracy movements. As such, the Net is operating as a means for state reconstruction, reconnecting the national and the local,[9] and as a form of sociopolitical critique.

From the perspective of the state, there are four characteristics which position the Net as a 'tool' for a democratization of political life. Firstly, the temporality of the Net allows for instantaneous relations. That is, the Net provides the architecture

8 In the UK, the current New Labour administration has labelled itself an 'open government', where many of its operations are described as 'services', some of which are available 'on-line'. Secondly, its operations increasingly involve public and private sector agents in delivering local services (building, cleaning, audit, and so on).

9 For example, the idea of 'Internet voting'. It is thought that citizens are increasingly dis-connected from national political life, but the Net offers the opportunity to almost literally 'wire up' citizen and government through e-voting, e-government services, and so on.

for a continuous feedback loop between citizen and state. Governmental decisions can be offered for consultation and feedback 'on-line', inaugurating a participatory relation between citizen and state. Secondly, the geography of the Net enables a kind of 'virtual commons' to operate. The dispersed population may no longer cause a problem for representative democracy, the Net offers an infrastructure for 'direct democratic' fora. Thirdly, citizens are thought to suffer from a lack of information about government and its services. The Net offers the possibility of disseminating such knowledge throughout the population at the touch of a button. Finally, access to government can be reconfigured through the Net, where local council and government can act as entry point to 'open government'. In short, the Internet allows central government to institutionalize processes of decentralized and dispersed governance, while retaining a nation-state level formation.[10] We can imagine future scenarios where cyber-citizens monitor the processes of legislation and legal consultation at each stage of the law-making process – actively registering approval or disapproval through screens wired-up to 'participatory centres' in Whitehall or Washington. Perhaps citizens will be able once more to directly draft the laws by which they will be governed. Such reflexive processes might be first implemented at local and regional levels in which interactive democratization will be introduced as ways of `tapping' local citizens on their views, needs and beliefs. The imaginary democratic polity of the future is one of a perpetual and continuous 'town meeting' where active citizens devote most of their time and energy to debating the public good (Levine 2000). But there is a paradox underlying this delirious enthusiasm:

> The state's attempt to reassert its power in the global arena by developing supranational institutions further undermines its sovereignty. And the state's effort to restore legitimacy by decentralising administrative power to regional and local levels reinforces centrifugal tendencies by bringing citizens close to government, but increasing their aloofness towards the nation state (Castells 1997a: 243).

The dynamics of information flows across local, regional, national and global boundaries produces a scenario within which the nation-state as a stable sociopolitical entity appears thoroughly compromised. If we take the idea of digitally-facilitated empowerment seriously, state attempts to empower its citizens seem to undermine the activities and purpose of the state itself. While the idea of networked technologies of communication has been used to model improvements to existing governance structures, it has also been used to propose *alternatives* to state governance. As Bryan Turner observes:

> Social theorists of the global media believe that not only have we arrived at a new cultural threshold, but that we have arrived at a unique opportunity to side step the legacy of the administrative state and to revive participatory democracy through an extension of the impact of electronic communication systems to the wider community (2001: 23).

10 See *UKOnline.gov.uk*. For critique, see Street (1997).

Flattening

Within models of the 'network state', whether Castells' relatively critical model or national government rhetorics, we see specific fusions of the characteristics of new information and communication media with models of democracy. All of these centre upon the emergence of more 'interactive' relations between governance mechanisms and individuals, and the generalized 'empowerment' of individuals in relation to those traditional institutions. It is arguably the case that, in the new millennium, a new discourse of digital democratization is emerging which incorporates these notions of circulation and networking, but emphasizes the horizontalization or 'flattening' of culture. For example, the 'new volunteerism' associated with Web 2.0 applications such as Youtube, Facebook, Wikipedia, and such like, appears to usher in a flattened form of cultural production, or at the very least a blurring of the differences between cultural production and consumption (Beer and Burrows 2007). The blogosphere and the transformation of journalism, where the 'broad sheet' newspapers become more like interfaces in their digital on-line forms, disperse the production of knowledge and cultural commentary among the community. The event cannot be represented as such; it is continually *presented* in infinitely variable forms over the course of twenty four hours. Readers can literally talk back to writers who can then respond, and so on.

Similar processes are thought to occur in relation to digital products in the global economy. For Lash and Lury (2007) it is the movement or circulation of such products that characterizes their value. It is not simply that things move, whether that be financial objects, commodities, images, ideas – but that their meaning and value is continually altering as a consequence of that movement. As in the news story, as other cultural products move through networks they do not remain the same – they can be rewritten by consumers, and indeed producers increasingly expect this to be so. In the case of the brand, producers and designers intend consumers to 'send objects back' with their preferences and practices now inscribed within them. For Lash and Lury (2007), this is how capital successfully accumulates in a 'global culture industry'. In terms of a more general theory of digital communication, Mark Poster argues:

> Digital conditions of culture mean that the creation of works, their unlimited reproduction, and infinite distribution are functions at the disposal of everyone who has access to networked computers. Digital culture enables the transformation of any text, image, or sound, so that fixed objects like books and films – a fixity that has been taken for granted in modernity – are no longer default features of art… [A]nd, let us recall, all of this change depends on the condition of the digital – the shift to the electronic format of zeros and ones or the on-off switch (Poster 2006: 52).

In this view, there appears to be something about digitization that defies traditional and modern institutional and organizational structures. If the emphasis is now upon speed, circulation and movement, then what is happening to our sense of space and place in contemporary culture? Moreover, the notion of flattening, as a result of circulation and speed through networks, raises significant issues for the operation of power in digital culture. Are all cultural objects and processes dematerialized,

deterritorialized and disembedded? Does digitized information transcend *all* that was previously solid?

Infoscapes, Zones, Divides

The cyberspace theorists of the early 1990s thought of digital culture in terms of autonomous cultural spaces either separate from physically grounded place, or perhaps even rendering those physical places obsolete. The notion that the circulation of digital information creates new kinds of spaces has been at the forefront of digital discourse; whether conceived in terms of 'mediascapes' (Appadurai 1990) or 'networks' (Castells 1997), the capacity of digital information to defy or reconfigure Euclidean space is well documented (cf. Mosco 2004). More recently, in tandem with a shift from hardware to everyware, research has shifted toward understanding exactly what the interrelations between digital and non-digital culture might be, especially in terms of how digital media appears everywhere present, and in that way has a role in structuring and re-structuring the physical spaces we inhabit in unseen but potentially vital ways (Burrows and Ellison 2004; Burrows and Gane 2006; Graham 2004; Lash 2002). As Saskia Sassen puts it, in relation to theories of globalization:

> Hypermobility and 'dematerialization' are usually seen as mere functions, or capabilities, of the new technologies. This understanding ignores the fact that it takes multiple material conditions to achieve this outcome…much of what happens in electronic space is deeply inflected by the cultures, the material practices, and the imaginaries that take place outside electronic space (2006: 344).

In other words, digital information does not circulate outside of material structures, but inside and through them, changing the nature of those structures and being subject to reconfiguration as a result of them. This immediately raises questions of access to those informational structures, and how digitization might relate to prior modes of inclusion and exclusion. For some, digital media transcend the constraints of modern political forms. In this respect, a common premise of the globalization and 'cosmopolitan' literature is the notion that some version of digitally facilitated participatory democracy is a necessary 'way forward' in any future globalization, regionalization, and cooperative collaboration of nation-states. However, we hear little of the material, structural, or situational obstacles to a flourishing citizenship in these accounts, which are couched in terms of means and technicalities. Thus, the 'technical obstacles' to such a future are thought to lie in the construction of more effective, cheaper, and more accessible digital technologies, solving the constraints previously preventing individuals and communities from creating authentically cosmopolitan democratic communities.[11] The fact of information poverty tends to block out the

11 Barlow (1996) and Rheingold (1991, 1994). Much of the corresponding debate (and debunking) has focused upon whether these network-generated discursive practices and institutions can be realistically understood as communities. However, the asocial and ahistorical imagery of communality informing these nostalgic accounts of *Gemeinschaft*

even more recalcitrant problems of economic poverty and social exclusion. For example, one influential account of the information revolution explicitly links the process of democratization and the new 'electronic commonwealth' with the advent of the structural infrastructure and systems of global urbanization:

> …globalisation, informationalization and generalised urban spread – seem to be converging towards the disappearance of the city as a specific form of relating society to territories. After existing for millennia, cities would seem to be falling into an inevitable historical decline on the threshold of the new millennium. This book challenges that increasingly widespread vision, and broaches the possibility, or even the necessity, of renewing the specific role of cities in a world of generalised urbanization, proposing that a dynamic, creative relationship be built up between the local and the global (Borja and Castells 1996: 2).

The digital revolution appears to offer nothing less than the reconstruction of the urban landscape itself, where virtual public spaces transform civil interaction within the electronic city. The towns and cities of the future digital culture would thus be hardwired for continuous information exchange and conversational debate about the aims and objectives of civil life. We have, as it were, a fusion of the Greek polis with the democratizing technologies of the 21st century:

> A city is a chance to build a democracy of proximity, of participating by all in the management of public affairs, reinforcing integrating collective identities. The principle of subsidiarity, which should be understood as the decentralisation of power and areas of competence along with the availability of financial resources to make it practicable. Politics, in the sense of public management, should not be pursued at higher levels when it can be pursued at the local level (Borja and Castells 1996: 249-50).

We can see such rhetorics of localization now in the form of publicly accessible wireless networks in the downtown cores of the large North American cities. The rhetoric is one of informational *intensity*, producing seamless forms of interactive exchange, and an informed population. Of course, it may well be that in some cases supposedly global digital information networks are recreating senses of place and senses of community in very positive ways, giving rise to an energetic democratization in certain localities (Liff et al 2002; Miller and Slater 2000). In others, however, local fragmentation 'may inspire a nostalgic, introverted and parochial sense of local attachment and identity. It [globalization] recontextualizes and reinterprets cultural localism, it does so in ways that are equivocal and ambiguous'.[12] For some critics,

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have been questioned elsewhere, and are not the focus of this critique (see Loader 1997 for explorations of this theme; also Giddens on the reflexivity of modernity and his argument about what he calls the 'transformations of intimacy' and personal life in what remains of the civil societies of late capitalism (1990, 1992).

12 Robins (1994) in Anderson and Ricci (1994: 204-13). See also Featherstone (1995); Featherstone et al (1995); Featherstone (1990); Friedman (1994). Also of relevance here is Roland Robertson's (1992: 173-4) concept of 'glocalization', which describes 'how global pressures and demands are made to conform to local conditions'. We might add the material, structural, and situational factors that actually shape the lives of those who are forced to live in

political rhetorics of digital 'interactivity' between citizens and government might equally be cast in terms of surveillance:

> …unless it is possible to configure systems of democratic *accountability* that are equal to the gregarious sprawl of the networked world, then all of the high hopes for an 'electronic commonwealth' will be dashed. Instead, citizens may well find themselves inextricably wired into a Panopticon prison (Brown 1997: 196).

Zones of Enclosure

The enfolding of digitally mediated information into the fabric of the city is producing somewhat polarized narratives of reinvigorated communitarianism and increasing fragmentation and segmentation. Segmentation is thought to take a number of forms, including the separation of 'extraterritorial' digital space from the localized place of ordinary individuals (Bauman 2000), intensifying surveillance techniques which increasingly and *routinely* 'sort' populations (Lyon 2001), both of which are inextricably tied to the commodifying tendencies of late capitalism. In other words, the global expansion of the Net has also been conceived as producing increasingly intricate fusions of information technologies and militarized, bureaucratized, and governmentalized systems and practices (whether publicly or privately defined). In essence, such a 'wiring up' of society is seen in terms of a more penetrative embedding of technocratic control and surveillance within previously 'public spheres'. As such, the digital revolution represents a continuation of the surveillance techniques perfected by the nation-state in modernity, as described here by Giddens:

> There is a fundamental sense in which all states have been 'information societies', since the generation of state power presumes reflexively gathering, storage, and control of information, applied to administrative ends. But in the nation state, with its peculiarly high degree of administrative unity, this is brought to a much higher pitch than ever before (1985: 178).

Far from involving a fusion of the polis with democratizing digital technologies, digital political cultures fuse a carceral model of social order with Orwellian techniques of global surveillance. In narratives of digital de-democratization, Foucault's panopticon has been given digital wings and now operates through the capillaries of information flows: where the original panopticon secured docile bodies, the digital panopticon produces docile minds (Robins and Webster 1999). Novel connections and reconnections between citizen and state represent increasing insecurity and surveillance as opposed to interactivity and empowerment. In fact, interactivity should be read as a key technique of surveillance; empowerment a rhetoric of the increasing insecurity, privatization, and individualization of subjectivity. Moreover, in response to the more radical models of democratization, it is thought that the so-called virtual democratic communities enabled through the Net represent elite formations, signalling a further retreat from their societal obligations in an ever

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the new 'metropolitan capitalism'; uncertainties of the expanding service sector, post-Fordist production, flexible specialization, and so on.

more privatized society of atomized consumers (Bauman 2000). In Bauman's 'liquid modernity', while elites are able to gain access to global mobility, the majority of people are faced with the impossibility of re-territorialization, of grounding, of closure, in a culture of unbridled but never-ending choices.

In general terms, the emphases within these broadly 'technophobic' accounts are upon the ways in which new technologies actually *increase* the possibilities of centralized control for some, maintaining existing conservative sociopolitical practices, rather than undermining or disrupting them through radical decentralization. As Dawson and Foster state:

> Indeed, history has shown that every technological revolution in communications – no matter what its potential for democratisation has been – has lent itself to the growth of new monopolies of information when inscribed within existing systems of social and economic power (1998: 53).

The notion that digitally-facilitated information is chronically insecure underpins increasing anxiety and the production of 'moral panics', concerning the prevalence of hacking, identity-theft and other forms of digital-deviancy (Jordan 1999; Lyon 2001; Poster 2007; Taylor 1998). In the current cultural climate of post-9/11 anti-terrorism, we may expect digital media to become subject to ever more penetrating and liberty-affronting measures, effecting a colonization of the Web by governmental agents. In this scenario, when we think of networks we should think of transparency rather than privacy. For Robins and Webster 'the network society is a more transparent society, and a more transparent society is, potentially, a more disciplined society' (1999: 118). In a wider sense, what used to be called the military-industrial complex has become the military-techno-scientific complex and the bureaucracies and cadres of this complex are increasingly among the most important, if non-democratic, decision makers in society. What used to be known as finance capitalism becomes global financial capitalism, 'enclosing' and controlling all spheres of the network society through a systematic marketization:

> At the end of the twentieth century, we would argue, what is referred to as the 'global network society' may be thought of in terms of the forward march of the Enclosure movements, in terms, that is to say, of the further and rapid extension of the reach of market criteria and conditions … We can speak now, for the first time in human history, of the entire planet being organised around a single set of economic principles (profitability, accumulation, private property, provision on the basis of the ability to pay, competition in the marketplace) which are capable of being operationalized in real time across distance, and which seek to penetrate deep into the intimate spheres of everyday life (Robins and Webster 1999: 7).

Although, it should be noted, such commentators may be generally supportive of developments toward direct or participatory democratic practice, the notion that digitization is delivering this scenario is seen as an illusion perpetrated by hegemonic elites who will benefit from the greater control implicit in the global panopticon of digital capitalism. Any potentially democratic processes of de-territorialization are met with re-territorializations in the form of fortress societies bereft of communal

bonds and connections. What is actually occurring in the so-called network society is a further penetration of corporate marketing strategies, and exclusionary stratification into everyday life,[13] within the familiar ideology of optimistic futurism.[14] The major difference digital media makes here is the probability that these strategies of control achieving a global and more opaque reality, imposing Western capitalist ideologies and market logics into hitherto 'unconquered' spaces.[15] In these terms, Foucault's striking image of the modern carceral society as a panopticon of surveillance and power has been extended to the global stage:

> What these technologies support, in fact, is the same mechanism of power and control, but now freed from the architectural constraints of Bentham's stone and brick prototype. On the basis of the information revolution, not just the prison or factory, but the social totality, may come to function as the hierarchical and disciplinary machine (Robins and Webster 1999: 120).

The first response of many critical theorists, then, is to see the new digital media in terms of an irreversible destruction of the 'commons', the dissolution of local autonomies and the disenfranchisement and atomization of those excluded from the brave new world of *Cyberia.* What digitization does is to 'perfect' the modern state's tendencies to watch, to document and classify, and to control. For Robins and Webster, the network society constitutes an entire 'technological system' to ensure centralized monitoring and enclosure (1999: 120-122).

Divides, Exclusion and Insecurity

Within models of a de-democratic e-topia, existing social divisions and patterns of social exclusion are extended to include exclusion from digital capital and the opportunities it facilitates. Digital information technology is in the process of transforming the heart of the contemporary system of social production, but the objective of transnational production remains the same: profit and capital accumulation in the economic sphere, hegemony in the political sphere and ideological domination in the cultural sphere. Digital culture simply builds upon and further deepens the chronic social inequalities of class, gender and race created by modern capitalism. In this respect, the utopian vision of digital-republicanism of the technocommunitarians is an ideological illusion masking the actual power of the Fortune 500 Corporations. Instead of the future of reforming, piece-meal digital-engineering we find new articulations based upon new social relations of digital exclusion.[16] Zygmunt Bauman sketches such a dystopian image of the future:

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13 For example, Robins and Webster's description of the 'new enclosures' of the information age (1999).

14 See Robins and Webster (1999) for a comprehensive exposition of this position.

15 See Sardar (1996) for an account of cyberspace as the 'darker side of the West'.

16 It should be noted that the debate over the libertarian or controlling dynamics of modern media and modes of cultural production date back to Walter Benjamin's famous essay on mechanically reproduced images and the debate between Benjamin and Adorno that shaped the whole 'culture-industry' problematic in the writings of the later Frankfurt School.

> Contrary to what academics, themselves members of the new global elite, tend to believe, the Internet and Web are not for anyone and unlikely ever to become open to universal use. Even those who get access are allowed to make their choices within the frame set by the suppliers, who invite them 'to spend time and money choosing between and in the numerous packages they offer'. As for the rest, left with the network of satellite or cable television with not as much as a pretension to symmetry between the two sides of the screen – pure and unalloyed watching is their lot (1998: 53).

There are many dystopian variations of the future information society as an exclusionary and chronically insecure one (Neil Postman's *Technopoly* 1993; Alberto Melucci's ghettoization; Mike Davis' de-industrialized *City of Quartz* (1990), Umberto Eco's neofeudalism, and so on). All of these narratives speak of the decline of civility and social inclusivity consequent upon an erosion of civic/civil space, following the general deterritorialization of public spheres (Bauman 1998, 2000). Deregulation, de-industrialization and liquefaction are irresistible forces that follow the course of global capitalist development. In contrast to the 'wired city' of mutual exchange and urban regeneration, Bauman speaks of:

> the new fragmentation of the city space, the shrinkage and disappearance of public space, the falling apart of urban community, separation and segregation – and above all the exterritoriality of the new elite and the forced territoriality of the rest (1998: 23).

Digital technology expands the reaches of financial capital but prefigures a coming society of monadic citadels, a neo-feudal ghettoization of excluded communities subsisting in a parody of 'competitive capitalism' and the global market of atomized interests. With the decline of the public sphere, the cities of the future appear as topographies of fear and loathing (cf. Davis 1990; Elin 1997; Sennett 1996):

> Rejection prompts the effort to circumscribe localities after the pattern of concentration camps. Rejection of the rejecters prompts the effort to transform the locality into a fortress. The two efforts reinforce each other's effects, and between themselves make sure that fragmentation and estrangement 'at the bottom' remain the twin siblings of globalisation 'at the top' (Bauman 1998: 127).

Digital technologies – as principal mediator of 'liquid modernity' – are further stripping away the mutual face-to-face bonds of pre-modern forms of community and civility. Milder scepticism about the threat to civil community produces a qualified image of the future in terms of a further loss of control and autonomy before encroaching private and public corporate bureaucracies (global banking, finance and currency speculators playing a prominent role here). For example, Galston summarizes three kinds of 'structural doubt' with regard to the civic consequences of the kind of virtual voluntary communities exemplified in the utopian vision:

> Because they emphasise exist as a response to discontent and dissatisfaction, they do not promote the development of voice; because they emphasise personal choice, they do not

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See for example, Benjamin's 'Art in the Age of Mechanical Reproduction' and Adorno and Horkheimer's 'The Culture Industry' (in *Dialectic of Enlightenment*).

> acknowledge the need for authority; because they are brought together and held together by converging individual interest, they neither foster mutual obligation nor lay the basis for sacrifice (Galston 1999: 8).

Digitization, then, has become a primary site for the dynamics of social and cultural exclusion, particularly where the accumulation of social capital is thought to be increasingly digitally mediated through network building and maintenance (Wellman and Haythornwaite 2002). For those without access to information networks, the future is an inherently insecure one, where longstanding inequalities are being reproduced in digital form. If economic, social and cultural capital increasingly involves the accumulation of 'digital skills' (computer and networking skills, information and data gathering skills, having an online 'presence', etc.) it is thought that such skills will remain differentiated across age-old social divisions. In other words, those with existing social and cultural capital may be best placed to take advantage of these new resources (cf. Loader 1998; Robins and Webster 1999). There is no reason to assume that digital technologies will be any different: patterns of access and exclusion will simply map on to existing social hierarchies of inequality in what have become known as 'digital divides'.

The majority of research into the digital divide has focused upon physically defined access to digital technologies, drawn at regional, national, international and global levels.[17] For instance, in the UK, divides tend to be drawn in terms of differential access to digital resources from within distinct socio-economically defined neighbourhoods, between the 'north' and the 'south', and along dimensions of age, ethnicity, gender and social class.[18] These divides are increasingly cast in terms of 'social informatics', that is, in terms of how to make 'socially progressive' connections between informational and institutional environments. In Canada, a divide is also drawn between north and south, but on an altogether different register in terms of geographical distance and proximity (see Erickson 2002) where the terms 'urban' and 'rural' refer to particularly distinct socioeconomic and cultural places. In the United States, the digital divide is drawn most often in terms of ethnic minority groups and low income groups within major cities, and between smaller cities, where areas are increasingly described as being 'info-rich' or 'info-poor'.[19] What is common to these models is the idea that lack of access to digital resources constitutes and also exemplifies broader social inequalities and divisions.[20] Referring

17 For a comprehensive overview see Chadwick (2006).

18 For an expansive account of digital divides in the UK see Loader and Keeble (2004). For an alternative conception see Lash (2002).

19 This is now cast in terms of a divide between the 'always on' broadband connection and the slower 'dial up' services. The former allows for 'richer', faster streamed content, where the latter is seen to provide more limited forms of content. In other words, the digital divide is perhaps now a question of speed, or between the 'interacting' and the 'interacted' in Castells' sense (1997).

20 The literature on the digital divide fails to take account of non-users as exercising any significant agency. Use is taken to be an axiomatic good and non-use as necessarily 'exclusion'. Interestingly, policy and sceptical sociologies of the digital divide tend to converge here. See Wyatt (2005) for a characteristically insightful discussion of these issues.

to more than simply having access in a physical sense, this is now taken to mean how specific relations between digital information and persons might themselves *constitute* divides – drawn in terms of information skills and use patterns, of senses of competence, and of democratic participation in digital culture (Chadwick 2006; Norris 2001). Even for those with access to digital media, the future remains insecure in a different way, where such spaces actually reinforce existing social and cultural divisions and hierarchies, and where the pace of change and the possibilities of 'keeping up' with emerging forms of social capital appears frenetic.

Finally, there is a further and perhaps more invisible sense in which digitization may produce and reinforce divisions. It has been argued recently that digital information is becoming an ordinary aspect of the materiality of cities (not virtual representations), especially in terms of what actually constitutes a zone, space or neighbourhood, and how different kinds of geo-demographic data may become enmeshed with each other. Moving beyond the surveillance society literature, the further implication for some is that an unprecedented amount and granularity of data is producing the 'new socio-spatial zones of the information age' within which social subjects may be digitally 'sorted' but also through which they act and enact their 'lifestyle choices', engage with services, and take advantage of consumption opportunities (Lash 2002; Burrows and Ellison 2004). These new digital topographies are neither inherently negative nor positive, but abstracted and aggregate data may relate to and shape citizen engagements and consumption practices on the ground. The ability of social subjects to exercise any agency in their choices has become dependent upon not only access to digital information but the ability to engage reflexively with it; to *interact* with digital media proactively rather than passively or defensively (Burrows and Ellison 2004). But what exactly are citizens engaging or interacting with? What does it mean to 'participate' in digital culture and what happens to the figure of the citizen?

Commodification, Empowerment and Disempowerment

Within both the institutionally orientated model of the network state, and radical models of non-state participatory democratization, new figures of the citizen are constructed and promoted. In narratives of digitization which emphasize democratization through proliferating connections, citizenship is thought to be transformed through technological empowerment and interactive communication. In the most optimistic accounts, the citizen will almost automatically become an informed, participatory political subject, through the transformational power of digital information exchange (for example Dyson 1998). The perceived importance of the new information technologies, usually digitally facilitated networking, by those governmental agencies attempting to restructure the relations between states and their citizens appears self-evident within a host of internal publications on the subject.[21] Although not so technologically determinist as one might be initially tempted to think, the background literature to current policy proposals within this

21 See the material located at the CORDIS website for example (www.cordis.com).

area display a degree of digital enchantment, specifically in terms of its capacity to facilitate unprecedented information dissemination and interactive citizen-government processes. In short, digitization is considered essentially democratic if regulated correctly, and not only that, but *embodies* precisely the kind of participatory politics thought necessary to offset the disaggregating effects of rapid economic and geopolitical globalization:

> The fact that advances in telecommunications have made it possible to create an arena for the exchange and comparison of knowledge is an opportunity that come just at the right moment for the European institutions, as they seek to democratise their decision-making process, and for the Union as a player in European social democracy (Jean-Claude Thébault *Forward Studies Unit* 2000: ix).

In tandem with the electronically infra-structured democratic reform of governmental institutions (now thought to be eroding, if not almost entirely de-legitimated), through the embedding of transparent, accountable decision-making processes, the Net will simultaneously enable citizens to act as they have always desired: to be directly consulted about every political decision, and be able to observe every moment of the deliberative process. In the UK, the Net has figured over the last ten years or so as an object of citizen regeneration, principally through the empowering qualities of information itself:

> We stand on the threshold of a revolution as profound as that brought about by the invention of the printing press. New technologies, which enable rapid communication to take place in a myriad of different ways across the globe, and permit the information to be provided, sought, and received on a scale hitherto unimaginable, will bring fundamental change to all our lives (Labour Party, *Information Superhighway*, London, 1995).

Both the institutionally-orientated narratives of the emerging network state and the de-institutionalized visions of virtual democratization concur that digitized governance will primarily be a matter of democratization: of the relations between institutions and citizens, and of the experience of citizenship itself (either as conventionally defined, or as a new 'global', 'virtual', or 'technological' mode of citizenship). Further to this, Poster (2001) argues that if we are thinking in terms of power, culture and subjectivity, we should be thinking outside the categories of the modern state:

> If the term *democracy* refers to the sovereignty of embodied individuals and the system of determining officeholders by them, a new term will be required to indicate a relation of leaders and followers that is mediated by cyberspace and constituted in relation to the mobile identities found therein (2001: 188 Original emphasis).

In more grounded terms, most would agree that citizenship is now an unavoidably informational problematic where citizens require a range of information resources in order to participate effectively in societal life. Where the new world order is thought to be primarily an 'information order' (Lash 2002), the divide is no longer a solely material one, but a digital one between the information haves and have-nots, or in Castells' terms, the 'interacting' and the 'interacted' (1996). For some commentators, the virtual architectures of the Net remove traditional obstacles to inclusive citizenship:

class, gender, ethnicity and bureaucratic jurisdictions which have circumscribed and materially differentiated modes of participation (Turner 2001). Thus, citizenship may become both a universal form of political subjectivity while retaining the possibilities of cultural difference and sociopolitical diversity. As such, any dynamics of social exclusion become reduced to questions of access to digital culture. For others, this is to assume the benign character of information itself and to underestimate the extent to which it is commodified. It also potentially ignores the extent to which informationalization is wrapped in the transformation of citizenship into consumerism as a mode of engagement with political and cultural life.

Digital Commodification

Digital culture is intimately bound with cultures of consumption. In some accounts, the commodification of information is thought to further intensify the exploitative practices of the marketing industry and herald a new culture of limitless consumption. The fragmented and flexible forms of accumulation found in post-industrial capitalism find their perfect vehicle in the 0s and 1s of digital information. All aspects of culture can be transformed into indistinguishable 'packets' of information. This represents something like the culmination of the 'cultural alignment' of technology and commodification, inaugurated by the Industrial Revolution (Taylor and Harris 2005), or the convergence of digitization and commodification where communication itself is increasingly commodified (Mosco 2004). These perspectives concentrate on commodification rather than consumption. Any 'flexibility' in form is simply a new means for capital accumulation, accommodating uncertainty into its operations. For others, 'digital commodities' are indeed flexible and therefore intrinsically interactive, radically altering the subject/object relation when explored in terms of how they might be consumed. They soften rather than harden relations between producers and consumers and require new levels of participation from reflexive consumers where '[I]n global culture industry, things come alive, take on a life of their own' (Lash and Lury 2007: 12; see also Poster 2006 and Thrift 2005). There are emerging strong accounts of how digitization blurs the boundaries between the production and the consumption of culture as increasing numbers of cultural objects are digitally mediated and circulated and whose variable content is to some extent user-generated (Burrows and Beer 2007; Lash and Lury 2007). Behind the breathless enthusiasm for wikis, blogs and youtube, the implications are radical for any theory of cultural value, of meaning, of authenticity. Reproduction is no longer mechanized but mediated 'from within' and the generation of 'value' is not 'in relation to either price (as a mark of exclusivity) or origins (as a mark of authenticity), but in relation to information (that is, as a mark of distinctiveness)' (Lash and Lury 2007: 141). In other words, digital culture is more or less participatory in that it is constantly in flux, but not inherently democratic. Not only can some of this participation be considered immaterial labour, there are new digital agents enforcing digital rights management (DRM) in software. The flows of data are shaped and regulated invisibly (to the user, the citizen, or the consumer) by metadata – data about data – constructing what it is possible to do with the data and how the data is organized. But such regulatory machines may be user-generated

in wikis, or subject to top-down political intervention (as in China). Indeed, Poster (2006) observes that the territoriality of the subject is minimized in digital culture, but it is not eradicated.

But there are equally strong claims about the increasing quantity of such cultural objects in terms of their decreasing 'quality' and the possibility of agency or reflexivity in the culture of spectacle (Taylor and Harris 2005). In a line of thought weaving through Heidegger, Benjamin, and Baudrillard, Taylor and Harris (2005) see the technological (digital) enframing of everyday life as the ongoing demise in authentic or 'free' relations with technology. This is partly to do with mass customization and post-industrialism, where the digitization of culture allows for infinite reproducibility and 'flexibility' of a kind unimaginable even for Walter Benjamin. Such reproducibility is seen as the production of 'copies', removing the human subject from any sense of the aura, the authentic, or the real. There is a distancing effect between consumer and authenticity, where individuals are faced with ever-proliferating quantities of digital images engendering the 'danger of the hyperreal' where digital code replaces physical reality as the site and source of production. Digital technology, in its ability to transform matter into information, converts public space into information-commodity environments. Digital culture is a culture of unprecedented manipulation – of irrational consumers by dominant capital interests, of representation by digital code, of authenticity by hyper-reality. Less philosophically, it is has been argued that digitally mediated culture is somehow less 'complex' or 'challenging' than older forms of community and identity. Digital technology is thought to contrast almost directly with a prior state of social, cultural and political freedom:

> Against the simplistic technoculture and its drive towards technological order and virtual community, we would wish to counterpose more complex and challenging cultural and political values. Against technological 'empowerment', we counterpose political freedom (Robins and Webster 1999: 6).

In this broader sense the circulation of information and the de-differentiation of institutions further accentuate the transformation of public spaces into quasi-private zones of security personnel and data gathering. Embedded and articulated within the dominant politics of privatization and individualization, digital technology will also encourage increasingly private solutions to public problems, in the form of self-governance and individual responsibilities, making the phenomenon of privatization one of the most important characteristics of global consumer culture. This is the familiar scenario advanced by Baudrillard (1988) with his idea of the 'end of the social' and with it the end of politics. What remains of the citizen-subject is an atomized anti-society of privatized consumers of inauthentic simulacra. Bauman comes to a similar conclusion:

> Public spaces – agoras and forums in their various manifestations, places where agendas are set, tested and confirmed, judgements are put together and verdicts are passed – such spaces followed the elite in cutting loose their local anchors; they are first to deterritorialize and move far beyond the reach of the merely 'wetware' communicative capacity of any

> locality and its residents. Far from being hotbeds of communities, local populations are more like loose bunches of untied ends (Bauman 1998: 24).

The idea of a digitally mediated participatory citizenship disguises the 'push-button' nature of digitally mediated political life (Street 1997). That is, the Web is simply another media of simple polling of preferences and opinion. The figure of the consumer-citizen takes centre stage where the processes of political management and engagement are inseparable from mass-mediated and customized forms of consumption. Information, instead of being an empowering force for cultural democratization, operates as a *substitute* for authentic knowledge, particularly where institutional and organizational uses of information centre upon the construction of preference databases. The individual freedoms associated with digital-empowerment are illusory – these are simply methods of decentralizing and delegating responsibility for citizenship to the individual. Citizens are thus now expected to behave like the dominant images of private consumers in economic theory – autonomous, individualized decision-makers removed from the communitarian fabric. Kroker and Kroker describe this kind of atomized citizen in terms of the 'bunker self', who increasingly distances themselves from 'real' sociopolitical relations:

> Digital reality is perfect. It provides the bunker self with immediate, universal access to a global community without people: electronic communication without social contact, being digital without being human, going on-line without leaving the safety of the electronic bunker (Kroker and Kroker 1996: 96-7).

Digital culture, then, simply builds upon current sociopolitical, cultural and economic trends toward commodification and privatization. Power in digital culture indexes an increasing tendency toward the total surveillance and administration of society, now conducted through globally gathered and sorted digital information. The results of this will paradoxically be greater insecurity, an intense amplification of existing social divisions, and the consumerization of democratic citizenship.

Throughout the discussions above, there is a striking polarization around issues of technological 'empowerment' and 'disempowerment'. These have become increasingly intense with the movement from hardware to everyware. If digital cultural objects are taken to be inherently interactive then we see potentially empowering forms of user-generated dialogue, discourse and cultural production. But where digital code is seen to promote unprecedented domination through the proliferation of digital commodities then we see a potentially disempowered citizenry. In the former scenario we have 'interfaces' rather than 'users', in that the notion of a 'user' implies a distance or a separation from what is being used. For Lash (2002), this underplays the significance of technical and cultural hybrids in 'technological forms of life'. For others with the computerization of everyday life comes the figure of the 'computer user'. In a further form of consumerization, the personal computer user appears empowered and 'smart' as they cooperate with 'friendly' software. But for Rose (2003), this kind of empowerment disguises the positioning of users as 'dumb' and essentially passive when considered from the point of view of software. The software designers have configured user-consumers to be anxious and essentially powerless receptacles for the mindless acquisition of upgrades and the versioning

rhetorics of digital culture. Ultimately, digitization is skewed toward 'technological rather than human ends' (2003: 12).

Concluding Remarks

In this chapter, I have expanded the sketches of digital culture introduced in Chapter 1, through a review of social and cultural commentary about the role of information technologies in the wider context of globalization and the so-called digital revolution. In an admittedly brief mapping of the dominant narratives of digital culture, we have seen that contemporary social, political, economic and cultural processes are increasingly thought to be mediated by information-technological systems for good or ill. I have suggested that despite often radically different approaches and conclusions, the positions discussed here are emphatically concerned with the parameters of access, interactivity and authenticity of an emerging digital culture. When we have circulation, networks, new territories, and emphasis on participation then access to all that appears a central political, economic and cultural strategy; this appears 'obvious' because of notions of interactivity and associated shifts in relations of power. But the question remains as to what is at stake in terms of authenticity and meaning in digital information culture.

The purpose here, then, has not been to normatively evaluate these claims, nor decide which account is the more sociologically convincing at this stage. Rather, I have been interested in demonstrating the multiple ways in the Internet and the Web have figured in recent social and cultural theory, with a view to expanding our understanding of what digital culture might entail beyond any initial definition. When looked at in this way digital culture becomes a more complex field of inquiry, involving multiple and contested fusions of political ideals, technical artefacts, institutional identities, and models of cultural stability and change. A second purpose has been to show how conceptions of digital culture operate as powerful narratives of inevitability, either in continuous or discontinuous form, as defining much of the conceptual vocabulary of the digital culture. In Foucauldian terms, we can think of these narratives as defining the possible fields of thought and action both discursively and materially and constituting the possible fields of digital culture (Barry et al 1996). More specifically, these narratives of digital culture articulate changing conceptions of the relations between technology and culture, where new subjects and objects are emerging and being theorized. We are now talking about digitization as a 'cultural preoccupation' with problems of sociotechnical relations (Barry 2001). In substantive terms, the elevation of these digital problematics within current social and political thinking marks the Web as a key technology of contemporary sociopolitics, a kind of 'third way technology' so to speak. Digital culture then, conceived broadly, encompasses a sprawling and complex domain of issues and problems related to the constitution of social and political order, and forms of institutional and individual identity and subjectivity. The circulation of digital information, in the form of images, text, and sound, has become a central object of critical inquiry and research into the potential for novel forms of democratization and de-democratization. These problematics centre on the 'threats' and 'promises' of increasing technologization,

the potential transformation of power, authority and legitimacy, and the potential transformations of institutional and individual identities.

In mapping this terrain, I have argued that the dominant narratives of digital culture are somewhat polarized when seen in the most general terms: on the one hand, we have a potentially democratizing technology of circulation, networking, interactivity, and empowerment, while on the other, a potentially de-democratizing technology of surveillance, privatization, and commodification. Of course, I have presented these complex debates in simplified and ideal-typical form, but have tried to show how numerous shifts are occurring in the precise details of these accounts. The sense of dynamism of both technical and cultural thought is apparent. The impacts of these representations upon governmental thinking and policy, and within a wide selection of popular media, are far-reaching. Expressed most simply, there are few areas of public and private life and associated 'social problems' which have not been discussed or framed in terms of the 'effects' of digitization upon them.[22] Where the democratized future is seen in benign terms, typically the vision of the future advanced by the exclusionary paradigm is darker and more threatening. Often, however, the explanatory sociologies behind these rhetorics are equally mono-causal and technologically reductive: technoscience is the precise cause of the ills of modern life; fragmentation and alienation have their roots in untrammelled technological development; the politics of technology is one of access provision and not one of the immanent forms, uses, and contents of the technology in question. The motifs of access, interactivity and authenticity appear as either intrinsic properties of new digital technologies or the rhetorics of manufacturers, marketers and governments.

Andrew Barry (2001) suggests that what marks out our 'technological culture' is the expectation that promises and threats of change are located in technical devices. He also argues that in reality technical change may be *more or less* inventive in practice. But this does not prevent cultural theorists, policy makers or practitioners any the less sure that this is what is happening. In general it is thought that, in digital culture, a variety of boundaries are increasingly hard to draw – nation states, firms, cultures, technical and cultural, and so on. But in practice, there are blockages and impediments that are not overcome in any simple sense. In some contexts things are made interoperable, but in others they are not. In the narratives discussed here there is a seamlessness to the digitization or technologization of culture that requires further questioning. It reproduces the kinds of inevitability discourses which are often the subject of its critique. The inevitability appears to be located in the technology itself. Indeed, it is the precise relations between technology and culture which remain under-explicated so far. We need to ask, what is the assumed *nature* of technology in these accounts? In narratives of promise and threat, digital information technology

22 Among these issues commonly phrased as social problems within the press, the Internet is made to appear as threat to personal and collective identity; the provider of new destabilizing identities; threat to grounded community; provider of new communities; threat to the nation state; increased power to the state; threat to privacy and security; provider of anonymity; threat to economic prosperity; creator of new and uncontrollable markets – for example, in pornography, money laundering, and other illicit activities.

plays a central role in broader cultural shifts toward a hardened or softened form of capitalist culture. But how is such 'order' actually constituted or produced? What exactly is the role of technology in relation to culture here, and is there anything *new* about digital technology in this sense? This is the question we turn to in Chapter 3.

Chapter 3

On the Materials of Digital Culture

Introduction

One of the most striking aspects of contemporary culture is the sheer amount of electronic and digital devices through which information is said to flow. From personal computers and laptops, to cell phones and iphones, image capture machines, MP3 players, Blackberry's and the like, the technologization of culture appears incontestable. The aforementioned ubiquity of digital information flows in contemporary capitalist culture is made possible by a seemingly infinite world of things. Recent accounts of an 'Internet of things' and of the 'automatic production of space' (Thrift 2005), suggest that these things are also increasingly interactive, constitutive of everyday life in the form of interoperable environments, and that citizen-consumers are now *expected* to interact with them. In the previous chapter I showed how numerous discussions of contemporary culture implicate these 'new' or 'digital' technologies as underlying mechanisms of both continuity and discontinuity, of order and disorder, organization and disorganization. But as Lievrouw and Livingstone (2002) argue, the diverse technologies discussed under the rubric of 'new media' are often assigned a central role in social and cultural change but with little in-depth analysis of their mechanics or dynamics. In this chapter I want to examine how the relations between culture and technology have been theorized in relation to the transformations discussed in Chapter 2 and ask how we might analyze their dynamics. Questions of what exactly is new about these 'new media', and what is mediated or mediates in digital culture, are central concerns: How are the differences between digital and pre-digital culture theorized in terms of the technologies themselves? What kinds of capacities are they thought to have? How have they become seemingly ubiquitous in institutional and broader environments, and what is their relation to cultural forms and practices?

There are many ways of approaching the relations between the technical and the cultural in accounting for stability and change, often from very different theoretical and disciplinary traditions. The majority of 'new media studies' have focused, in one way or another, on how the features of devices differ from their predecessors and how they produce different cultural effects. Features might include the technical capabilities of microprocessors and the possibilities of interactive communication, the political economy of new media industries and services in relation to convergence, specialization or de-differentiation, and also the cultural content of new media forms in terms of its apparent variability and open-endedness. As such there are many ways of defining and interpreting 'what's new' about new media, and there is little agreement about which features are most significant. What is common to most, however, is a degree of residual essentialism or determinism,

where the features are defined in the first instance followed by claims about their likely cultural impact. The subtle variants of determinism at work in theories of media technology are part of broader commitments to forms of social theory and need to be discussed in this context. Accordingly, detailed consideration will be given to how models of technology and culture align with theories of modernity and postmodernity. For some, theories of technology developed in relation to a critique of modernity are entirely appropriate for understanding digital media. The march of technical domination continues apace and with it the more intensive and now largely invisible 'deadening' of everyday life in modernity (Taylor and Harris 2005). For others, the unique characteristics of digital media force us to radically revise our models of technology. There is something about the interactivity of digital machines which destabilizes modern categories of culture and technology (Poster 2006). Problematizing both these perspectives is the view is that modern and postmodern theories of technology are rather similar forms of reductionism where a diverse series of technologies and techniques is collapsed into *technology*. The advent of digital technology involves a 'reshuffling', inviting further reflection upon the very idea that there is 'technology' and that it is something different than 'culture'. In the contemporary moment, the roles of machines in the production and maintenance of culture and society have become explicit rather than implicit. In other words, for Barry (2001), the predominant feature of our 'technological culture' is the very idea that social and cultural change is increasingly located within technologies and devices. How stability and change are actually related to technical devices requires in-depth empirical analysis and has significant implications for the notion of a transition from analogue to digital.

This chapter outlines and develops the claim that if we pay greater attention to the technical artefacts themselves, then the relations between analogue and digital devices, techniques, conventions and practices appear far more 'uneasy' and provisional than aforementioned discussions would suggest. In doing this, the chapter draws upon some different disciplinary traditions: social theory, science and technology studies, and new media theory to explore academic debates about digitization from a different angle. There are three broad sets of arguments I wish to make here. First, that the narratives discussed in Chapter 2 embody underlying commitments to ontologies of technology and culture rooted in a dualism of modernity versus post-modernity. I argue that, despite their manifest and important differences, we are left with essentialized or abstractionist models of technologies which underplay locally specific dynamics of enactment. In turn, we are invited to accept macro models of a definitive transition from analogue to digital culture, the character of which is either discontinuous or continuous with modernity. We have 'more modernities' or 'post-modernities'. In both positions the technical devices imbued with such predominant roles are taken both too seriously and not seriously enough. They determine or under-determine, drive or reflect, modernize or post-modernize. I argue that such forms of reductionism, however nuanced, are unhelpful in understanding the dynamics of digital cultures.

Second, I argue that we need to turn elsewhere to introduce some of the specificity and diversity of both digital technologies *and* cultural environments. For some new media theorists there are distinct properties or 'principles' of digital media which

become enacted in cultural processes of one kind or another. The key ideas to be explored here are those of variability, transcoding, and remediation. By contrast, for those working in STS or the anthropology of technology, such properties or principles are rather more ambiguous in being outcomes of provisional arrangements, associations or 'hybrids' of cultural and technical elements. These represent quite different ways of conceptualizing the materials of digital culture, how they are tied together, and the kinds of effects they produce. They imply alternative ways of thinking through the broader models of digitally mediated cultural change presented in Chapter 2. Most importantly, they suggest different kinds of questions concerning access, interactivity and authenticity in the later chapters.

Following this, I want to develop three more specific sub-arguments. One has to do with why the technological modernisms and postmodernisms discussed should not simply be abandoned. We need to consider how actors pursue policies of 'technological modernism' or 'postmodernism'. Discourses of technological and cultural change are themselves active within institutional cultures, as part of the enabling and constraining dynamics of inventiveness, cohesion and change. In other words, claims are made about what is 'new' and 'old' within specific environments and there are often serious contestations of such claims, the outcome of which arguably frame moments of stabilization and closure. A further line of argument is that despite numerous efforts of standardization there is nothing inevitable about the formation of digital cultures in practice where questions of how materials are entangled and integrated (or not) become central. This becomes a question of local specificity, where digital technologies are enacted and experienced. Technical objects have to be constituted as such; they have to be inscribed and made amenable to use, whether that be for purposes of accessing, connecting, interacting or whatever. Such a task is at once intellectual, material, and use-orientated.

Finally, while new media theory generally conceptualizes media objects as performative rather than passive, it is within science and technology studies that we find the conceptual architecture for extending the notion of agency and exploring the different dynamics of enactment which, I will go on to argue, should characterize how we think about the *making* of digital cultures. This entails a number of moves, not always present within STS work. One is to conceive technical properties as undergoing *ongoing* inscription and de-scription in practice, in contrast to dominant models of closure or stabilization (Bijker et al 1987). Another is to think about object-object relations, or in other words, about 'suites of technologies' that make certain practices possible or desirable and prevent or obscure others (Shove 2003; Shove et al 2007). These ideas force us to examine the distinctions between analogue and digital in terms of how relations between materials, discourses and practices are assembled and managed.

In the following sections it is important to note that the discussions here are not an evolutionary narrative. Indeed, the point is precisely that these three theoretical orientations as I construct them are adhered to and practiced by advocates and detractors on the ground. For example, governments tend to pursue policies of technological modernism, where museum curators are veering towards technological postmodernisms. In this way, each is taken seriously as a form of theorizing and active *positioning*.

Enframing, Rationalization and Control

> If we are to resist the logic by which technology becomes the measure of all things, we need above all to secure a critical intellectual vantage point beyond its empire (Robins and Webster 1999: 247).

There are numerous understandings of the term 'technology', many of which have been developed relatively recently in response to a variety of systemic changes in material production. It remains a contested term in terms of debates about what constitutes a particular technology, where its boundaries lie, what kind of actions it can perform, and how it is related to social, cultural and political entities. In this latter regard, a largely asymmetrical relationship between technology (technique) and culture (meaning) has been central in defining the concept of modernity in much social theory. For example, the antagonism between the two spheres dominates much of the philosophy associated with Critical Theory (particularly the Frankfurt School), but also classical sociological theory, and more recently within cultural studies of mass media and ideology. The image of modern technology as autonomous functional systems colonizing civil society, democratic cultures, and the possibility of transcendental critique is a common theme (cf. Adorno and Horkheimer 1972; Heidegger 1977; Marcuse 1964). This way of thinking about technology as more than a series of objects, a system, or tools, is arguably *the* feature of modernity itself, an insight articulated most clearly in Heidegger's phenomenology of modern technology as *enframing* (1977). The important thread is that the distinction between technology and culture is not only an analytical or epistemological one, but also an ontological difference.

The nature and role of information technologies is most commonly analyzed in relation to longer standing critiques of technology in modernity, particularly where modernity is conceptualized as an increasing technologization of society, culture and subjectivity.[1] Digital culture is the outcome of the abstract informational needs of contemporary capitalism; particularly it's military and finance machines. Again this is not exclusively about periodization; it has more to do with an ontological commitment. In the majority of analyses of modernity, technology takes a background role in processes of bureaucratization, rationalization and commodification. Those accounts that bring it into the foreground most typically assert that while technology has made modernity possible, it is antithetical to *culture*, or is essentially a different kind of entity than culture.[2] Specific technologies, whether digital or non-digital, are instances of *technology*, conceptualized as a rationalizing material or ideological force. For some, where technology can explain elements of social change, it also has the potential to liberate humanity from the material constraints of nature (for example Marx 1847, weaving between technological determinism and neutrality), or at least produce cumulatively progressive forms of the social. For others, this is an inherently dehumanizing fate, transforming culture and nature into technological

1 For example, this kind of utopian/dystopian debate can be seen in respect of the advent of cinema, radio, and television in particular (cf. Feenberg 1997; Kittler 1999; Poster 1990).

2 The diverse entanglements of the concepts 'technology' and 'modernity' are particularly well explored in Misa et al (2003).

modes of thought and 'attitude' (Ellul 1964; Heidegger 1977; Kittler 1999), or a naïveté laundering the ideological dimensions of the dialectics of technocratic thinking and art (Adorno and Horkheimer 1972; Habermas 1971; Kirkpatrick 2004; Marcuse 1964; Taylor and Harris 2005). The positioning of digital technologies as un-differentiated technology, albeit historically specific, represents a continuation of this antagonistic dialogue of rationalization and modernization.[3] Any transformation of existing institutional cultures in relation to digital technology is conceived as another layer of domination – a domination now achieved through the convergence of computing machines with media forms, content and vehicles. It has been argued that the Internet is merely the latest in a long line of militarized and governmentalized information technologies, and as such is intrinsically embedded within a more general desire for societal control:

> We argue…that the military principle of 'command and control' is at the cutting edge of informational developments and that it is integrally connected to the wider search for order and control within and even without nation states (Robins and Webster 1999: 8).

It is certainly the case that, for the most part, models of digital culture stemming from critical theory agree that digital technologies are qualitatively different from pre-digital media. For example, they facilitate the reconstitution of time-space frameworks, they detraditionalize social relations, they institutionalise 'interactivity' whether in terms of empowerment or surveillance, they allow for many-to-many communication, they create the possibility of vast databases, and they transform their users into new subjects. Yet, in both promise and threat-led discourses, digitization is seen as the logical extension of existing information and communications technologies within cultures already organized around technical rationalities and control, progress and liberalization, or a continual dialogue between risk and opportunity.[4] In other words, at a 'higher level' the differences between digital and non-digital media are subsumed into the logic of modernity as a cultural or technological machine. These essentialist models of digital culture can be summarized in simplified form:

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3 In etymological terms, the English word 'technology' derives from the Greek *techne*, emphasizing 'craft', 'making' and 'skill'. During the eighteenth century, the closest approximation of this term was the 'mechanical arts'; those considered useful or practical, as opposed to the fine arts; those considered high or imaginative. These definitions retained the emphasis upon the knowledge, art, and practice of craft, but incorporated a notion of systematicity, which pervades modern usage of the term. During the 19th century the term changes through its use as an 'application of Science' (Williams 1983). In consequence, a conceptual separation occurs here between machinery and culture, or technique and meaning. For example, the ways in which such principles of systemization pervaded philosophies of mind, theoretical physics, bureaucracy, theories of nature, factory organization, and so on, is often not associated with the term 'technology'.

4 See Slevin (2000). Using Giddens' account of Reflexive Modernity (1994), he takes a realist and largely cognitive stance on risk and uncertainty. Accordingly, the Internet is analyzed in terms of an 'increasingly uncertain world'.

Promises

- Digital technologies either possess substantive democratizing properties or are intrinsically neutral.

- When conceived as neutral, (instrumentalism), they inevitably lend themselves to democratizing global forces of information creation, transfer and dissemination (technology is always used progressively).

Threats

- Digital technologies either posses substantive de-democratizing properties, or are intrinsically neutral.

- When conceived as neutral (instrumentalism), they inevitably lend themselves to control by de-democratizing forces (hardware and software ownership equals anti-democratic control).

We can further tease out some of the variants of technological essentialism here, where technology may be conceived in *instrumentalist* or *substantialist* terms (Feenberg 1999). The something inherent in the technology might be neutral (instrumentality) or substantial (technical rationality). For instrumentalists, the ontology of technology becomes either emancipating or dominating depending on who or what is in control of it. It is the ways in which neutral technologies are put to use by powerful interests within the domain called 'society' that determines the effects of that technology, or the degree to which the sphere of the technical overlaps with the social or cultural (Habermas 1997). This underpins both promise and threat orientated accounts of technological effects: on the one hand, technology is inevitably used progressively, for example in providing access to a digital 'knowledge commons', or is inevitably used by dominant institutions to cement and augment undemocratic practices by, for example, further rationalizing the exploitative mechanisms of capital over labour in the total work environment of the call centre.

For the substantialist, technology can also be either emancipating or dominating, but this is dependent upon the properties of technology itself, rather than on external social processes. The ontology of technology determines its effects.[5] This can also underpin both positive and negative accounts: technology itself possesses innately progressive qualities, such as facilitating democratic communicative exchange, or on the other hand, it possesses innately dominating qualities, for example, by necessarily abstracting and instrumentalizing human relations, where, as Jacques Ellul has it, 'technique ... has become autonomous' (1964: 46).[6] The essence of technology is

5 Heidegger's (1977) insight that technology is a mode of seeing the world (or more specifically, a 'challenging forth') has been central to recent accounts of the ubiquity and transformative character of 'postmodern technologies' in Borgmann 1995, Feenberg 1999, Poster 2002, and Taylor and Harris 2005. It is transformed into a fully materialist theory of media ontology by Kittler (1999).

6 Jacques Ellul, in *The Technological Society*, attempts to trace the effects that technology (*technique*) is having upon other societal spheres, such as politics, economics, and so forth.

ontologized in all these cases. Technology is framed as possessing a substantive or neutral essence irrespective of social, cultural or historical context. This is not simply a case of family resemblance; the continuous ontological structure of technology allows for the reduction of a multiplicity of artefacts to technology.[7] This has deep significance in Heidegger, where it is the metaphysics of *Gestell* (enframing) that defines technology, not devices or techniques. Technology is a position taken toward the world. In the case of digitization, the media theory of Friedrich Kittler (1999; Gane 2005) offers a similarly totalizing position, but with a materialist orientation.

For Kittler, what are new about new media are the particular conditions of possibility they make available, where '[t]he dominant information technologies of the day control all understanding and its illusions' (1999: xl). It is the media – the technology – not the message, that is central to Kittler's theory. The material structures of media are privileged over any meaning their circulated messages may contain. These material structures – the keys of the typewriter, the algorithms of the computer – only make possible particular forms of thinking and meaning making and occlude others. Importantly, one cannot *understand* media (as in McLuhan 1974). One can only attempt to document the historical conditions of their emergence retrospectively. Although the majority of Kittler's work is by implication upon earlier 'discourse/networks' (historically specific information processors) he has recently commented upon the collapse of previously distinct media technologies within computerization:

> The general digitization of channels and information erases the differences among individual media. Sound and image, voice and text are reduced to surface effects, known to the consumers as interface…Inside the computers themselves everything becomes a number: quantity without image, sound or voice (1999: 1).

Most importantly, the technical apparatuses of a given period are systematic in their effects. They structure the entire social field, produce corollary forms of subjectivity, and provide the possibilities of knowledge.[8] In other words, culture in all its forms is a question of its technical architecture, whether the letter and handwriting, the gramophone and its reconstruction of the senses, or digitization and its transformation of everything into numerical form. The increasingly invisible machinery or hardware of the interface creates its 'end-users'; the material structures of computation are not objects but processors, and what they process is subjectivity.[9] Indeed, as we saw in

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The effects, for Ellul, are dehumanizing in that every field of human activity is subject to the technical logic of efficiency. See also Feenberg 1991 and 1999 on substantialism.

7 Technology here might be conceived as 'technique' (Ellul 1964); 'technical rationality' (Habermas 1970); 'de-worlding' (Heidegger 1977), and so on. While very different, they are all abstractions of multiple and diverse devices and relations into *technology* at the level of ideas.

8 This is similar to Foucault's model of power/knowledge formations, but with a materialist as opposed to discursive emphasis and arguably a greater rigidity.

9 For Kittler, the boundaries between bodies and machines are no longer clear (if this was ever a plausible distinction), and the human body and the idea of 'humanness' are effects or constructions of media. Think here of current understandings of self in the terms of

Chapter 2, one is encouraged to access the software in its 'user friendly' variants, but one cannot access the hardware. The purpose of modern computing for Kittler is precisely to disempower its users in this way.[10] Access to digital culture really means computer access to human beings; interactivity is an elaborate and somewhat ironic form of disempowerment, and the notion of authenticity can only be revisited well after the digital era has been superseded by another discourse/network.

There are two reasons for briefly revisiting forms of technical determinism here. Firstly, it is central to understanding the dominance of the promise/threat dichotomy (Chapter 2) in structuring so much of the debate surrounding the impact of digital technology *on* culture. In some ways narratives of promise and threat offer a dialectical reading of new media development. For example, the argument that we should develop powerful critiques of any claims to technical novelty and promise over and above the 'underlying' expression of modern capitalism remains a compelling and partially useful mode of critique:

> Continuity is painfully apparent in everything ... we have described the transformations associated with the global network society as the new enclosures. What they express is the drive to subjugate more and more elements of social life to a logic of rationality and control (Robins and Webster 1999: 234).

While it remains useful as a way of directing our attention to the longer history of information and the rhetorics of novelty at work in digital culture narratives, especially as wielded by government departments, corporate bodies and especially the computing industries, it leads us into too many assumptions about the logic of technical development and a strong sense of inevitability and closure around particular sets of ideals and values. We are also encouraged to assume a direct, often linear, relation between ideals, technologies and practices. A shared assumption is that there is some invariant ontological essence that is definitive of digital technology (and therefore that there are in-built properties, dispositions, teleologies that accompany the technology irrespective of its uses or appropriations). The predominant feature of such a position is to conceive of cultural change as a series of definite 'effects' resulting from the deployment of specific technologies by particular groups. What I have described as the key tropes or problematics of digital culture discussed in Chapter 2 (access, interactivity, authenticity) are treated either as intrinsic properties or definitive effects of specific technologies. In consequence, further social and historical analysis is rendered irrelevant. From the modern perspective, digital technology both embodies and drives further modernization (now commodification), in either its utopian or dystopian forms. The characteristics of digital technology are the same across the globe. This stems from a particular reading of digital technologies as enabling infinite reproducibility (Taylor and Harris 2005). As Andrew Barry (2001) observes, in modernity this is seen as a necessary attribute of the technical,

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information theory, biology and complexity theory. Kittler states that '[T]he age of media… renders indistinguishable what is human and what is machine' (1999: 146).

10 A similar argument is made by Rose (2003) where 'user error' signifies the manufacture of a 'dumb' user through 'friendly' software. Where Rose's argument returns to a conventional humanism in the last analysis, Kittler's position is avowedly post-human (see Gane 2005).

where it is not contaminated by social or cultural specificities. This appears to be especially true when digitization can be reduced to the transformation of everything into 0s and 1s.

Secondly, thinking in a more reflexive vein, these essentialist models are not positioned here simply as 'straw men' in that they do have a life on the ground as resources for institutional actors. That is, determinist tropes are routinely called upon in making particular claims about digital culture; claims which legitimate and indeed sometimes necessitate specific courses of action. For example, the claim that digital information is uniquely mobile regardless of context is central to managerial rhetorics in Chapter 5, and is one of the central concerns of cultural practitioners in Chapter 6. This is often known as 'strategic essentialism', but might also be thought of in terms of the immanence of global information culture.[11] But as I shall go on to argue there is no reason to think that technological modernisms of this kind can be operationalized into practice in any simple sense.

Indeterminacy, Variability, and Virtuality

> …the Internet is more like a social space than a thing, so that its effects are more like those of Germany than those of hammers…the problem is that modern perspectives tend to reduce the Internet to a hammer (Poster 2001: 176-7).

Commentators drawing upon poststructuralist theory and/or analyses of postmodernity have conceptualized emerging information and digital technologies as decidedly indeterminate (for example Lash 2002; Lury 2004; Manovich 2001; Poster 1995, 2001, 2006; Turkle 1996). Where those within a broadly modern tradition stress the continuity of social and cultural organization and the embedding of new technologies within existing frameworks of rationalization or metaphysical regimes, postmodern theorizing suggests radical discontinuity, often created and certainly intensified by new communications technologies.[12] Mark Poster, cited above, in reference to Heidegger's particular form of essentialism, argues that we simply misunderstand the Internet and related technological forms if we continue to think in terms of the first media age rather than the 'mode of information'. For Poster, it is the non-representational character of electronic communications which makes them postmodern, where the 'flow of signifiers' disrupts the fixed categories associated with earlier oral and written cultures (1990, 1995). The mistake of modern theorizing is to think exclusively in terms of either the emancipatory effects of digitization upon pre-existent identities, or the irrevocable 'loss' of the human subject to all-encompassing convergent media/technology (Kittler 1999; Taylor and Harris 2005). We need to think about technology and the cultural in more fluid

11 In which digital technologies are continually drawn upon as modes of imagining the future and constructing the present. On immanent critique of information culture see Lash 2002.

12 The label 'postmodern' is applied relatively loosely here. For example, Lash (1999) is not a postmodernist, but articulates a third sense of modernity outside or underneath 'simple' and 'reflexive' modernity.

and transactional terms, as 'language machines' (Stallybrass et al 1998) which have always been mutually constitutive. Whereas for modern social theory technology creates a total and somewhat systematic material and ideological environment of domination or liberation, for others the trajectories and properties of new media may be all pervasive but are also far more contingent and ambiguous in their effects. The precise nature of these trajectories and properties are of course subject to debate.

The majority of modern technology is concerned with the manipulation of physical properties. In contrast, postmodern technologies are explicitly concerned with the manipulation of information (Castells 1996; Lash 2002; Lury 1997, Poster 2006);[13] the manipulation of information *constitutes* entirely novel forms of culture and power. Technology as information is all-pervasive in a more explicitly cultural form as it penetrates and mediates all aspects of societal life, but with a high degree of ambivalence and contingency (Lash and Lury 2007). This entails a double movement. Firstly, the characteristics of new media effectively deconstruct our received models of technology as systemic thought-environments or inert things (Lash 2002; Lyotard 1991; Poster 1995, 2002; Rifkin 2001). Cultural processes are now unthinkable outside of technological mediations in a world made of computable and modulated information (Manovich 2001). Secondly, the institutions upon which modern (print-orientated) ideas of culture and power are predicated are themselves problematized by such a new understanding and experience of unhinged technology. In this sense, the question of whether the 'impact' of new media will be normatively good or bad is mute. We should be asking how our existing understandings of culture and power are remediated in potentially unforeseeable ways, as was the case with the shift from oral to print (Poster 1995, 2001, 2006). Instead of continually attempting to locate or situate new media within modern conceptions of technology (causality, logic, effects, domination, and so on) as a way of avoiding the delirious perniciousness of new media rhetoric, we should acknowledge the radical difference of new media in terms of both unsettling our experience of and relation to cultural objects.

There are two more specific lines of argument to be discussed in turn which are thought to distinguish new digital media from their modern counterparts. Firstly, a key idea is that new media are 'underdetermined'; this concerns the variability of digital information and the concomitant contingency of its effects. This has radical implications for the character of interactions between technology and culture. Secondly, new digital media are thought to create 'virtual' rather than 'actual' relations; or more accurately, are thought to reverse the traditional movement from virtual to actual associated with modern technology (Levy 1998; Lash and Lury 2007; Miller 2000). Again, the implications are radical for any theory of the effects

13 Of course, this in itself is insufficient to designate the Internet as a 'postmodern technology'. For example, Castells (1996) makes much the same point, but understands these processes (Net) as operating 'against' modern forms of life (Self). The difference for the postmodern theorist is that the manipulation of information *constitutes* entirely novel forms of culture and power. So while we might compare Castells' and Poster's analysis in terms of a shared belief in a new epoch, we must be careful not to conflate their very different analyses of what that epoch is. The differences between Castells' macro sociology and Poster's media theory far outweigh any commonality drawn at such a general level of techno-cultural change.

of technology in culture. The generalized features of new media identified in modern and postmodern theoretical models can be simplified here:

Table 1 Schematic Model of Modern and Postmodern Technologies

Modern	Postmodern
Material	Discursive
Continuous	Discrete
Objects	Spaces
Determined	Underdetermined
Neutral (Instrumental)	Cultural
Actual	Virtual
Centred	Decentred
Fixed	Mobile
Governable	Un-governable
Effects	Performances

This is a heuristically useful model in demarcating ontologies of modern and postmodern technologies, and it has particular resonance in Chapter 4 in relation to knowledge, but as Poster has pointed out, the notion of a simple 'transition' from one state of affairs to another is quite wrong.[14] But Poster does assert something like a 'break' where digital is now the dominant mode of information. If institutional modes of organization are strengthened in technological modernisms, they are undermined in Poster's account.

Underdetermination: The Uncertainty Revolution

> What is new about the medium of the Internet – which I distinguish from print and broadcast media – is that as a machine, a thing in the world, an object extended in space, in short, as simply one more technological device, it is nonetheless *underdetermined* (Poster 2001: 13; Original emphasis).

In discussing the idea of underdetermination I want to draw upon two somewhat different theorists of new media. Poster's (2001, 2006) interventions are largely theoretical in the tradition of critical theory and are mostly concerned with language. Manovich (2001) develops a materialist theory of new media with a precise attention to technical forms that is not found in Poster, Kittler (1999) or Taylor and Harris (2005). In Poster's historical account, the Internet and related new media can be

14 Poster has been criticized for presenting such a view (for example Flew 2005; Webster 2002) but clearly states that 'Periods or epochs do not succeed but implicate one another, do not replace but supplement one another, are not consecutive but simultaneous' (1996: 21)

distinguished from the explicitly modern media of print and broadcasting.[15] The newspapers, journals and discourses established through the medium of print, through the mechanical reproduction of the cultural object, are extended in time and space. That is, they encourage a cognitive, reflective relation with them, they *constitute* the modern subject – the citizen, the intellectual, and the democratic subject of the nation state are inconceivable without print. Print objects are determinate, they are extended but fixed in time and space, and they encourage a relation of opposition between the knowing subject and the cultural object. The electronic media of film and television are further extended in form in that they are faster and encourage more flow from the centre to the periphery. They also introduce the hyper-real (the self-referential real) and as such begin to upset the centred stable subject of modernity.[16] But, the radical difference with digital media is that they allow for non-representational activity to be conducted on a global scale where the contested cultural objects of the media can be 'sent back' as it were. The underdetermination of digital media can be summarized in the following ways: Firstly, the producer/receiver model of communication is deconstructed. This is highly significant for Poster as it inaugurates a democratization of communication where:

> the acts of discourse are not limited to one-way address and not constrained by the gender and ethnic traces inscribed in face-to-face communications. The magic of the Internet is that it is a technology which puts cultural acts, symbolizations in all forms, in the hands of its participants (2001: 184).

Secondly, 'culture' is thus simultaneously received, mediated and manipulated. Thirdly, communicative action is removed from the traditional territories of the nation-state, moving across space and time outside the traditional zones of power. Where the nation state is central to modern media communications and cultural forms, it no longer holds where the new media become primary spaces for communication and self-transformation in, for example, the blogosphere. Fourthly, global contact can be achieved simultaneously, removing the traditional fixity of national institutional and self-identity. Finally, the subject is inserted in a networked configuration, which is not inherently disabling, but rather reveals subjectivity as an explicitly 'constructed' phenomenon to be worked upon (Poster 2001).[17] All these phenomena problematize the modern theorizing of technology as fundamentally

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15 It has required considerable work in shifting the culturally dominant function of computers from calculation to communication. For Manovich (2001), this is 'transcoding', where culture (media) is now shaped by the conventions of computing (numerical representation and calculation).

16 This represented, for Adorno and Horkheimer, the industrialization of culture, and, the disappearance of autonomous culture as a space for critique. For British Cultural Studies, the opposite was nearer the mark; it was discovered that subjects routinely resist the hegemonic meaning of media channels, creating novel meanings in relation to socio-structural constraints. This is not simply a matter of recognizing the agency of the audience, but concerns the precise ways in which audiences are enabled, allowed, or expected to be active. See Tudor 1999.

17 The ability of users to modify and redistribute content is taken as central where this changes what is meant by an 'audience' (Livingstone 1999).

continuous with our understandings of properties and effects. As a consequence, indeterminacy has become a defining feature of digital technologies:

> With the term *underdetermination*, I contend that certain social objects that I call virtual (Hypertexts, for example) are overdetermined in such a way that their level of complexity or indeterminateness goes one step further. Not only are these objects formed by distinct practices, discourses, and institutional frames, each of which participates in and exemplifies the contradictions of capitalism and the nation-state, but they are also open to practice; they do not direct agents into clear paths; they solicit instead social construction and cultural creation (Poster 2001: 17; original emphasis).

This is a quite different reading of digitization to that of, say, Kittler (1999). Instead of delivering the emancipation of the modern subject, or its further dehumanization, we have more open and contingent configurations of technology and subjectivity. For Poster, there is a sense in which digital is an inherently reflexive technology, necessitating radical reflection upon both its own form and the possibilities of creative performance. For example, *Hypertext*, as a mode of writing, appears to require the reader to be active and creative in producing their own narrative form. For Kittler, this is the loss of any connection or understanding of what it is to write, of even knowing what the relation is between hand and type, between thought and word. But for Poster (2006), while both the structure and meaning of the hyper-text are indeterminate and underdetermined, this should not be confused with any kind of immateriality:

> There is nothing immaterial about networked digital information systems…it is precisely the new *form* of materiality, its electronics and machine-level language, that enables these systems to work as they do. Only ignorance about new media allows one to characterize them as 'immaterial' (Poster 2006: 56).

For others, it is not only the Internet that constitutes these kinds of contingencies. While not described in terms of post-modernity, a significant break with modern (critical) theories of cultural industries is posited by Lash and Lury (2007) who assert that the broader shift has been from 'determinate' to 'indeterminate' cultural objects. A general theory of unintended consequences is used here in explaining that cultural objects, particularly in digital form, circulate and are transformed in ways which would have been inconceivable until very recently. One of the key aspects of this is the digitization of previously non-digital cultural forms and technologies. The real resonance of this will be explored through the archive in Chapter 6. While Poster has concentrated on the capacities of networked information technologies, the new media theorist Lev Manovich has developed a nuanced account of the principles of new media in their various formulations. For Manovich (2001) it is in the 'principles' of new media objects that we will find any novelty in relation to old media, and this is not always a question of analogue versus digital. In a detailed and sophisticated account of this 'language' of new media, Manovich argues that:

> Today we are in the middle of a new media revolution – the shift of all culture to computer-mediated forms of production, distribution and communication. This revolution

> is arguably more profound than the previous ones, and we are just beginning to register its effects (2001:19).

The revolutionary aspect here is the unforeseen coupling of computing and media technologies; an unprecedented phenomenon, producing a kind of spatial and temporal vortex whereby everything is computerized and mediated in the present. Moreover, through this 'transcoding', older media and cultural practices are subject to a remorseless re-materialization as computer data where cinema and photography are redefined through the 'cultural conventions' of computing. This is a ubiquitous 'information culture' at its most literal, with computerization at its core. The synthesis of computation and media forms involves the:

> …translation of all existing media into numerical data accessible through computers. The result is new media – graphics, moving images, sounds, shapes, spaces, and texts have become computable; that is, they comprise simply another set of computer data (2001: 20).

Accordingly, and in contrast to critical theory, the focus should not be upon wider economic, political or sociological phenomena per se but rather upon the emerging conventions and practices of new media designers as they organize the data which structures the users' experience. As new media objects are cultural objects:

> …the computer media revolution affects all stages of communication, including acquisition, manipulation, storage, and distribution; it also affects all types of media – texts, still images, moving images, sound, and spatial constructions (2001:19).

The key principles at work here are the emergence of 'programmable media', the 'modularity' of new media where objects such as web pages are configurations of discrete units presented as modular forms, the automation of creative actions by software, the variability and immediacy of 'liquid objects' constructed as they are used (such as digital games), and the aforementioned transcoding of media and computation. It is important to stress that the 'principles of new media' that Manovich specifies should not be considered as fixed, law-like properties. Rather, these are 'general tendencies' of a culture undergoing computerization. What is also important here is how this shifts the focus away from the dominant narratives of 'interactivity' or 'networks' and toward a more abstract set of principles which *may or may not* manifest as interactivity or networking and so on. This adds some nuance to Poster's analyses of the form rather than use of new media in that there might be various models of interactivity, which may be relatively 'closed' or 'open' in practice. The kind of 'digital materialism' that Manovich proposes suggests accounting for any 'digital culture' from the bottom up. This means following the cultural objects as they are created through practice. However, it places the making of digital cultures firmly in the hands of new media designers and the objects they produce. It matters not what the cultural institution actually does, as the architecture of practice is invisibly constructed prior to any use and may be the result of the relation between cinema and software rather than the politics of cultural policy. As such the cultural

objects of Manovich's information culture have a significant dynamism and degree of agency:

> New media objects are cultural objects; thus, any new media object – whether a Web site, computer game, or digital image – can be said to represent, as well as help construct, some outside referent: a physically existing object, historical information presented in other documents, a system of categories currently employed by a culture as a whole or by particular social groups (2001:15).

Virtual Power

Manovich (2001) sees the new cultural objects as liquid in form. That is, unlike the objects of Benjamin's mechanical reproduction they can produce infinite variations not only infinite copies. While this might appear a rather different form of democratization, it is muted by the delegation of some of this variability to software machines (updating; versioning) and the invisibility of computation. For Poster, underdetermination arises through the formation of *virtual* objects and relations – new territories and forms are created through exchange. The notion of virtuality is, of course, not straightforward. Many modern theories talk of the virtuality of information technology. Poster draws upon Levy's (1984) understanding of the virtual as the 'not actualized'.[18] The flows of digital information are always open to reconfiguration, as they are never concretized in specific time-spaces, unlike, say, print objects. The modern ontology of technology operates upon the idea that objects are created when (virtual) potential is made actual. For Poster, digital objects are not like this. The actualization of potential does not occur, rather, it is always endlessly deferred as a field of possibilities through which multiple narratives may be explored. Digital cultural objects such as web pages are thus thought to be always indeterminate, undecideable, and therefore always virtual (Poster 2001). Web pages are always in process, always deferred as new links are created and followed, old links disappear, and endless ways of navigating through appears possible. In fact, digital media reverse the traditional functionality of technology, virtualizing the actual, whereas modern technology actualizes the virtual. In digital culture, there is no central authority which can fix symbolic forms in time and space, and therefore actualize them. Where industrial technologies were developed and inserted within

18 The use of the term 'virtual' as a description of Internet facilitated interaction has taken a number of forms. This has been used to argue that modes of Internet communication should essentially be considered *authentic*. Hence virtual community, identity, communication, exchange, and so on, as used by Rheingold (1994) and others. This use of the term virtual emphasises the 'meaningful' character of computer-mediated-communication – it is virtually as authentic as the 'real'. Similarly, the term is used in the opposite manner, to describe the non-real aspects of CMC. This is a negative connotation of the virtual as a poor *substitute* for the real. This can be found in critiques of narratives of promise, for example in Jones (1995, 1997) and Robins and Webster (1999). I am referring to neither of these uses specifically. Rather, I am looking at Poster's work on virtuality as this is used to describe the *undecidability* of Internet technologies. This is an argument about digital ontology: what technologies are, and what their effects will be.

hierarchical forms of organization, enhancing this kind of structure, new media appears to defy the logic of actualization, centralization, and rationalization (Frissen 1997; Poster 2001).[19] As Poster states:

> The assemblage is digital so that messages travel, when bandwidth is adequate, at the speed of light. And it is packet-switched so that each message has no prescribed path but follows any available route to its destination. What is known as cyberspace is sustained by this entire apparatus. Though it is not a finished product with definite specifications and fixed features, one may characterize cyberspace, because of the characteristics that have emerged thus far in its configuration, as the virtual territory (2001: 152).

Poster suggests here, for example, that the very terminology of citizenship is outmoded and cannot be used to refer to the dispersed subjectivities of global information cultures (Poster 2001). Where the subject is constituted and re-constituted within digital databases, it is both disembodied and disembedded from the traditional anchorage of social and cultural institutions and territories (Poster 1990, 1995). Some have suggested that the very idea of discursive power, of institutional discourses of power, is outmoded in a world made of digital information flows. There is simply no time for power to be discursive, to be open to reflection. Power must now be operating *in* the information itself, as it is continually morphing and weaving through virtual spaces:

> Power was once largely discursive; it is now largely informational. Power is still very strongly, as Foucault suggested, tied to knowledge, but informational knowledge is increasingly displacing narrative and discursive knowledge (Lash 2002: 3).

The central difference between modern (substantive) and postmodern (non-substantive) model of technology is their respective emphases upon the continuous and discontinuous nature of new media features.[20] The ontology of digital media is not spatiotemporally global (everywhere), but undecideable and in a sense, formless (everywhere and nowhere). In digitally mediated postmodern culture, then, the game is up for traditional agents of power, whose very operations are unthinkable inside cyberspace (Frissen 1997; Lyotard 1991; Poster 2001).[21] In Poster's earlier account (2001), the virtual topoi of the Net provide an alternative public sphere within which new relations of power and cultural forms may emerge and operate. The central point here is that modern theories of technology in ontological terms tend to underplay, ignore or underestimate the apparently undecideable nature of digital cultural spaces and forms and overestimate the power of dominant institutions:

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19 We might think here of the blogosphere.

20 Others advance the idea that the Internet is essentially 'anarchic' in nature. See Paul Frissen's account of the postmodernization and virtualization of public administration (1997: 124).

21 The problem of the very idea of controlling information technology is intimated by Jean-Francois Lyotard in which 'an empirical or transcendental mode whereby the mind is affected by a "matter" which it does not fully control, which happens to it here and now – this whole idea seems completely out of date' (1991: 50).

> The stability of earlier forms of critical agency waver when the body is hooked up, through the keyboard, mouse, and screen, to the Internet. So exigent is the practice of self-constitution in communications in cyberspace, so strongly is agency here mediated by information machines, and so utterly dispersed is the space of interaction that oppositional practices of earlier decades no longer seem able to take hold of the situation. To insist upon agency politics in this context is to bury one's face in the sand of the bygone age of Man (Poster 2001: 76).

Poster's insistence that digital technologies or objects are performative in the relation between human and machine is productive. It positions the technology in relational terms in that human and machine are mutually constituted. Having said that, the imagined outcomes of digital information machines appear a little celebratory and it seems that the possibilities of subjectivity have been limited to individual, disembodied self-exploration drawn across the planet.[22] The models of postmodern culture brought to bear on this are often an unbounded stock of resources for actors to pillage and engage in unfettered practices of bricolage and reflexive self-definition (Bauman 2000; Featherstone 1995) and in a sense this has been mapped onto networked communications rather hastily. In this way Poster has arguably read uses from forms, a mode of abstraction which requires some empirical substance if we are to understand what the novelty of digital may be. Nonetheless, the important argument here about the specific performative capabilities of new digital media need to be taken seriously in the questions they pose for traditional accounts of technological development and cultural change, where technologies tend to 'reflect' or 'embody' other powerful interests. While I have concentrated on the 'what' of technology in digital culture so far, I now want to turn toward questions of 'how'. In order to do so, however, I argue that we need to turn to anthropologically orientated theories and empirical explorations of users and uses inspired by work in science and technology studies. These take a number of forms and have produced a wide conceptual armoury, some of which I shall draw upon in the next section.

Dynamics of Enactment: Scripting, Use, and Co-determination

> The great import of technology studies to the social sciences is to have shown, for instance, how many features of the former society, durability, expansion, scale, mobility, were actually due to the capacity of artefacts to construct, literally not metaphorically, social order…They are not 'reflecting' it, as if the 'reflected' society existed somewhere else and was made of some other stuff. They are in large part the stuff out of which socialness is made (Latour 2000: 113).

In tracking an intellectual debate about technology and culture I am arguing that approaches to digital technology are dominated by essentialist and abstractionist models in that either the function or form of technology is taken to be inherent in the artefacts or in the cultural forces shaping them. As such, continuity and change are

22 Even in terms of cyberspace communities these have operated along distinctly individualized and now *Blairite* models of community, where issues of choice, self-improvement and self-exploration have been paramount. See Rheingold (1994).

outcomes of largely autonomous technical development or the assumed reflexivity of users, or are a 'reflection' of the interests and mechanisms of dominant institutions, whether those of production and manufacturing or design and marketing. My simple initial point is that we need to explore some of these assumptions on the ground. It may well be that digitization is inaugurating profound cultural changes. But we cannot assume this by isolating the technical architecture of the machinery and theorizing the possibilities that appear to follow. In this next section, I will argue that work inspired by an 'anthropology of technology' forces us to re-consider aspects of these conceptions of digital technology in a productive manner, asking us to consider any novelty of digital culture as an outcome of the mutual constitution of technology, culture and subjectivity in local terms.[23] There is more to this than further philosophical reflection on the 'question of technology'. Rather it is a matter of transforming aspects of social theory and new media theory into the kinds of empirical studies in STS. This is important as there has been a tendency within recent accounts of new media to avoid issues raised by those working is STS, especially through the reduction of a rather diverse set of positions in technology studies to a generic 'social constructivism' or 'social constructionism' which is then positioned as incommensurate with saying anything about broader trends (e.g. Flew 2002; Taylor and Harris 2005). At best this is misleading. At worst, it dismisses a wide range of empirical work on the specificity of technology and culture in favour of endless speculation or abstraction. In this section I want to reassert the importance of concepts from the interdisciplinary field of technology studies, while paying some attention to some of the tensions and disagreements therein. I will argue that a focus upon the material, symbolic and user orientated dimensions of digital technologies provides an alternative and robust set of questions for empirical exploration.[24]

Contingencies and Configurations

Postmodern theories of technology stress the contingency and ambivalence of digital machines as indicative of a break with modern conceptions and forms of technology. Flows of information produced by the convergence of computing and media present the possibility of control and disruption at the same time where societies are now 'modulated' rather than 'disciplined' (Deleuze 2002; Manovich 2001). There is a performativity to technology which is quite different from much modern social theory, especially where any effects of informational media remain 'underdetermined'. While this makes a strong case against the notion of a 'logic' of technology, to which a myriad of devices can be reduced, postmodernisms of this

23 The notion of the human-nonhuman 'hybrid' (Latour 1993) was one of a number of terms (see also 'cyborg' (Haraway 1991); 'collectif' (Callon and Law 1997); 'co-agent' (Michael 2000)) added to this repertoire during the 1990s.

24 In sociology, as in anthropology, the semiotic is privileged over the material. Material objects feature as semiotic intermediaries, 'carrying' meanings and resources for the construction of individual or collective identities (Featherstone 1990). The possibility that such items are also useful, or perhaps even agential, in enabling and shaping action fades from view.

kind tend to substitute such logic with either fragmentation or deferral. Much work in STS also stresses contingency and underdetermination, but these dimensions of technology are explored empirically and predominantly in terms of how specific local enactments may radically differ. In new media theory, the differences between analogue and digital technologies are largely drawn at the level of technical 'features' or 'principles'. Manovich's (2001) materialist argument about transcoding, that what is new about new media results from the computation of media, suggests a building in of automated principles which structure our experiences. But do such principles or features simply transpose into institutional and everyday practices? At what point might digital technologies embody these features and how do they relate to the ways in which they are configured and used?

As this is not a book in or about STS, this is not the place to review the history of or burgeoning literature in technology studies. I simply want to draw upon a number of important current debates. While there are varieties of post-essentialist technology studies, what they have in common is an attempt to problematize what essentialist theories take for granted as 'technology' (cf. Bijker and Law 1992; Grint and Woolgar 1991, 1997).[25] Briefly, the most basic premise of the variant known as the 'social construction of technology' (SCOT) is that in contrast to much critical theory there is nothing inevitable about technological development or the effects of a technology (Biker et al 1987). While there might be forms of 'lock in' or 'path dependency' where trajectories of technological development appear linear and unavoidable, things might always have been otherwise. The contingency and uncertainty of the technical may not lie, then, within the form of machines or devices, but rather be a consequence of technical outcomes resulting from social negotiations between social groups. I will briefly introduce two related approaches here. Firstly, a textual approach to technology further developed by Woolgar (1991, 2002), and secondly, the relational materialist approach favoured by Latour (1999, 2005) and others, both of which have significant implications for issues of novelty, stability and change.

In the textual or semiotic approach what we think of as 'technology' is an unavoidably rhetorical event. In this case, what counts as digital technology (or the effects of digital technology in culture) are textual; they are a matter of interpretation and representation and have the same kind of flexibility as a literal text. Rhetorics of technology usually take the form of claims about a technology's capacity, function, effect, and so on. Technology then is inextricably tied to discursive power in that it is impossible to access an unmediated knowledge of its capacities and effects. For example, as opposed to suggesting that variability is actually a property of specific technologies (for example, where the Internet is thought to be inherently less determinate than, say, the telephone network) analytic scepticism is taken as the appropriate conceptual register with which to approach technology in general. As Grint and Woolgar argue:

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25 It is important to note that these perspectives have their roots in, among other traditions, Foucauldian analyses of the contingency and relational character of power/knowledge formations where 'power and knowledge directly imply one another' (Foucault 1979: 27).

> The interesting questions are not, then, what does the technology do? Or, what are the effects of the technology? Since these questions presume an objectively verifiable – that is, un-mediated – truth. Rather, the point is to analyse the way certain technologies gain specific attributes. Again, this is not to suggest that machines do not have effects. Instead, what counts as an effect (or even a machine) is taken to be a social process involving the persuasive interpretation of information and the convincing attribution of capacities (1997: 33).

Indeed, as we have seen, the attributes of digital code are interpreted rather differently by Kittler (1999) and Poster (2006). For the purposes of this argument, this is a question of opening those 'reflective' accounts of technology and culture discussed above – where culture increasingly 'reflects' the properties of digital technology or vice versa – to a more *reflexive* sensibility where 'the conjunction of the technical and the non-technical is crucial to the very constitution of technology' (Grint and Woolgar 1997: 94). The implication of this is that there can only be rhetorics of technological novelty, which might equally include those of the designer, the management seminar and the critical theorist. A first set of questions, then, concerns the ways in which the properties, meanings, and uses of technical artefacts are culturally 'configured' among different constituencies on the ground, asking how it is that some claims appear more convincing than others (for example, the claims of a corporate lawyer rather than, say, a sociologist). In subtle contrast to Manovich (2001), building a 'bottom-up' account of digital culture would have to address a broader range of constituencies than technical designers. For example, in following this 'technology as text' approach, Hine argues that 'the Internet is everywhere, but it is not everywhere in the same way…the Internet is as much a discursively created object as a single, given artefact' (2000: 28-29).[26] This is significant, as we shall see, for in contrast to the analyses of Manovich (2001) and Poster (2006) there are multiple rhetorics about what digital technologies *are* and can *do* circulating locally which enable and constrain how they are situated and used in specific environments. These might be both conservative and radical and there is no a priori reason to assume in advance which rhetoric of technology will become stable or definitive. To emphasize, this 'configuration work', which has the effect of setting limits on what can be done with a specific technology, is undertaken not only by designers, manufacturers and technicians, but by institutional actors of many kinds who draw upon diverse

26 The Internet is most commonly viewed as a global totality, which may be accessed from disparate cultural contexts, but forms its own autonomous context (the 'on-line' world). I have argued that this is only one narrative of digital culture. While we can draw upon work in STS to maintain an analytic scepticism concerning the functions and forms of technology, there is often a tendency within such work to maintain an un-differentiated notion of culture (see Barry 2001; Hand and Sandywell 2002; Latour 1999; Law and Hassard 1999). Where technologies are socially or culturally 'constructed', what does the 'constructing' can sometimes remain opaque or be taken as self-evident. At one level, the micro-political contexts of technology/society transactions override any consideration of the wider dynamics and differentiation of culture. In another sense, the very metaphors of 'construction', 'social forces', 'building', and so forth, indicate a particular adherence to technological rhetorics of the transactions 'between' the cultural and the technical; that technical things are actually made out of cultural elements.

resources (including that of social theory) to configure both the technology and its imagined users in particular ways. Having said that, while new technologies are not simple carriers of modernist ideological domination which position their subjects accordingly, neither are they blank slates upon which cultural meaning is simply inscribed by reflexive agents. There are a number of distinctive and more specific processes to be discussed here which try to account for the conjunction of material, textual and practical forms of embedding.

If technology is rhetoric or social text as above, then strong accounts of novelty or necessity are located in the efficacy of claims making, in the configuration of technology as appearing to simply 'reflect the truth' about its appropriate uses and likely effects. Similarly, change concerns the shift toward new regimes of truth in this sense. Technology then becomes something like a social policy or, as Woolgar (2002) suggests, a form of 'social theory'. Latour (2005) proposes something rather different. He argues that it is a mistake to conceptualize the properties and effects of technology as only a rhetorical matter. He wants to extend the capacities and dynamism of things themselves in a 'relational materialism' so that:

> In addition to 'determining' and serving as a 'backdrop for human action', things might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid and so on (Latour 2005: 72).

Objects or technologies do not so much 'reflect' or even 'represent' the intentions of designers, manufacturers, the broader interests of capitalist organizations, or the truth claims of social actors. He argues that things are, in a sense, both more relational and more active than that:

> Objects are never assembled together to form some other realm ... simply 'reflecting' social values or being there as mere decorum. Their action is no doubt much more varied, their influence more ubiquitous, their effect much more ambiguous, their presence much more distributed than these narrow repertories ... even as textual entities objects overflow their makers, intermediaries become mediators (Latour 2005: 85).

Latour is here arguing against the 'social' in 'social constructionism' however complex that 'social' is thought to be. He wants to maintain the constructionism but distribute these actions more widely (Latour 1999). For Latour, the social construction of technology and the rhetorical approach have underplayed the performative nature of the object in being insufficiently reflexive in its reversal of the technology-and-society dualism. Although the meanings and uses of technology have been recognized as culturally defined, constructionism still tends to reserve the dynamics of meaning constitution to autonomous subjects, culture, or society.[27]

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27 Within constructionist scholarship, the traditional epistemological divide between technology and society has been the focus of much research and debate (cf. Bijker et al 1987; Bijker and Law 1992; Law 1991; Grint and Woolgar 1991). As Latour has recently argued, these approaches have generally maintained the divide is an ontological dualism, by theorizing technology from the other subjective 'side'. Within the social sciences, a distinction between 'hard objects' (the economy, genetics, biology, and so forth) whose universality is decided by science and technology, and 'soft objects' (religion, consumption, popular culture, and so

This is a metaphysical view of artefacts which is not sufficiently self-critical to grasp (information) technologies in their inscriptive and reflexive dimensions as mediators rather than intermediaries.[28] The roles of technologies or objects as mediators have become explicit in digital culture. As Lash has argued, a dualism between technology and culture, or between object and subject, appears increasingly difficult to maintain even as a methodological heuristic:

> Now technologies have never had the transcendental status that science and scientific facts and theories have had. Technologies have always been very difficult to reduce to poles of subject and object. Previously they have with difficulty been reduced to the object role, as in, for example, "technological determinism". But with the growing centrality of genetic and information technologies this is increasingly impossible. Technologies have become increasingly hybrid: neither subject nor clearly object (1999: 274).

The general challenge is one of undermining the view that technology is made of different materials than culture and that we then have to theorize the transaction between the two 'spheres'. In following the materialist thread, instead of assuming that technical devices have systematic effects read from their designed form or content, or dominant interests of one kind or another, we should consider *how* devices carry 'inscriptions' of what they are for, how they should be used, and how they relate to existing technologies and social practices.

Inscriptions

One of the most important concepts in the actor-network approaches of Latour (1999, 2005) and others is 'scripting'. This promotes a relational and materialist way of conceptualizing the development, diffusion and use of digital technologies. Scripting refers to the means by which a technology constitutes or configures its user *and* the possible relations with other elements in a given use environment. As Madeleine Akrich puts it, technical objects 'define a framework of action together with the actors and the space in which they are supposed to act' (Akrich 1992). At the level

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forth) which are constituted by the subject is one of the oldest divisions in the field. Within the special area of recent 'science studies', the hard objects are now included as topics available for social analysis and explanation. However, for Latour, the constructionist turn has had the effect of stripping away the qualities of the 'object', transforming those hard objects into purely immanent subjects. In this sense, constructivism is under the same constitution as realism, treating the dualism as existent, by explicitly crossing and attempting to explain it. For Latour, the mistake is to argue that objects are *caused* by subjects, that nature is socially constructed. Inverting the binary opposition generates the speculation that objects 'bear certain properties that subjects bear' (see Latour 1993, 1999; for commentaries see Lash 1999).

28 This simple insight can be considered as an expression of the *hermeneutic turn* in contemporary thought applied to technoculture. From this perspective our individual and collective experiences of the world are always-already interpreted and the process and products of interpretation shaped by the available inscriptions, symbolic resources, technologies, and traditions of understanding. Applied to technology this entails that the hardware of artefacts and material systems are themselves to be construed as open to appropriation and interpretive specification through interpretive action.

of design and manufacturing, relatively intentional or unintentional scripts may be produced, they can be material or semiotic, and they can be relatively open (flexible) or closed (prescriptive). Prescriptive forms of inscription are most obvious when objects or technologies are designed to configure the user in specific and practical ways. In a prominent example, Latour (1992) analyzes hotel key fobs which are bulky enough to be an encumbrance, thereby 'telling' guests to return them to the desk. In this case the message 'leave me at the desk' is *inscribed* in the key itself. Latour thus shows how things (the key fob) make social relations (between client and hotel keeper) durable in ways which go beyond those in the anthropologies of Appadurai (1986) or Douglas and Isherwood (1996). The point here is that relations between people can be inscribed and hardwired into the design of material artefacts. As such, it is misleading to think of things, whether they are key fobs or digital texts, as infinitely flexible carriers of ascribed meaning.

This has a clear resonance with Manovich's (2001) argument against 'interactivity' as a principle of new media as designers' instantiate open and closed 'formats'. Interactivity then is a condition that may or may not result. The important difference that the concept of scripting makes here is the *reciprocity* between design and use. The particularly significant important point is that:

> … technical objects and people are brought into being in a process of reciprocal definition in which objects are defined by subjects and subjects by objects. It is only after the event that causes are stabilized. And it is only after the event that we are able to say that objects do this, while human beings do that. It is in this sense, and only in this sense, that technical objects build out history for us and 'impose' certain frameworks. And it is for this reason that an anthropology of technology is both possible and necessary (Akrich 1992: 222).

The reciprocity between designers and users is paramount here and is more encompassing than Woolgar's (1990) argument about rhetorical configuration, Manovich's materialized account of formatting, or Taylor and Harris (2005) analyses of enframing, all of which in different ways privilege the point of view of the designer/manufacturer in establishing the field of possible interpretive practice. Akrich argues that in order to properly analyze how things have come to be as they are one has to move back and forward between these constituencies so as not to take any particular point of view as definitive because 'Neither the purely technical necessities nor the imposition of certain sociopolitical forms can explain the form taken by innovations' (1992: 36). The conditions of variability, interactivity or indeterminacy I discussed above in relation to Poster's (2001) work need to be repositioned as *questions* about the details of reciprocal movements between rhetorical and material design *and* the ways in which those scripts are engaged with at the level of everyday practice. Scripts are also dependent on contextually specific cultural norms, and can also be open in the sense that a technology allows for or even expects multiple uses, meanings or practices. In sum, the concept of scripting highlights the range of contextual, practical, material and semiotic factors that need to be taken into account when considering whether and how the designer's inscription will in fact define the end use of the technology in question. Claims about the technological determination of cultural practices should be correspondingly modest. The scripts of even the most

prescribed artifacts remain open to resistance and anti-programmes when exposed to the contextual realities of use. The relatively open scripts of digital objects posited by Poster (2006) and other new media scholars suggest a dynamism to the relations between technology and user that requires some qualification and contextualization in these terms.[29]

These approaches suggest introducing specificity to technologies (rather than 'technology') in a number of ways. One is to introduce scepticism about definitive properties and effects resulting from forms of convergence, interoperability and digital coding. A second is to consider how digital technologies may nonetheless operate as 'inscription devices' in relatively open and closed ways promoting some forms of use and delimiting others. The third is to relationally extend agency to the technology, the user and the cultural environment. If the possibilities of reciprocal determination between technologies and their users have been established it is arguably the case that the environments in or through which this occur are under-explicated in actor-network approaches. While we might now see culture as necessarily technical and vice versa, we know little about the specific practices or cultural dynamics which might enable or constrain the possibilities of inscription. If the technologies of digital culture become part of the 'fabric' of everyday life, not as a backdrop but as something more like the architecture or infrastructure, then we need to know more about what that fabric consists of, and what kinds of dynamics might be at play here.

Translation and Uses

If technologies become inscribed in relatively closed ways a related question in STS has been how such inscriptions are made stable and mobile; how do technologies 'succeed' in terms of diffusion throughout the cultural field? For Manovich (2001) new media become pervasive partly because of their computation and modular form. For Taylor and Harris (2005) it is the cultural alignment between digitization and commodification that explains ubiquity. From an STS perspective, one would have to ask how it is that non-essentialist technologies become configured within a range of different environments. Or, to ask how do objects or information become 'translated' into the localized frameworks of action operative within, say, different institutional environments. For example, as I will argue in Chapter 4, the ways in which the 'same' computers are inscribed, interpreted and used might be quite different in the public library and the cybercafé, with different implications for patterns of use, the redistribution and development of skills, and therefore the making of digital culture. For Latour (1999: 15) the translation of things involves not frictionless movement or mobility 'through' networks but their transformation. In a sense, things do not move at all, they are transformed as they are translated into different contexts. For example, as I will argue in Chapters 5 and 6, digital information is not 'raw' and

29 From this point of view digital technologies have a role in shifting the distribution and delegation of roles and functions between human and non-human actors and in re-defining the meaning of competence and skill. One result is that previously important forms of human competence, like the ability to write well with pen and ink, are no longer valued attributes.

neither is it 'mobile'. I will show how, in direct contrast to the seamlessness implied in both critical theory and new media theory, it requires a great deal of intellectual and practical work to make it appear to 'flow' through information networks and that even this is not necessarily achievable.

As a corrective to the technodeterminsitic optimism and pessimism of script writers and social theorists, the concept of appropriation is often deployed. In cultural studies, especially of media, it is well known that individuals interpret the content differently at the level of cultural meaning (Tudor 1999). This is important in establishing that digital media cannot simply 'embody' dominant interests as such encoding is necessarily conjoined with diverse practices of decoding. However, I am arguing that we should take a route beyond the semiotics of technologies or objects and their content as being reflective of wider cultural meanings, or 'projectors' of dominant social and cultural interests. We need to ask questions about use and uses. For example, the emphasis on uses has been used as way of explaining how standardized technologies or objects such as global brands come to be revalued in counter-intuitive and unexpected ways (cf. Miller 1988; Silverstone et al 1992).[30] The significance, then, is more than cultural appropriation. The dynamics of *uses* will have different kinds of impacts upon trajectories of production and consumption (see Shove et al 2007). In extreme cases, users actively develop and implement 'anti-programmes' (Jelsma 1999) in response or resistance to those inscribed in the technologies in question. This could take the form of direct technical intervention, for example, in 'hacking' the components of software. However, I am arguing that uses are more often a matter of how intentional or unintentional scripts 'mesh' with existing technologies or forms of conduct such that the dialogue between inscription and use produces forms of de-scription and re-scription. In relation to digital culture, this approach produces strong arguments for avoiding any face value claims about the dis-embedded nature or de-territorializing tendencies of the Web. Rather, digital culture should be analyzed from the 'bottom up', so to speak, as the provisional outcomes of inscription and re-scription in local practice (Miller and Slater 2000). Moreover, as I have discussed above, the possibilities of variable uses appear exaggerated in digital culture where digital objects are more or less *designed* to facilitate multiple interpretations and uses (Lash and Lury 2007; Poster 2006). In other words, digital technologies are inscribed with an open ended ambivalence in symbolic, practical and material ways. But, in line with the argument for local specificity, these technical possibilities need to be explored in terms of how and in what circumstances do such inscriptive possibilities get *enacted*? Digital technology may be *more or less* underdetermined within different and dynamic use environments.

The suggestion in dominant narratives that institutional formations are overridden, bypassed or eradicated requires further qualification, especially as from an STS perspective digital technologies do not stand outside or inside existing forms of organization or order but must be *constitutive* of orders of one kind or another.

30 These processes are similar to those that have interested authors coming to appropriation from the direction of consumption and cultural studies (Silverstone et al 1992).

In this regard, there are many kinds of social and cultural order which may overlap, intersect and themselves be subject to cycles of orchestration and reconfiguration (Hand and Shove 2004). Institutional forms of organization and order, in relation to which the inscriptive possibilities of digital technologies may be enacted, will come into contact with other conventions of order such as individual and collective lifestyles, routines, conventions, and so on.[31]

Accordingly, this is not necessarily a question of how institutions, organizations, and individuals appropriate technology for their own ends, but also how such incorporation simultaneously modifies institutional and organizational representations, relations, and operations (McLaughlin et al 1998). In taking a relational conception of digital technologies, then the analytic focus shifts to how technologies become 'arranged' with other elements in a configuration (such as an institution). Further to this, all the elements making up any such institutional culture should be treated as contingent and potentially conflictual, rather than assuming their relative stability, and then focusing upon how they 'interact with technology'. A focus on the internal cultural dynamics of an institutional or organizational site problematizes the notion that these are stable or unified contexts within which digital technologies are simply 'situated' (Barry 2001; McLaughlin et al 1998).[32] As I will argue in the following chapters, while there might be an overarching set of cultural dynamics (for example, discourses of public service or private enterprise) which in effect define the explicit cultural functions of the site, these are often internally conflictual and become entangled with technical devices in diverse ways (Barry 2001; McLaughlin et al 1998; Morgan 1993; Woolgar 2002). Inscription, translation, and re-inscription are dynamic enterprises and ones in which new technologies also have consequences for the environments into which they are introduced. [33] It is not that digital technology becomes stabilized or 'black-boxed' in such a way that it becomes autonomous, but that further work is required to *maintain* that configuration, network or arrangement (Hand and Shove 2007; Shove et al 2007). From a relational materialist perspective, for devices to disappear or to move from the 'sublime' to the 'banal' (Mosco 2004) and remain there requires a certain amount of ongoing work by those human and non-human agents that engage with them.[34] As Andrew Barry observes, in thinking about the possibilities of political 'inventiveness':

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31 For example, Silverstone (1993) refers to styles of 'clocking'; the rhythms and routines of family life into which families reproduce through a distinctive piecing together of tools, technologies and practices.

32 Recent ethnographic work in this area suggests that there may be considerable differences between the cultural definitions and descriptions of digital media within, say, public service and private enterprise, or between governmental cultures and domestic cultures, and so on (cf. Miller and Slater 2000; Woolgar 2002).

33 For example, in another context, McLaughlin et al (1998) has argued that traditional sociologies of technology have assumed that once a technology is embedded within an organization it becomes 'black-boxed'. They argue that this misunderstands how the black-box is re-opened periodically by actors and agents within the organization.

34 Pantzar (1997) tracks the symbolic trajectories of a range of commodities (the telephone, the computer, the car, the television) suggesting that they go through distinctive phases of redefinition. Starting their collective career as fashionable objects of desire, the next

> What is inventive is not the novelty of artefacts and devices in themselves, but the novelty of the arrangements with other objects and activities within which artefacts and instruments are situated, and might be situated in the future (Barry 2001: 212).

In sum, even when technologies appear stable, that is, when their design is 'fixed', their acquisition and use remains a process of translation and invention for their 'purpose' and cultural significance is always on the move (Shove and Southerton 2000; Bijker 1992). This suggests that moments of socio-technical closure or in Silverstone's (1993) terms, *domestication*, are illusionary in that technologies continue to evolve as they are integrated into the ongoing dynamics of cultural environments and their associated practices.[35]

Co-determination

I have argued so far that technical design, the use environment, and the uses, are mutually constitutive. Further to that I am arguing that all of these dimensions of digital technology need to be theorized as more or less dynamic. I will now argue that the most useful way of considering these mutual relations is through the concept of 'co-determination'. That is, the idea that the technical features of a given device or system are not 'constructed' of 'shaped' by their environmental location, but they co-evolve alongside it. There are three particular dimensions to this which are important to clarify here. Firstly, technologies can be said to co-evolve with the dynamics of systems of which they are part. The characteristics of specific technologies or techniques, such as the laptop, HTML text, a database, shift and change alongside changes in the computer industry, the socio-economic and financial ebbs and flows of the capitalist marketplace, the patterns of demand in a given market, and so on. Secondly, in a more mundane but equally important sense, technical characteristics can be said to evolve in tandem with shifting conventions and practices of use (Oudshoorn and Pinch 2002; Shove 2003). Thirdly, while it has become standard within science and technology studies, and actor-network inspired research, to take the object seriously as constitutive of action and order it has been less common to consider how 'suites of technology' operate (Shove 2003; Shove et al 2007). The media theorists Bolter and Grusin (1999) explicitly explore relationships 'within and among media' in this way (21). They argue that:

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stage is one in which acquisition is legitimized in rational or functional terms, followed by a period of routinization. At this point, the technologies in question are so ordinary that their acquisition needs no justification at all.

35 For example, discussions of digital image making frequently imply that it has effectively obliterated photographic ways of seeing and doing to the extent that the digital version barely counts as photography at all (Mitchell 1992). Recent work on digital photography has shown that equal attention must be paid to the practices of which the digital camera has become part (Shove et al 2007). This means taking the user seriously, but in relation to the requirements of, in that case, doing digital photography *competently*.

> What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media (1999: 15).

The central point here is that instead of focusing in detail on single artefacts and their arrangement or association with other kinds of entity (discourse, persons, practice, and so on) we must appreciate how ecologies of things might be arranged, and how specific technologies may relate to each other. This has real significance in digital culture as increasing numbers products and technologies are *designed* to be compatible with others, thereby creating systems or networks of interdependence (for example, between computers, printers and digital cameras).[36] The possibilities of technical interoperability condition the possibilities of tying systems together. As I will argue in the following chapters, attention to the shifting relations between books and PC's, inscriptions on paper and digital code, dusty archival records and digital images, provides an important corrective to the concepts of scripting, configuration and domestication as they have been deployed with reference to the relation between specific items and individual users. We need to think more explicitly about the dynamic relation between complexes of technologies and conventions, and therefore about the ongoing and characteristically emergent dynamics of institutionally located digital cultures. As I will argue in relation to the library, the business organization, and the archive, the diverse roles that both humans and nonhumans play in configuring what the appropriate relations are between things has significant implications for any conception of a shift from analogue to digital culture.

Finally, while the characteristics and consequences of digital culture are subject to intense debate, the notion of a transition from analogue/print to digital/web culture is subject to rather less questioning. As I have suggested throughout Chapters 2 and 3, this is partly to do with the ways in which digital technologies are conceptualized, especially where they are thought to simply *replace* older technologies of mediation and communication for good or ill. But it is also an effect of theorizing cultural change as linear and as characterized by the dominant technology of the period. Anecdotally this is clearly the case, where older vinyl collections are replaced by CDs, where high-end analogue cameras are no longer manufactured, where Kodak begins to dismantle its film based operations and buildings in Rochester, NY, and so on. In line with the approaches pursued here, we need to ask whether the cultural conventions, uses and users that make the technologies what they are disappear quite so easily.

Accordingly, digital technologies are not only or not simply re-inscribed, appropriated or domesticated by different sorts of institutional or individual user. There may be historically rooted sets of conventions and expectations through which they are initially positioned and understood. From this point of view, metaphors of replacement or displacement may be hasty in the sense that older 'cultural technologies' may have an unexpected resilience. The implication is that the capacity of digital technologies to stabilize cultural order in particular ways depends

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36 In other cases, designers and manufacturers produce what are in effect pre-assembled suites of products and technologies; for example of electric power (Hughes 1983).

upon their integration into prior and ongoing scenarios and performances. Digital technologies can appear powerful and even autonomous in their own right but can not simply produce cultural order by themselves – they must be integrated into cultural environments and dynamics of enactment, into forms of practice which will in turn be altered as a result of such integration.

Concluding Remarks

This chapter has aimed to reconsider what the 'materials' of digital cultures might be and ask questions about the novelty and agency of these materials. I have argued that most digital culture theorizing has been underpinned by modern and postmodern conceptions of technology and culture. I have argued that there is much to be gained from these approaches but that we need to switch registers toward the 'anthropology of technology' found largely within science and technology studies. I have sought to raise sets of questions to be fully explored in the following chapters.

In the modern paradigm, society, culture and subjectivity are conceived as relatively stable entities, which are being transformed by but remain essentially antithetical to the machine-like *logics* of technology. In the postmodern paradigm, technology has been re-specified as a language machine, where society, culture and subjectivity are mediated *through* postmodern information technologies. In this second, more reflexive sensibility, technologies do not exist 'outside' culture, but increasingly mediate all cultural forms. In other words, (information) technologies are in-the-world with human beings (Lash 1999). However, in both cases digital technologies exist with a kind of residual core or totality of definite properties or effects whether that is instrumentalism or fragmentation. In opposition to these predominately essentialist and abstractionist accounts, I have argued for an approach that takes the narrative ideals, objects, and users involved equally seriously and for an explicitly local focus upon whether and how these materials become arranged, enfolded and stabilized. It is by examining local engagements with digital technology that the continuous and discontinuous characteristics of digital culture are to be illuminated. In other words, for an emphasis on how digital cultures get *made* within and through particular sites rather than as a result of macro-level determination or individual appropriation. Such making does not reside solely in the hands of ideologies, institutions, technologies, designers or individual users, although these are all involved to some degree. It is the specificity of *how* different materials become interrelated, inter-connected and even inter-operable that requires empirical analysis.

In some respects this chapter has followed a historically rooted, but not necessarily progressive, intellectual debate related to changes in technology. Modern theorizing appears entirely appropriate for the extraordinary transformations of the Industrial Revolution and the fordist production machines of the early twentieth century. Similarly, postmodern theorizing appears quite suitable for rethinking the causal logics of such modernisms when faced with the apparently chaotic and formless proliferation of distributed information networks in the later half of the century. As N. Katherine Hayles puts it:

> The point I want to underscore is that it is a *historical construction* to believe that computer media are disembodying technologies, not an obvious truth. In fact, this belief requires systematic erasure of many significant aspects of our interactions with computers… Virtuality is not about living in an immaterial realm of information, but about the cultural perception that material objects are interpenetrated with informational patterns (1998: 203-4. original emphasis). [37]

Following this, one might read the rise of social constructionism and particularly the more radical actor-network theory approaches as, again, an effort to follow the ambivalences, ambiguities and contradictions of globalization and localization in the twenty first century. Indeed, some have recently called for a new 'descriptive sociology', where rapidly emerging forms of digital culture need to be tracked and traced rather than analyzed (cf. Beer 2008; Burrows and Beer 2007). I think the notions of 'every-ware', 'ubiquity', and 'convergence' seem to require a perspective which moves beyond this and looks at *processes* of making, of management, of relations and their maintenance. To argue that digital cultures are somehow divorced from, or so radically removed from, pre or non-digital formations appears to presume a great deal of novelty in a similar way to Poster (2001, 2006). As I have suggested, drawing upon concepts from STS and the remediation theory of Bolter and Grusin (1999), it is worth questioning the very notion of a *transition* from one state of affairs (analogue) to the other (digital), whether this be conceived as largely progressive or not. The majority of digital culture narratives discussed in chapter 2and here have underplayed or overstated the role of digital machines, treating them as transparent vehicles for the flow of information, or as the autonomous drivers of the digital revolution. The dominant themes of access, interactivity and authenticity are theorized as either intrinsic to technical devices (for example the Web, and now Web 2.0, is 'more interactive' than the telephone), or as purely sociocultural values and valorized practices threatened by monolithic technical devices (for example analogue originality is effaced by digital plagiarism). Theorizing the digitization of culture is then always a question of establishing the effects of the technical upon the cultural or the other way around.

In contrast to this, the post-essentialist work on science and technology discussed here tries to avoid one-sided constructionism in any form. For Latour (1992, 2005), social and cultural order is constituted and distributed through associations of humans and nonhumans, or persons and things. From this perspective, access, interactivity and authenticity must be approached as efforts to align and configure a multitude of materials – sociopolitical ideals, technological artefacts, persons, skills,

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37 We should be attentive to the ways in which technology is appropriated by intellectuals as well as by other social actors and agents (Hard and Jamison 1999). It has been argued that the virtuality of the Internet is a discursive construction underlying specific intellectual projects – those of disembodiment, inter-textuality, and identity politics (Miller and Slater 2000). In this sense, the Internet is indeed an interpretive event (see Grint and Woolgar 1997). Another way of thinking about this is to see this apparent ambivalence as a consequence of the specific sociopolitical conditions of reflexive modernization (as in Smart 1999). That is to say, the notion of the ambivalence of technology fits very well with the current concerns and political projects of critical social theory.

valued practices, and so on – as *provisional and effective configurations* of human and nonhuman elements. This is not simply a question, then, of taking account of 'the wider context', but also the longer term dynamics of cultural environments. In the following chapters I will utilize the ideas presented here to explore and follow the trajectories of digital culture as enacted within a set of quintessentially modern institutions: the library, the business organization, and the archive.

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Chapter 4

A People's Network: Access and the Indefiniteness of Learning

Introduction

The term 'access' has become pervasive in popular and academic commentary, highlighting inequities and privileges of one kind or another, moral imperatives to eradicate exclusion in favour of inclusion in all areas of societal life, a generalized shift from 'ownership to access' in a new 'experience economy', and the list goes on (for example Lister 2001; Rifkin 2001; Thrift 2005). I have argued that it is a dominant narrative of digital culture in two senses. It can refer to a democratization or 'flattening' of culture, of new cultural spaces and forms which are inherently more accessible than ever before because of the place-defying structure of digital communication technology (Poster 2006). It also refers to new disconnections alongside connections, to new territories and zones, and to divides between them which need to be 'bridged' as select physical environments become informatized to an unprecedented degree (Burrows and Ellison 2004; Lash 2002; Thrift 2005). In public policy on information access, the democratizing qualities of digital culture must be delivered to citizens by overcoming social barriers and digital divides. A central tenet of government policy in digital culture has been to overcome this 'digital divide' by providing 'universal Internet access' within public libraries. The public library, both in Britain and North America, is now expected to become the key site for people to freely access all that the digital world has to offer.

To this end, *The People's Network,* an explicitly Blairite, National Lottery funded project, has been developed in the UK.[1] While public libraries have existed in a network or grid since at least 1918 (Black 2000), the People's Network refers more explicitly to information networking through the creation of ICT learning centres in all 4,300 UK public libraries by the end of 2002.[2] These provide free Internet access and office related software, access to on-line collections, and a range of e-government services associated with local democracy (such as feedback to local councils on services), developing partnerships with local employers and other educational institutions. These learning centres, as nodes in the People's Network, provide the substantive focus for the chapter. They are now rather ordinary aspects

1 *Framework for the Future*, Department of Culture, Media and Sport (DCMS 2003), states the People's Network 'has a vital role to play in delivering the government's commitment to universal access to the Internet' (9).

2 At the time of writing, approximately 2,900 of these have been completed.

of public libraries. But how did this come about? Who and what have been the agents of this cultural shift? How has digital culture been *enacted* in libraries?

In what follows, I will discuss how three significant constituencies – government, libraries, and library users – with potentially different understandings of access intersect and interact in the public library as an intermediary site. Firstly, there is the e-vision of government policy at the European and national level. Government directives on access provision are embedded within wider debates about culture, information, mobility and citizenship. They are mostly concerned with *delivering* information to citizens and in improving digital skills of one kind or another. At the national level, strategic documents speak of rewriting the whole 'cultural sector' around digital ideals of information, democracy and empowerment. At local government level, they take the form of resource allocation tied to audits of library use. Secondly, there is the public library itself as a modern cultural institution, constituted in terms of historically specific cultural discourses and practices, the activities of professional librarians, and the materials located there. The governmental vision of providing access appears to ignore the internal dynamics of the proposed intermediaries themselves (Greenhalgh et al 1994, 1996) and the potentially variable interpretations and enactments of 'digital culture' therein. Thirdly, there are the library users and the orientations to access and use that they bring to the library. While we have some statistical and survey based information on who library users are and how they behave in public libraries (Sandvig 2006), we know little of library users' perceptions of such use, and how their understandings of access (as opposed to, say, ownership) are enacted in relation to public library culture and other dimensions of everyday life.[3] The actions of these constituencies will be presented separately in the following narrative, in reality they are mutually constitutive elements in the remaking of the public library as a more explicitly digital cultural configuration.

In order to explore how activities 'meet', the majority of the chapter will focus upon one public library in the UK People's Network, looking at the formation of an ICT Learning Centre during 2000–2002.[4] Instead of using quantitative data on the activities of library users in comparison to government projection (and finding a 'mis-match'), the chapter critically engages with both the discursive and material processes involved in attempts to shift the image, function and use of public libraries in relation to digitalization. It asks how the discourses, materials and practices of public information access are co-produced and integrated within this specific locale. I will go on to argue that there are quite different inscriptions of 'access', 'technology' and 'active citizenship' circulating within the public library environment. These are related to political-economic constraint, but more importantly to competing understandings

3 As argued in Chapter 3, this is not to debate whether users are 'active' or 'passive', or to assume any counter-intuitive activity as 'resistance', but to understand how relations between ideals, technologies, and practices are configured within a historical-local place in relation to a variety of often contradictory interests and practices.

4 The research involved the semi-structured interviewing of library staff and library users within a central library in the city of York, UK. In-depth interviews were conducted with the Senior Librarian responsible for Life-long Learning and with the Principal Librarian. Semi-structured interviews lasting between forty-five minutes and one and a half hours were conducted with library users.

of what 'culture' is in relation to 'technology' and what the appropriate *ethical* role of public libraries is in configuring relations between them. Digitalization has become the rhetorical and material 'vehicle' of earlier ideas associated with library postmodernization (access, empowerment, and participation), but is co-evolving with the activities of library users and the shifting ground of digital literacy, skills and indefinite learning.

The E-Vision: Digitization, Government, and the Public Library

Western governments are increasingly preoccupied with the potential role of digital technologies in their own reinvention and legitimization. While digital technologies embody a number of distinctive threats to national culture, they are at the same time 'written in' as necessary for the promotion of national citizenship within increasingly globalized cultural flows, and for maintaining the relevance of government as a set of viable and representative public institutions (cf. Barry 2001; Castells 1997; Giddens 1998; Hague and Loader 1999). A general enthusiasm concerning relations between digital technology, new modes of governance, and 'active' citizenship captured in metaphors of 'empowerment' and 'interactivity' is now a commonplace of contemporary political discourse (Barry 2001; Hand and Sandywell 2002). In fact, significant institutional reform is now unthinkable outside the context of technology, and information technology in particular. To take one example, the European Union, under an initiative entitled 'e-Europe', have been pursuing the following objectives: (1) bring every citizen, home and school, every business and administration into the digital age and online; (2) create a digitally literate Europe, supported by an entrepreneurial culture ready to finance and develop ideas; (3) ensure the whole process is socially inclusive, builds consumer trust and strengthens social cohesion.[5] In this narrative digital technologies offer the possibility of a new politics:

> Information and communication technologies can be viewed as a laboratory for political process re-engineering. They can be a vehicle for renewed institutional communication and can thus enable a new relationship to be built between representatives and the people they represent. The aim is to replace the vicious circle of protest by a virtuous circle of participation through direct and constructive dialogue both vertically (between citizens and politicians) and horizontally among citizens themselves (Hubert and Caremier, *European Commission* 2000, 43-44).

The European Commission increasingly promotes what it considers to be continuous technological innovation; enabling convergence and connectivity across key political, public, and civic institutions. It is for this reason that 'cultural institutions' (museums, galleries, archives, libraries, universities, exhibitions, and so on) have become foci for an unprecedented level of EU research and policy initiatives, promoting the development of 'user-friendly' information societies.[6] The idea that

5 'e-Living: Life in a Digital Europe', *An EU Fifth Framework Project*. IST-2000-25409.

6 See the Green Papers prepared for the *European Commission*: 'eEurope: An Information Society for All', Dec. 1999, Lisbon; 'Green Paper on the Convergence of the

appropriate relationships between government and citizen can be technologically embedded within a range of public and private *intermediaries* has become central to 'information age' policies (Cabinet Office 1999; OeE 2003). Cultural institutions are expected to bridge the digital divide through the provision of interactive exhibits and subsidized digital services (cf. Hague and Loader 1999; Hubert and Caremier 2000).[7] In the UK, a key policy aim has been to ensure citizens have universal Internet access by the year 2005, partly achieved via public libraries – now expected to become 'gateways to the learning society'.[8]

In policy discourse, libraries have been positioned as significant intermediary agents in the provision of information access and the anticipated transformation of citizens for some time:

> Tomorrow's new library will be a key agent in enabling people of all ages to prosper in the information society – helping them to acquire new skills for employment, use information creatively, and improve the quality of their lives (*Library and Information Commission*, 'New Library: The People's Network' 1997).

In a sense this is nothing new at all as public libraries have always embodied ideals of citizenship through the provision of 'techniques of self-improvement' (cf. Burchell et al 1988; Foucault 1988, 1999; Rose 1999).[9] For example, in response to a perceived escalation of social and political problems after the First World War, public libraries were lauded as sites for promoting social stability (constructing 'model citizens') and economic vitality through the dissemination of technical and commercial information, 'stabilizing civic consciousness' (Black 2000). This notion of the library as having an 'outreach' function has continued to be prevalent within the profession for quite some time (Ranganathan 1963). But in the kind of 'global information culture' discussed in Chapter 2, citizens are now thought to require continual information access, empowering them in making informed decisions and engaging with governmental institutions in a more 'interactive' or real time

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Telecommunications, Media, and Information Technology Sectors, and the Implications for Regulation towards an Information Society Approach', Dec. 1997, Brussels. Also see the collection of documents and research initiatives within the CORDIS website. Available at www.cordis.lu/ist/.

7 See also the Green Papers prepared for the *European Commission*: 'eEurope: An Information Society for All', Dec. 1999, Lisbon; 'Green Paper on the Convergence of the Telecommunications, Media, and Information Technology Sectors, and the Implications for Regulation towards an Information Society Approach', Dec. 1997, Brussels.

8 See 'Building on Success: An Action Plan for Libraries', Draft for Consultation, *Re: source*. In the US, a similar notion of 'equality of access' is at the heart of much public library discourse (Pawley 2003).

9 Technologies of citizenship are understood here as the diverse array of governmental techniques for working on the population within particular domains. As Rose states:

> State institutions certainly extend the scope of their operations and the depth of their penetration into the lives of their citizen subjects. But they do so by a complex set of strategies, utilizing and encouraging new positive knowledges of the economy, sociality and the moral order, and harnessing already existing micro-fields of power in order to link their governmental objectives with activities and events far distant in space and time (1999: 18)

relationship (cf. Barry 2001).[10] In the instrumental context of declining electoral turnout, digital technologies are seen to provide direct access routes to and forums for the decision-making processes of local and central government. If they can be situated within freely accessible public institutions, then effective government-citizen communication is thought possible at reduced cost. But why the library? According to the *Library and Information Commission* (now incorporated in RE: SOURCE), library institutions already embody precisely those values necessary for information-based social inclusion and citizenship, representing a 'force for the public good'. As the library becomes a digital information *interface*, it can provide 'tool kits for personal growth', access to 'a shared value system', conferring 'civility through citizenship and sharing' (LIC 1999; 1999a). This will be achieved through connectivity (universal access), content (life-long learning resources and government information), and competencies ('universal information literacy'); all thought essential for 'meaningful' citizenship (Ibid.). These directives involve many assumptions about information, public libraries and citizens. In the next section, I will explore how they translate, if at all, into the public library as a cultural institution.

Libraries Without Walls: Between Analogue and Digital Culture

> Free libraries are used by every class of the population; male and female, rich and poor, learned and unlearned, boys and girls, the blind, the deaf and the maimed, all resort to a good free library (J.S. Rowntree 1881).[11]

Making public libraries and their information resources 'more accessible' is not simply a matter of filling them with computers, access to which is free of charge. There is a broader reconfiguration of access which has involved symbolic, material, and rhetorical changes which will be highlighted here. While many smaller branch (community) libraries have been closing as a result of funding cuts, at the same time 'showcase' architectural library projects have emerged in recent years in such cities as Vancouver, San Francisco, and Phoenix. In most cases reorganization has involved the de-differentiation of libraries where, for example, many public libraries in North America have incorporated information technology, bookshops, gift shops, cafes and such like in the general design. This process also involves the distribution of digital services across a variety of public institutions, especially where broadband connections are becoming standardized features of these environments through

10 See for example the website for UKOnline at www.ukonline.gov.uk.

11 Cited in Black (1996: 23). The idea of the public (or 'free') library as a space for social inclusion is clearly not new, although the statistics on use do not bear out Rowntree's claim. Joseph Rowntree is arguing here for a library in York, England, the substantive case used in this chapter. Public libraries were initially proposed for the working classes, as a form of patronage. The notion of a 'targeted population', deemed to require particular forms of instruction and education, returns in contemporary culture in the form of 'empowerment'. Empowerment assumes that sections of the population require training in particular techniques of self-governance.

government subsidy (Servon 2002; Mutch and Ventura 2003).[12] The discourse of redesign is based upon the idea that the public library as a quintessentially *modern* institution needs to come to terms with some of the features of a fragmented post-industrial society:

> As a civic space, devoted to cultural and educational purposes, the public library serves to reinforce social solidarity in an increasingly fragmented and market-driven culture. Some of the same social needs it was created to meet still exist but in different forms and in a very different environment: public libraries have both changed and remained the same. They arose as mediating institutions in a time of social transformation, then adapted to the needs of a modernizing world, and now, in a postmodern, postindustrial world, are navigating through changes whose impact we are only beginning to assess (Molz and Dain 2002: 2).

In practical terms, this is a question of whether to incorporate digital technologies within existing layouts, the extent to which those layouts are no longer suitable and are actually 'barriers' to access, or whether there should be dedicated spaces for digital resources. This is sometimes called 'recombinant design' (Horan 2000), referring to the physical space of the library in terms of how 'traditional' cultural materials are organized, presented and made accessible, and how digital resources will be recombined with these.

Material and Immaterial Culture

In the UK, the computerization of public libraries began during the 1960s but became more visible during the 1980s when automated circulation systems, electronic information services, and online catalogues were prominently used (Black 2000). The first so-called 'cyberspatial' public library was Croydon Central Library refurbished in 1993 providing a public access CD-ROM network, PCs, Internet access, email access, and a networking of electronic services in schools and other libraries.[13] It was not until the late 1990s that the association of the Internet with public libraries began to take on more radical connotations. The image of library institutions transforming themselves into a 'library without walls', a decentralized node in a computer-mediated network, became the dominant discourse of future modernization and informationalization in this sector as PCs with Internet access became more widely used (Black 2000).

In York Central Library, England, the development of an ICT Learning Centre took place in 2000-02, making the library part of the nationally coordinated People's Network. For the librarians, while producing a series of practical and logistical considerations, this involved some broader problems of rethinking and redefining the boundaries and functions of the institution, while maintaining or 'defending'

12 For example, as a public/private partnership in Alberta, Canada, the *SuperNet* links 429 communities through broadband connections in libraries, hospitals, schools and regional government offices, across a geographical space larger than France.

13 For a detailed account of this, see Kirby, H.G. 'Public libraries and the information society: case study of Croydon Library Service', in Thorhauge et al (1997).

its traditional status as public space and print-based educator. The library had a number of PCs, two with Internet access, for around three years prior to this. These were located within the existing space of the lending library, placed alongside the microfiche reading machines and CD-ROM facilities. Librarians talked of these as 'supplementary' techniques of information searching and retrieval – to be used in order to better find print resources in the library, or to add to them. Users were only able to access the Internet for thirty minutes at any one time. But as one senior librarian suggested, the location of PCs within the existing lending space often 'gave the impression to both library staff and users that they were replacing books'.

The ICT learning centre entailed something different – the movement of PCs to a second floor room, *Room 18* – where reference materials are stored. The lending floor of the library now contained traditional materials (books, CDs, LPs, and so on) and the second floor a network of PCs. The library is represented differently within these two domains. In one, the lending library remains organized traditionally, with resources catalogued according to discipline, itself an artefact of a hierarchical and legislatory conception of culture (Bauman 1988). As part of this the traditional arrangement of the book stacks provide for permanent supervision of the public from the library counter – 'surveillance by design' (Black 2000: 96). In the other, Room 18 looks like a modern office or college environment – rows of PCs, water dispenser, office chairs and tables, and so forth.[14] One of the difficulties arising for staff here was how to differentiate themselves from other access centres, such as cybercafés, and maintain a sense of connection between Room 18 and the rest of the library. When digital information technologies are enfolded into the fabric of the library, librarians' conceptions of knowledge as a collection of artefacts is problematized:

> [I]nformation is now both content and process. The demarcation between the two, manifest in a book-dominated collection, is no longer obvious, since the electronic message, unlike the book, is volatile, having no protocol for determining its reliability or authority and no assurance of its preservation (Molz and Dain 2001:124).

But modern legislatory conceptions and practices do not simply disappear. What was once visual observation now becomes data collection and monitoring, for a number of quite different reasons. Firstly, library members are catalogued electronically: name, address, occupation and so forth are routinely collated for record keeping and internal audit.[15] These audits are augmented by the profiles of Internet use automatically constructed – the time, location, sites visited, frequency of use, and

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14 In their study of the changing image of public libraries, Alistair Black and Melvyn Crann observed how some library users perceived 'public libraries becoming more like community information centres, while bookshops were becoming more like libraries'. *Mass Observation Analysis, The Public Library*. 02349, B2728, S2207, A1706.

15 Despite policy rhetorics of libraries being neutral 'third' spaces in a democratic public sphere, the actual uses of the library have always been subject to institutional scrutiny and policing. However, a cluster of novel policing problems arises for the digital library, particularly where electronic information resources enable users to perform actions not easily monitored within the material boundaries of the library. Where uses of the Net (as a global technology) operate outside of the physical site, it has become a particular focus of local organizational

so on. These auditing practices appear essential for the public library in terms of maintaining public funding and accountability to government:

> ... because we got funding from the government and a public body we have to, we have public standards to meet, and one of those is that we evaluate the service we're providing and how people are using it (Senior Librarian, York).

Secondly, in conjunction with the auditing of access provision, the library does not wish to be seen as enabling or promoting behaviour considered immoral or anti-social, and in a sense libraries are expected to make and perform a specific model of the social, an ideal vision of legitimate social and cultural activity. Library users are often subject to informal monitoring techniques, used by staff to determine 'abnormal' use patterns and behaviour:

> ... we have one person who is, who has a very specific requirement about which computer he uses, and he doesn't like somebody to sit next to him ... we do have concerns about him though, that the material he is accessing is not something we would want to sanction (Senior Librarian, York).

Thirdly, the uses of cultural resources are also conceptualized in terms of the 'added value' to users. As such, users of library services have their uses classified in terms of outcomes, requiring increasing levels of information about users themselves:

> …we don't have the money we used to have, the resources we used to have to provide services, I think we need to look more carefully at the services we provide ... like we can't be all things to all people, we need to think about where we're going to concentrate our services, and so yes we might need to gather more information on people ... we just get them to use their postcode and that would tell us a bit more about the area (Senior Librarian, York).

In sum, digital technologies are physically separate from the print collections in the library, but their use is subject to ongoing monitoring practices associated with modern legislation. However, the whole question of the role of the library and librarians in mediating access to digital resources is embedded within a more complex set of discourses and practices. The question of recombination extends to a more philosophical dialogue between modern and postmodern conceptions of knowledge. This is especially important, I will argue, as the material reorganization of the library is entangled with both digitization and the postmodernization of knowledge.

Cybrarians: Custodians and Navigators

In contrast to the LIC's diachronic accounts of a transition from the old to the new library, there are *multiple* perceptions of digitization circulating synchronically in the library site. On the one hand, digitization is seen as a direct threat to

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scrutiny: 'Anybody who uses the [ICT Learning] centre has to sign an agreement, so they agree to use it in a particular way' (Senior Librarian, York).

libraries, particularly their role as legislators of modern knowledge and culture. On the other hand, digitization is perceived as a 'saviour' of the library in postmodern culture. These opposing (but often overlapping) discourses of how public libraries ought to function can be summarized as contrasting cultural values and practices:

Table 2 Modern and Postmodern Models of the Library

Modern Discourse	Postmodern Discourse
Collections: repositories of valued cultural artefacts, universal knowledge and legitimate culture	*Interfaces*: diffusion of cultural artefacts and information throughout the social field prioritized over collecting knowledge
Pedagogy: sites of information intended for public instruction and edification	*Empowerment*: provision based upon equal citizen rights; from 'instruction' to 'self-education'
Legitimation: providers of legitimate symbolic and cultural capital	*Democratization*: fostering multiple cultural heritages and traditions
Gatekeeping: gatekeepers of history and collective memory	*Communitarianism*: from legitimation to communally-owned practices

To elaborate, in the left hand column, libraries are conceptualized in terms of their official cultural practices as quintessentially modern institutions (cf. Black 2000). Culture is typically seen here as institutionally licensed, operating as resources (skills; tools; knowledge) which may be borrowed. Here, libraries are positioned within high culture, and for the traditionalist their very existence is constantly under threat from 'new' technologies of mediation and reception such as the computer where 'people will have through their home terminals and television screens access to the majority of information they require. They will not have to go out for it' (Fothergill 1977).

Notions of networked democratization and interactivity in government directives would appear to directly challenge this modern custodial self-image. Indeed, the discourses represented in the right-hand column are now seen to take priority over the former.[16] This is seen as an explicit attempt to flatten the culture of the public library, to remove traces of the hierarchical and vertical organization of culture (knowledge). Most importantly, digital technologies themselves have now become the primary vehicles of these values in the library, thus embodying the threat to modern culture (and the relevance and organization of libraries) but also as providing, in part, the technical means of postmodernizing libraries for economic survival. Rather than assuming that these values are distinctive properties of digital media which will simply override previous values, it should be noted that public libraries have seen

16 This table should not imply a simple movement from one set of cultural values and practices to the other. Rather, these can be said to co-exist in the library. This is important for considering the claim that new technologies may be 'culturally' rather than 'technically' defined.

themselves as under threat from such cultural values for some time (Black and Muddiman 1997). In other words, digitization and associated expectations are being strategically positioned within this ongoing dialogue about libraries and culture – as a way of securing both the cultural and economic position of the library as a public funded agency. The library as a whole thus embodies *both* modern and postmodern visions of library culture, rather than one simply eradicating the other. This situation pulls the librarian in several directions, producing antinomies toward the role of the library in enacting digitization in relation to culture.

Despite reservations about the 'digital attack' on traditional print culture, librarians have had to become 'trained' as evangelists for this new vision of the library as an 'interface', a library at the forefront of the 'information society'.[17] One of the key challenges faced by public libraries in implementing the People's Network is identified as the retraining of library staff (Day 2003; Potts 2003). Issues of training are not only concerned with learning to use and show others how to use new technical devices, but with an increased sensitivity to the notion of a 'digital divide', the library as paradoxically a 'barrier' to public access, and the many ways in which librarians' behaviour may exacerbate some of the gender, age, ethnicity, and class orientated features of this divide. More broadly, it has been argued within journals of librarianship and information science that a significant 'cultural' shift must accompany any 'technical' changes (cf. Goulding and Spacey 2003; Hull 2001). The notion that the implementation of government policy involves simultaneous technical and cultural change is thus explicit for librarians (Schofield et al 2004):

> ... there's quite a large culture of change amongst both staff and users of the library ... Staff have also become more ... initially there was a lot of resistance to technology, we've done quite a long and large training program to get them to become familiar with computers, so that they can actually help members of the public ... but there was definitely not a good feeling towards computers, you know they were being seen as interlopers really (Principal Librarian, York).

But, as has been argued elsewhere, the traditional functions and images of the public library are continually resurfacing, rather than being replaced by the new rhetorics of community and empowerment, as the official picture seeks to promote.

> It speaks the rhetoric of community, but is puzzled by its fragmentation and flux, and is hesitant about asserting a commitment to social justice and social change. In an age when those concerned with communities and their development preach decentralisation, partnership and empowerment, public librarians seem in danger of reverting to a conservative, insular and defensive stance. Like the public library as an institution, they have become in the main passive and reactive: they respond to constraints and contingencies, but fail to articulate a clear and purposive narrative of their future role. Visions and utopias they may have, but it in the end, these may not be enough to save

17 Alistair Black (2000) notes that librarians often accepted the notion of the information society unproblematically as a 'given' phenomenon. This might be seen as a response to under funding and marketization of public services in the UK from the 1980s onwards, where the information society represents a future within which libraries as providers of access can successfully operate.

> the public library from a future on the margins of social and community life (Black and Muddiman 1997: 142).

Information is for Learning

Librarians are being trained in the 'appropriate' technical and cultural aspects of digital access while at the same time enacting this training in relation to linear models of *information* organization and delivery. In the terms of library and information science, information requires an organizational infrastructure to make sense of it as a potential form of knowledge. There is a custodial sense of information operating in librarians' narratives especially where any cultural flattening or openness in relation to the Web is considered slightly inadequate:

> It [Internet] has the potential to be a really useful information tool ... but it can be incredibly frustrating because of lack of organization, basically, it needs a librarian to sort it out (Senior Librarian, Life-long Learning).

This conception of the Internet *as information* is also wrapped up in the new language of empowerment. The library is expected to develop and foster a wider definition of 'learning', in which information must be reorganized in order to count as knowledge and that knowledge needs to be situated within learning practices:

> Information is the most important thing that people can have, it really is, and so access to the Internet and the ability to use the Internet in a constructive manner is priceless as far as I'm concerned. It's about empowerment and people having the knowledge and ability to affect things that happen to them, and affect the way they can go forward (Senior Librarian, Life-long Learning).

There is a virtual library user implicit here, a user in need of 'more information'. While such information is conceptualized in somewhat linear and instrumental terms, at the same time, librarians are pulled in the other direction and are expected to move from custodians of this kind to 'knowledge navigators' (Worpole 2003). The library is de-differentiated and repositioned as a place for developing skills and techniques learned across a wider 'zone of empowerment', incorporating schools, colleges, and community centres. In this rhetoric, libraries shift from being 'branches' to 'nodes':

> It was a question of saying, well OK, we offer Internet access already, but having talked to education and training providers we felt that what was missing in the city was not another place to do training, but a place to come and practice what they had learned on other training courses (Principal Librarian).

This also involves the conceptualization of a wider range of library practices as necessarily about *learning.* The underlying idea is that libraries have traditionally been used for learning, however, this is debatable and requires ongoing investigation (but see Black and Crann 1998; Matarasso 1998). It is naive to see librarians as unaware of the more variable reasons for public library use – but the important point is that learning and self-improvement (now empowerment) are seen as the most appropriate uses, framing possible modes of enactment of digital culture. The

re-description of a range of everyday activities as learning is a central tenet of the postmodern discourse sketched earlier, where, in line with Lyotard (1984), learning is both de-centralized and tied to performativity. This is not only a rhetorical gesture, a slight of hand, but becomes inscribed in the institutional fabric:

> There's a lot of informal learning that goes on in libraries that's never collated or measured in any way ... with the new life-long learning targets I'm sure we'll be getting in to those kind of measurements (Senior Librarian, Life-long Learning).

Moreover, public libraries will track the 'learning careers' of individuals, enacting the kind of endless modulation of experience alluded to by Deleuze (1995):

> I think one of the things we like to look at is progression…we've got people who come in and start using computers for one reason and another, and we might refer them on to an agency for training and education, and at some point, we might decide to follow that up and see whether that person has taken up an education opportunity and moved on from there (Senior Librarian, Life-long Learning).

There are many tensions and ambivalences between efforts to encode digital media in the existing modern framework of public libraries and recognition of the need to embrace models of de-differentiated, non-custodial learning practices. On the one hand, the Internet and associated technologies are discursively and materially organized as information retrieval machines. While the PCs moved from the lending library to Room 18, they were advertised as supplementary learning tools. On the other hand, the library is becoming less distinct from other cultural institutions, particularly schools and colleges, all of which are centres of 'flexible training' and life-long learning. Digital media, then, are enfolded into the specificity of the institution when librarians expect them to augment existing learning practices and behave as information retrieval machines. At the same time, digital media bring their own expectations. Librarians have to be trained to recognize and become advocates for their technical and cultural capacities to eradicate hierarchical and legislatory forms of knowledge. On the surface, public librarians position digital media as possessing 'messianic powers' for delivering the postmodern library, but also treat it with a 'Victorian seriousness' about proper use (Black 2000). However, we should not assume that the positioning or 'encoding' of digital technology in the library is solely the hands of the librarians. What of the perceptions and activities of library users? In what ways, if at all, did library users' activities conform to governmental and library institutional expectations? Of what kind of significance might any disparities be?

Access, Information, Communication: How the Users Rewrote the Script

> People who do not have the Internet at home are more likely to be poorer than those who do have it at home; there is a persistent correlation between household wealth and the likelihood of owning a home computer (Dutton, OII 2005).

There is no shortage of analysis of the impact of the People's Network in terms of widening the user base of both digital resources and libraries themselves.[18] In line with library user research conducted in North America (Sandvig 2006), and to some extent visitor research in museums, access has been largely defined in terms of individual moments of acquisition as opposed to the ongoing dynamics of use. If we take the acquisition model of access, then the questions revolve around whether the People's Network has provided access to a broader population or simply increased the use of digital resources by those already using the library. Recent research has suggested that the 'proportion of socially exluded people who use libraries from the whole population is still quite low, which is the biggest obstacle for tackling the digital divide' (Loader and Keeble 2004: 42).[19] That being said, what I want to consider here are the dynamics of how existing users frame their use in the first instance (why come to the library?) and what use actually involves and how this may have evolved. In thinking about the *ongoing dynamics* of use, then, attention needs to be drawn to how non-digital and digital materials in the library may be implicated in reshaping use patterns, how gaining access may produce new expectations about what such materials are for, and how users understand their own competence and skill. These are questions that, in relation to the People's Network, have been virtually ignored. In this next section I discuss three areas where institutional expectations were reconfigured in their enactment, where users talked about how they engaged with and reframed the technologies and the ways they were positioned within the library: (1) information literacy; (2) learning practices; (3) information and communication.

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18 See Gannon-Leary et al (2003), Turner and Kendall (2000), and Schofield et al (2004). It has been argued elsewhere that the People's Network could only ever have a marginal effect on digital inequality when different tiers of inequality are accounted for, such as business and capital determining where to place new technologies on the basis of an area's status and demographic profiles (Graham 2004). Furthermore, different areas of town and cities are spatially ordered: some areas have plenty of technological-aware citizens and correspondingly many networks and information nodes, while other areas have few nodes, and this naturally has an impact upon different communities' receptivity to ICT (see Lash 2002 for a reworking of Tim Luke's 'Zones').

19 Research conducted by sponsors of the People's Network has taken a different view. For example, for the Museums, Libraries and Archives Council (MLA), Brophy argues 'the People's Network is becoming an essential infrastructural element both locally and nationally' (2004: 23). The Tavistock Institute's report *Books and Bytes* (2004) suggested that libraries were somewhat successful in encouraging new users into the libraries. The Department of Culture, Media and Sport Select Committee report on public libraries (HMSO 2005) stated that, this introduction to ICT will close the technological illiteracy gap for some by giving people everywhere the chance to learn to use this technological tool'. They found that the presence of People's Network was reversing a general slow decline in public library use within recent memory.

Informational Literacy and Distributed Competence

The librarians' understanding of information, while institutionally specific, is tied to the broader e-visionary idea that access to information is a prerequisite in *allowing* individuals to move from 'dependency to empowerment' (Loader 1999). Further to that, citizens need to be competent in using information to be successful citizens (Barry 2001). These discourses generally position informational competence toward the capacities of the individual user (to be trained), or in some cases, toward the information itself (to be delivered). In following Latour (1992), it is important to consider how it is that competence is ascribed to one particular actor, rather than as distributed throughout networks of people and devices (Shove et al 2007). Institutionally, some have called for a shift in the concept of the library as a centre for 'information literacy', firmly rooted in an information-science paradigm, to what is called the 'discovery system' or the 'learning library' (Marcum 2002). What is suggested by this is a shift from competence with information as a result of instruction by librarians toward a 'ground up' conception of learning through practice. The development of competence shifts from institutional training to individual empowerment. But while this retains the conventional view that competence is a property of the human subject, it is perhaps better understood as something that is in effect *distributed* between individuals (whoever they may be) and the resources and materials they use.[20] Indeed, if one takes competence to be an essentially human quality, digitization represents another instance of de-skilling and re–skilling both the librarian and library user. This is certainly how some librarians perceive the hollowing out of their skills and expertise in librarianship as a result of new digital media.

The shifting ground of competence with digital information media looks slightly different when the accounts of library users and the materials they use are brought into the equation. Different kinds of knowledge and skill are fused together in Room 18 through its use – the recently acquired, but often tacit knowledge embodied in the librarian and the library user, the formal knowledge in instruction documents (from 'how to use a mouse', to 'how to use a search engine', and so on) and library portal web pages, and the embedded knowledge in the computer and on the screen. Some of the previous skills of the user, in searching and retrieving among book shelves and in reference materials, for example, are now distributed within the online databases in computer networks of which the PC is part. Where the librarians conceived the coming together of information and library user as producing an effect of 'empowerment', usually in the form of learning, this positioned all the ingredients as rather static and their relation as linear. What became apparent was the ongoing redefinition and redistribution of competence and skill among the elements. For most of the interviewees, understanding exactly what access to digital resources might

20 The idea that competence is at once embodied in humans *and* in things relates to a strand of thought aspects of which are exemplified by the concept of the human-non-human 'hybrid' (Latour 1993) with the aim of capturing and characterizing alignments, relations, and interminglings between human and non-human actors.

mean or entail developed somewhat unpredictably through an iterative process of performance, reflection and adaptation.

Users were asked fairly broad questions to begin with, about whether they considered using information technology an important aspect of everyday life, whether being 'good at' using the Web was necessary, and why they had begun using these facilities in the first place. There were clusters of opinions about these issues, which seemed partly structured by age and employment status. For example, for older retired users, there are simply ever 'more ways' of accessing information. They did not talk of everyday life as composed of more information – there is not necessarily a proliferation of information itself – but an expansion of methods of access to 'what has always been there'. On the other hand, users in their 20s and 30s framed their desire for access to information through the Web as crucial in securing a 'stake' in a largely unpredictable information economy:

> I think, you know, in a job market that fluctuates so much, it could be important then ... you know, lots of short term contracts and things like that so, society's more dynamic and that (User 1: male, aspiring writer, 33).

In contrast to this view that the 'information society' (a commonplace term among many of the users) requires people to continually develop and update their skills in using information, users over 55 associated what they saw as increased information access with a wider cultural change toward more 'openness':

> I think everything's more open, you know, you can get information. I think people didn't ask questions before because when I was young it was just pointless; you weren't going to get help (User 5: female, retired, 64).

All users agreed that, one way or another, there is more accessible information in the present moment than ever before, but this meant many different things. For some, this was about a 'need' for continual access. For others, economic and social opportunity, and mobility, seemed to require more skill with information use, partly resulting from the changing expectations of others (usually potential employers). For others still, this was about the democratization of information, governmental culture, and learning. Interestingly, people concerned about their socioeconomic place within 'the information society' also expressed anxiety over potential information uncertainty (not overload), feeling that they are expected to know more, and be able access ever-greater amounts of information, but for no obviously discernable purpose:

> But I do think we can be fooled about how un-empowered we are if we don't access all this information ... we are living in a society where it's moreish, that there is too much (User 9: male, unemployed, 28).

These users appeared quite aware of the rhetorics of information-facilitated 'empowerment'. While there was a general enthusiasm about greater amounts/more accessible information, in great contrast to the views of librarians, there were no comments made about the relationship between that and the sources of the information. Information found through the Web was thought to be mostly benign,

and was interpreted in terms of its utility for addressing a particular problem such as contacting an employer or finding a fact, rather than its 'quality' or legislative authority. In this way, the perceived immediacy or utility of digital information appeared to be valued over its consistency and reliability as knowledge ('general knowledge' in particular). It may be that digital information was coming to be perceived as simply an ordinary and necessary resource in negotiating life in digital culture, and that this increasingly involves its differentiation from traditional understandings of knowledge. This may be a practical instance of what some interpret as a key characteristic of digital information itself – it leaves 'no time for reflection' (Lash 2002). It may also tell us something about the shifting cultural status of analogue and digital materials in relation to one another, for example books, computers. The cultural antinomies of information for the librarian do not necessarily translate into the needs of the users. There is also an important association made between digital information and novel learning practices. Where traditionally, learning has been about the successful accumulation of licensed knowledge, it is now predicated upon efficient information retrieval from a variety of access points.

Indefinite Learning and the Perpetual Reflexivity of Digital Culture

The privileging of this immediacy of digital information over the inaccessibility and elitism of authoritative knowledge connects with the governmental idea that learning can and should be performed within a wider variety of cultural spaces than the school, the library, and the university. While this is wrapped in a quasi-marketized notion of mixed service providers, the idea that learning practices embedded in digital information might be pursued continuously across a multitude of sites is central to the notion of 'life-long learning' as it is understood in the library. To echo Deleuze (1995) again, the walls are being removed in the de-differentiation of the physical sites of the school, college, university, and library, such that citizens are expected to engage in the practices of learning throughout the life-course, passing through a range of inter-networked sites. These sites are increasingly indistinct, all engaging in processes of re-training, re-education, re-evaluation, and re-assessment. Citizens are expected to be 'self-educating'; produced as such through continual education (as training). The arrival of digital technology in the library is positioned as, if not inaugurating, then certainly intensifying just such a cultural shift to continual learning, encouraging library users to actively re-interpret their actions not as 'leisure' but 'learning':

> So, it's about getting people to recognise that what they're doing is actually learning and that it's not as bad and as scary as they think it's going to be and that they should carry on with it (Senior Librarian, Life-long Learning).

Library users were asked what they understood to be the relationships between access to these resources and learning, whether they could articulate what life-long learning meant and involved, and how they thought about relationships between 'leisure' and 'learning'.

Three quarters of those interviewed articulated a 'common-sense' understanding of life-long learning, but only a handful of these were familiar with its institutional and policy related context. The kind of de-institutionalization of learning associated with the concept, and its intimate relationship to digital technologies was acknowledged by several users – again, in reference to the perceived democratizing qualities of digital information over the elitism of institutionalized knowledge:

> [life-long learning] is it about facilities which cater for those outside sort of institutional ... in fact I think we should get away from the idea of education as something where you go through the institutions, you get a degree, you get an MA, and somehow you're educated (User 9: male, unemployed, 28).

Users who were unemployed at that time, for which the concept appeared to explicitly frame their own experiences, were now re-examining their institutionalized learning experiences and finding them to be limiting, in terms of the scope for 'getting on' and their potential competence and skills in the future. That is, the idea of life-long learning was associated with ongoing self-directed learning connected with a narrative of an unstable present and an uncertain future. For those users, and others who were anticipating a career break or change for one reason or another, there was also a tendency to collapse a variety of everyday experiences into the category of 'learning', a process actively encouraged by public libraries. This is most commonly articulated in the similar terms to the 'democratization of knowledge'; in this case, where users described themselves as active 'participants' rather than passive subjects in their own learning experiences. For example:

> ... but it [life-long learning] is using the experience that you've found in your everyday life to help plan for things in the future ... not just traditional sit down learning (User 12: male, unemployed academic, 37).

> When I was at school I wasn't very academic at all ... and I thought I quite like this education now that I'm ready for it ... I enjoyed it ... I am participating in lifelong learning (User 5: female, retired, 64).

> I like the idea of education being something that never stops and that's accessible to everyone, that everybody's got enough time for it as well (User 3: female, freelance journalist, 34).

In line with their comments on information access, most users aged between 25 and 34 felt that the ability to be continually educated was especially important in 'modern society'. This notion of flexible re-skilling and perpetual reflexive adjustment had important resonances with these users, sometimes as 'opportunity' and at other times as 'necessity':

> I think its something that shouldn't stop ... the opportunity to re-skill yourself and re-educate yourself (User 3: female, freelance journalist, 34).

These accounts of life-long learning, then, were on the whole connected to broader ideas about the 'freeing up' of knowledge now in the form of digital information.

This speaks to recent ideas of indefiniteness and perpetual reflexivity associated with 'knowing capitalism' (Thrift 2005) in terms of the shifting ground of economic opportunity, the levels of engagement with information expected on the part of the consumer, and the shifting sands of competence and expertise as a result of both. Life-long learning is, if not quite literally, *indefinite*. This is framed as benign and democratizing for those not economically reliant on the development of employment related digital skills, for which the image of perpetual learning and re-skilling produces a rather different narrative of uncertainty. However, while notions of life-long learning were common ways of articulating their understanding of the role of public access to digital technology in theirs and others' lives, there was little evidence that this is what they are actually using the facilities for. When compared to the library surveys and web logs, users appeared more concerned with the *idea* of this rather than the practice.

Information, Communication, Participation

As we saw in the e-vision, a primary goal of government directives is to make citizens more 'active' and 'participatory'. The governmental positioning of digital information machines encourages a rearrangement of the relation between citizens and political processes in terms of networks, embedded in a series of popular intermediary sites. This involves the wiring up of national, regional, and local government agencies, and, if digital technology is inherently interactive, it can be made to *embody* interactive (participatory) relations between citizens and government. In the public library, this has an affinity with, for example, the development of local council web pages which are the learning centre homepage. These pages contain mechanisms for 'participatory' and 'responsible' forms of governance and citizenship mainly through the continual supply of information as feedback. These are mostly articulated at the level of local democracy: local councillors, ward committees, local elections, and so on. These are also a series of links to the House of Commons, regional Members of Parliament, and UKOnline (UK government information service). For librarians, such 'activity' is mostly understood in terms of a relation between information and learning practices rather than political practices in any formal sense. As discussed above, learning has been extended indefinitely in a more 'inclusive' rhetoric of life-long learning, which includes 'learning about the conditions we live in', some of which may be thought of in terms of state politics. But in what ways were initial users considered to be 'active' and did this bear any relation to the 'active citizen' or the 'active learner'?

Research into the impact of the People's Network on civic participation suggests that the role of digital resources is mediated by existing social class and educational factors of the users. Those individuals considered socially marginalized, or disadvantaged in terms of social, economic and cultural capital, appear the least likely to engage in e-government or similar resources (Quan-Haase et al 2002; Selwyn 2003).[21] Among the users encountered in the learning centre, none of them

21 Quan-Haase et al (2002), for instance, found that the most important factor for involvement in e-government and civic participation was the educational level of Internet

used the Web regularly for accessing *local* information of any kind. In addition, none of the interviewees expressed any desire to access government information or any kind of citizen forum, available through either local council or central government websites. This simple observation does raise a number of important questions about the governmental conception of public library (and other) forms of intermediation and the model of informational citizenship. Firstly, it raises doubts about assumptions concerning improved take up of e-government services via intermediaries, which may have nothing to do with participation and everything to do with delegation, but nonetheless tie the library into specific models of outcome measurement. Secondly, if the official model of the 'active citizen' finds no resonance among library users, we might speculate more theoretically that governmental conceptions of both 'action' and 'citizenship' are premised upon outdated models of 'the political', 'technology' and 'participation' as they theorize digital technology through a variety of modern deterministic lenses (Poster 2001, 2006). But does any of this mean that users are not 'active citizens'?

> [the Internet] it teaches people to communicate ... it adds to the library, the fact that you've also got books to go to. I think it's a wonderful idea. It ought to be national ... I suppose it will be (User 7: male, retired, 82).

One of the common ways in which users did not conform to their virtual counterparts in governmental and institutional constituencies was with their shift of dominant uses from experiments in information retrieval to augmenting and expanding their communications with others. In terms of the materials, this was apparent in the overwhelming use of email compared to any other application or service (see also Gross et al 2004; Hardy and Johanson 2003; Katz and Rice 2002; Wellman and Haythornwaite 2002; Williamson 2001). While retrospectively this may be no surprise to social scientists in this field, in that we would now expect instant messaging and Facebooking to be dominant in 2008, it was quite at odds with both governmental rationales and the ways in which the library imagined and tried to enact digital culture. All users stated that their main activity was sending and receiving email. Of course, this encompassed a wide spectrum of uses, as part of many everyday practices, from communicating with friends and relatives to job applications and speculative inquiries. Users across the spectrum expressed particular pleasure in being able to keep in touch with people abroad, especially where they felt that this contact would simply not be possible without email. Existing associations and ties were reproduced and managed and in many cases extended through this mediation. This includes maintaining contact with relatives who have emigrated, friendships

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users themselves, not just access to Internet resources itself. In a UK context, Hawkins et al (2001) reported that social classes D and E were underrepresented in libraries, both in terms of their numbers proportionate to other social classes, and also in terms of the frequency which they borrowed books. In other words, classes D and E, the most disadvantaged of all, were the people least likely to use libraries and the facilities therein. Selwyn (2003) found that the People's Network was not relevant to marginalized groups. Public access sites were not especially attractive to many users, having 'only moderate levels of recognition, and even lower levels of usage, amongst the general population' (Selwyn 2003: 15).

made while travelling overseas, and family at home when working or studying in the UK temporarily.

This ability to maintain friendships-at-a-distance through email use was considered a (if not the) major benefit of public Internet access, in contrast to both governmental (feedback) and librarians (learning) expectations. The framing of the Web as a communications medium takes a number of forms, but is typically articulated within such contexts of relationship maintenance. That is, instead of assuming that the relationships formed through the Web will be entirely novel, the Web was becoming embedded within sets of existing relationships – maintaining and cementing them across disparate time-spaces:

> ... keeping in touch with all my friends and relatives ... I mean there's no way I would write to each one individually ... its such a long process ... a time consuming process ... I've got friends now who I will probably stay in touch with for the rest of my life (User 16: male, unemployed, 29).

In addition to this, most library users were using search engines. Commonly, Web use began through curiosity while using the other office facilities for routine practices such as writing letters, making cards, or producing CVs and resumes, but developed over time into more systematic searching and re-visiting of particular websites. This was primarily directed at job searching and associated activities, such as searching for information about particular employers, job training schemes, and so on. It is commonly thought that this kind of information gathering and 'background work', which we might think of as a proliferation of informal research rather than directed learning, is central in positioning oneself in an increasingly information-saturated society. For example, in terms of self-positioning in the labour market, the Web is indeed seen as a vital tool, where 'it gives you more jobs to go at ... it gives you a shot' (User 1: male, aspiring writer, 33).

While users generally discussed the Web through metaphors such as 'progress' and 'the future', it was also clear that their particular uses have become firmly grounded in their existing experience and everyday activities. To consider the analogue to digital transition here, the use of digital media tended to supplement and re-mediate their existing activities rather than *replace* them altogether (cf. Miller and Slater 2000; Wellman and Haythornwaite 2002). But it also changes those activities. Conducting relationships through different media makes a good deal of difference to the character of the exchanges, more often than not in this case where what was considered a normal or routine form of communication enabled something altogether different to emerge. This sometimes involved a novel activity or re-established and reinvigorated an older practice. The act of achieving email contact with a lost friend or relative stimulated novel forms of contact, such as extensive travel, a return to letter writing, or an increasing number of telephone calls. For example, user 7 (male, retired, 82) has developed his own website which facilitates contact between ex-servicemen and women – something which began as a solution to a particular problem, but has created a new series of global contacts, which has facilitated his global travel on a regular basis. In this way, library users appeared to confirm the notion that 'virtual' activities such as email communications stimulate

more 'real' activities (cf. Woolgar 2002). Other examples are the ways in which Web use stimulated library use more generally, the majority of users use of other library facilities (particularly book and music borrowing) increasing since they began using the learning centre:

> I come in a lot more often than I used to ... yes, a side effect of coming here is that I use the books, video, CD-ROM much more than I did before (User 16: male, unemployed, 29).

Even users who explicitly stated that their use of the ICT learning centre was short-term (either through unemployment or the anticipated ownership of the technology) said that their use of the library as a whole had remained constant or increased. In terms of resonating with the dominant public library discourse of information retrieval, it is the relatively few users who have used ICT's for a long period that tend to describe the Web as simply 'another information resource': framed and incorporated within their existing models of computing and digital information:

> It [Internet] is a vast depository of information…rapid communication…that's it really; I mean what else could you say after that…I think those two phrases sum it up (User 13: female, admin. assistant, 39).

However, less experienced users expressed a kind of imaginative fascination with the Web, where their use of digital technologies confirms their imaginary models of a 'global Internet' which has unlimited potential for self-transformation:

> ... it empowers you in some way to find it out for yourself, 'cause otherwise you might not bother like. There's been a few things that I've looked up on the Net which I wouldn't have looked up in the past ... its expansiveness, that you know that there's going to be some information out there ... at least that's the idea I go around with anyway (User 8: male, student, 23).

On the one hand, the majority of users describe the Web primarily in terms of information. That is, users generally associated it with similar resources (books, CD-ROMs, etc.) as opposed to, say, the telephone. On the other hand, nearly all users enacted digital technology in terms of communications, rather than information for learning. They used email more than anything else, and spent most of their time engaging in communication with friends, relatives, employers, and so on. An important question is whether users describe the Web in this way because it is in the library. In the same way, do they describe the Web as an entertainment or communications technology when it is anchored elsewhere, in a cyber-café for example? We cannot answer this here of course, but there are some suggestive cues in users' accounts that I want to highlight in contrast with the notion that the use of digital technologies simply maps onto existing practices regardless of where the use takes place. For example, one of the most intriguing aspects of users' descriptions was how most of them disapproved of Web use which did not conform to 'appropriate library activities'. For example:

> Well, what I would say is, as far as chat rooms go, and downloading porn, you know nothing against it and that, but for a lot of people it's just become a tool to muck about on or to burn time with (User 9: male, unemployed, 28).

There is, again, an explicit association of the public library with a `Victorian seriousness' about appropriate-ness at the level of everyday uses. While using the facilities, some users are not necessarily comfortable with the computerization of the public library, particularly where they conceive 'culture' to be primarily a print-based set of resources. All users saw the library as an institution undergoing significant change, particularly with respect to the increasing numbers of computers in the building, and the general increase in ICT's of one sort or another. These changes were most commonly seen as inevitable and constituting progress:

> Libraries are first and foremost about borrowing books aren't they? But ... I suppose you've got to move forward (User 5: female, retired, 64).

Perhaps most surprisingly, these changes were not necessarily seen as replacing the traditional library altogether, and even when conceived as such a threat there is little lament for the passing of traditional libraries. Nearly all users were enthused about the role of the postmodern library, where information rather than knowledge, and access rather than expertise, are the general organizational and pedagogic principles:

> You know I don't see any reason for being pedantic about what a library has to provide ... I think this is one of the best facilities they have ... I would almost put it on a par with the books like, especially for its use and people's enthusiasm (User 7: male, retired, 82).

The dominant descriptions of the Web among library users were as an individualized learning tool: this might be freedom from the restrictive formats of institutionalized learning, the constraints of other learning resources, the traditional expectations of different social groups, and so on. Yet digital technologies seem to be enacted as contexts for community and self maintenance and expansion: the ability to maintain, augment and extend a communicative community of friends and relations that might otherwise be lost. In these ways, users constructions of their own Web experiences (cf. Miller and Slater 2000) were not necessarily compatible with either their own descriptions of appropriate uses, or in line with the institutionalized models of learning and empowerment, or participatory citizenship.

Returning to the question of what difference it makes for users to 'do things differently', what significance do these disparities have? Over the period of research the development and initial uses of the learning centre were subject to conflicting internal discourses about the relationships between print and digital culture. Normative accounts of information utility and learning became the official promotional line in an effort to both embrace what were seen as the properties of new media, but also to delimit their more open-ended purposes to those deemed suitable for public library culture. The shift of users' interests and needs from these forms of activity to others primarily directed at communication had a number of significant effects. Firstly, the promotion of the learning centre incorporated these uses and re-presented Room 18 as somewhere to 'connect with friends' as well as

learn. This may seem rather trivial, but it is not so for those librarians who see digital technology as inaugurating the commodification of information and knowledge and the potential disappearance of the public library as a distinctive cultural institution. Secondly, such a rhetorical shift has material and practice orientated dimensions. New skills and forms of competence are required on the part of librarians and of users. These are also subject to the versioning culture of the computer industry, and the short-termism and change-fixated culture of national and local government. New relations are developed between the discourses, materials and practices of digital culture as it is locally enacted or 'co-determined' in the public library.

Conclusions

In this chapter I have sought to understand how pervasive and influential directives of public access to digital technologies have become inscribed within a variety of discourses, technologies and practices within a specific locale. As we have seen, the ways in which digital culture is enacted in the public library has as much to do with the daily activities of library users and evolving techniques and skills, as it does with government or institutional policy and modes of organization. In grounding the appropriation of digital media in their cultural-historical locations, and more importantly in the *ongoing* dynamics of use, we see that there are multiple associations between culture and technology at work between and across the three constituencies highlighted here, and that they are subject to ongoing reconfiguration. The purpose of this was to ask whether perceptions and local agendas of government departments, library institutions, and library users actually coincide, and to recognize the multiple scripts and authors of digital culture. I want to emphasize here that it is not only a matter of competing interests or inscriptions, but that these mutually evolve. This raises especially difficult questions for those who want to translate policy directives into institutional sites and into practices.

The public library is being reorganized around digital cultural ideals, placing the professional librarian in a contradictory position. Governmentally, digital information technologies are positioned as key to reinvigorating future relations between government and citizen, when embedded and made freely accessible within public library 'intermediary' sites. Local public service providers know all too well that unless they embrace this kind of vision, they will be deemed inefficient or incompetent – and that perhaps other service providers might prevail in a 'cultural marketplace'. For librarians, this particular form of enthusiasm is fractured where digital technologies get weaved into an ongoing dialogue between modern and postmodern discourses of culture, and the proper role of public libraries as legislator or interpreter. For the most part, digital technology itself has become the vehicle through which to reactivate earlier ideas associated with library postmodernization (interactivity, empowerment, and participation), framing the Web as somewhat deterministically empowering *information* and decentralized learning technologies. This is sometimes represented in terms of the Web inherently 'possessing library features'. But such a representation requires ongoing rhetorical work and continual enactment, seen here through document and interview. It is worth reiterating the

point that there are multiple conceptions of digital culture and technology circulating simultaneously in a local context, and that this underscores the importance of exploring the internal cultural dynamics of those concrete places deemed to be 'neutral intermediaries' (see also Bellamy and Taylor 1998; Keen et al 1998; Loader 1998).

Library users have taken a central role in this chapter. I have suggested that the changes in ordinary practices have been significant for changes in the configuration as a whole. Library users have in a sense rewritten the scripts of digitization-as-learning. Library users often articulate the Web-in-the-library in these terms of self-education and life-long learning. But they bring their own antinomies of digital culture along with them, negotiating paths between enthusiasm and scepticism, opportunity and necessity, learning and leisure. The most concrete example of this concerned the rise of communication with others, rather than self-directed learning practices, and how these uses have become what public access to digital technology is now primarily *for*. For example, there is no evidence that library users are engaging with any governmentally sanctioned services other than pursuing employment-related searches. It seems that library users are in fact combining a host of different uses, some of which appear to be library-specific, whereas others are more commonly associated with entertainment or personal communication. In this way, the dynamics of use are certainly open-ended, making the issue of intermediation particularly complex in terms of speculating what the 'effects' may be, whether any 'closure' can be said to emerge, and how the use-environment is subject to cycles of orchestration (Bijker et al 1997; Hand and Shove 2004). Most importantly, then, to explore this further would not simply involve the measuring of Web use or behaviours of users within specific sites, but simultaneously exploring the variable cultural dynamics of those places, as such processes of positioning continually reframe the very conceptions and possibilities of use and the enactment of digital cultures (Akrich 1992; Lee 1999; McLaughlin et al 1998; Shove 2003; Shove et al 2007).

More substantively, the ongoing and shifting uses of the technologies have had the real effect of forcing this library to re-frame access as a *communicative* issue rather than only a learning one, promoting the library as a digital culture of communication as much as of learning ('a place to meet, chat and learn'). What the ongoing effects of this are open to further question. If there was a long-standing antagonism between legislation and interpretation in the library, how will this notion of 'communication' co-exist with these other aspects of library culture? Will we see increasing de-differentiation, or will there be any limits imposed upon what counts as leisure, learning, information and communication in the library, and so on? In summary, these differences between the Web as democratic feedback tool (in government policy), information retrieval tool (in public library discourse) and as communicative medium (in users' practices) exemplify both the ambivalence of the discourses and materials of digital culture, and the public library as a 'safe' intermediary site for the delivery of government promises.

To return to the question of a 'transition' from print to digital culture we can see that this has material, discursive, and practical dimensions. What we call the technology of digital culture has been framed, understood, and used in fragmented and multiple ways within public libraries. In using the broader notion of the 'materials' of digital

culture developed in Chapter 3, we see that different configurations of material and immaterial elements are combined to accomplish specific operations, and in this way we should not assume that digital technologies have an inherent affinity or incongruity with any particular context or location. Nonetheless, this should not imply that 'anything goes' with regard to how these technologies will be used. On the contrary, in contrast to the 'cyberbolic' hype surrounding digital technology, its operations are much more grounded in pre-existing institutional arrangements than we might think (Woolgar 2002). Indeed, the institutional context of the public library may have an important role in stabilizing inscriptions of appropriate uses of the technology. While users displayed a wide range of communicative applications related to their existing social ties, most articulated these in terms of their setting within the library, often disparaging the leisure-orientated uses of others. The library (and the historicity of the library) as a culturally important and 'serious' institution, appears to have a significant ongoing presence here. Library users made a lot of the fact that they preferred the Web-in-the-library to the 'transient' Web-in-the-cyber-cafe for example, where specific forms of computer-related competence and expertise are often thought to be prerequisites in the latter context (see also Lee 1999; Wakeford 1999).

Finally, there are some summary observations we can make here about the generic discourses of access and indefinite learning that have become associated with digital culture. While notions of access to resources for self-improvement have a long history within public libraries, the figure of the 'indefinite learner' needs to be seen in the contemporary context of individual life chances being redefined in informational terms (Barry 2001; Dean 1999; Lash 2002; Rose 1999). In terms of the role of the Web, the descriptions among librarians and their publics appear to have become fully embedded within the grammar of 'third way' sociopolitics: the grammar of empowerment, interactivity, participation and choice. The tensions between citizenship and consumerism are evident here where informed citizen-consumers become central to the function of the marketplace. Making digital culture in the library, and making the library a digital culture, involves moments of desperation about the loss of funding, the reactivation of an older narrative of postmodernization given new life in digital form, and a variety of trajectories of change: retraining, rebuilding, and re-conceptualizing what the library is for. These are all in thrall to the demands of reflexive capitalism, yes, but they are also the outcome of local conventions and with institutional level ideas about culture in general. Even though 'information' appears to have become the metaphor for everything, culture is certainly not flat in this story. There are many robust accounts of culture in the library. It is precisely the interaction between them that shapes the materials of digital culture.

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Chapter 5

Becoming Direct: Interactivity and the Digital Product

Introduction

Many of the grander promises evident in Chapter 2 relate specifically to e-commerce. There has been as much, if not more, web utopianism among the business community as cyber activists, particularly in relation to globalization and the seemingly infinite new markets enabled by interoperable databases and the digitization of service delivery. There has also been a sense in which it has been changes in the economy, or socio-economic restructuring, that have underpinned cultural changes more generally (Castells 1996, 1997a). While many have been rightly critical of such Castellian models of virtual culture – as a super-structural realm of digital symbolic exchange – some of Castells' key ideas have been taken up by commercial agents and have become part of the cultural currency or 'circuit of capital' within the business community as it learns about the 'network society' (see Thrift 2005). In other words, behind the hyperbole, some of the abstract and largely academic ideas about a new economy and digital culture may become part of the materials of digital culture on the ground, especially when they are taken to be inevitable. How such ideas manifest as the 'imperative to interact' within specific commercial environments forms the substance of this chapter.

In the previous chapter I looked at how different visions of public access to digital culture played out within the public library. A notion of interactivity remained implicit in that story. Interactivity was seen as both a property of the Web, involving a different relation between knowledge and library user, and as the model of citizen – state relationships. And yet the cultural intermediary, the cybrarian, was central in that the role of the librarian is to be even more active and explicit in constituting the appropriate relations between the technical and the cultural. What I will explore now is an alternative idea: that the intermediary, especially conceived as a human agent or institution, is precisely what can and should be dispensed with through the deployment of digital technology. In the business organization, reordering itself around the interactivity of digital culture is to 'become direct', to *disintermediate* all relations between organization and consumer. In the case of private business, the effort is to embrace the discontinuous and immaterial aspects of digital technology and instantiate interactivity through more explicitly technical means where 'the discourse of seamlessness effaces or elides meaningful distinctions between systems' (Greenfield 2006: 137). This is an organizational effort to produce immaterialization – to enact a seamless, purely technical form of transaction between consumer and company. It is thought that seamlessness between company and consumer can be

produced through tying digital information systems together to produce the kinds of immediate information flows discussed in Chapters 2 and 3. Moreover, in line with Bolter and Grusin (1999), any *sense* of mediation can be effaced through the deployment of digital technology.

More specifically, the question of interactivity is explored by looking at how speculative models of e-commerce have been responded to within financial services, focusing upon some particularities of an attempt to develop and deliver 'purely on-line' products to consumers within a major life insurance company. In what follows, I discuss a sequence of 'key moments' in the formation and development of a specific managerial project within a business organization which will be known as *LifeCo*. Briefly, at the time of the research, LifeCo were the largest insurance group in the UK, a top-five European life insurer, and the world's seventh largest insurer. LifeCo is backed by a global corporation with over £200 billion of assets under management. They have 25 million customers, with premium income and investment sales of £28 billion. In terms of business context, the UK arm of LifeCo has been part of a series of high profile mergers between 1998 and 2002, involving periodic processes of convergence and re-branding, some of which have been directly related to digitizing many traditional products and processes. I will present descriptions of the internal processes around and just after the dotcom boom between 2000 and 2003. The research looked at the existing platforms for products at the same time as following the trajectory of the specific 'on-line products' project, from the context of its initial conception to redefinition and redundancy. I shadowed the project leader over this period, attending all the key meetings (25 in total) between the relevant teams, a major workshop, plus informal meetings between more senior management and the project leader. Alongside this, content analysis of internal documentation and web-based material was used.[1]

The narrative approach presented here conveys the form and nature of negotiation during the course of the project, showing how local articulations of e-commerce involved contested and fractured conceptualizations of digital technology, organizational futures, and uncertainties about what kinds of expertise need to be mobilized. I argue that this provides a locally grounded perspective on the dynamics of interactivity, particularly the kinds of complex integrative 'work' required in enacting visions of 'seamlessness' in business to consumer transactions. One of the key difficulties to be highlighted is the relation between digital and non-digital materials. The remediation of print into digital does not occur automatically, it has to be enacted in the context of normal routine and practice. The tensions between the apparent 'fixity' of print and the 'variability' of digital technologies present significant problems in this regard, alongside the issue of how 'closed' or 'open' interactive platforms should be (Lury 2004; Manovich 2001). It is suggested that narratives of a

1 LifeCo is not a public space like the library and different research methods are required. Due to concerns over the 'highly competitive environment', it was agreed that no formal interviews would take place, but proceedings of the meetings would be noted by the researcher followed by personal accounts of the same meetings provided by the project leader. The meetings themselves and the documents they produced are the materials of my narrative account.

'direct' digital future provided great scope for imagining organizational expansion but framed the local planning of e-commercial ventures in ways that, when coupled with existing conventions and constraints, inevitably produced competing abstractions of the technology, the organizational context within which it was to be embedded, and the wider socioeconomic reality to which it was seen as the 'solution'. The outcome of these complications was that the organization continually multiplied non-digital elements in order to 'make digital products', preventing successful implementation. Digital and non-digital objects and processes appear inextricably entangled; attempts to isolate and separate them produce new forms of constraint in implementing ICT related organizational change. The chapter stresses that the promises of e-commerce should not only be seen as economic wishful thinking or hyperbole, but as an illustration of how digital media are continually thought to enable an un-mediated or 'pure' relationship between organization and consumer.

The Digitization of Financial Services

Within the field of e-commerce, financial service institutions have an increasing presence within global, international, and national economies, and everyday life practices, but, strangely, have been subject to very little sociological research.[2] Insurance and assurance institutions have always been agents of self-transformation; life insurance is an 'ethical technology' in that it encourages self-reflection and the monitoring of one's conduct in order to be eligible (see Clark 1999).[3] Insurance techniques are also methods of governing populations through complex combinations of the prudential and the speculative.[4] According to Clark (1999), early insurance organizations were made possible through an intimate relationship with key information technologies of an emerging print-mediated culture.[5] In the UK, the expansion of financial services is occurring in the specific context of welfare state contraction and individualization (Rose 1999; Taylor-Gooby 2000). Crucially, digitization, particularly in relation to the apparent *interactivity* of the Web, has been lauded as the perfect conduit for such an expansion, connecting existing markets, producing new 'virtual markets', delivering products to a growing sector of risk-conscious, citizen-consumers. This has enabled novel forms of competition to emerge

2 See Knights et al (2002); *DTI Foresight Programme Report*.

3 According to Lyon (2001), financial services exemplify postmodern industries of surveillance, where surveillance is conducted globally but also penetrates everyday life in unforeseen ways, as risk-information becomes central to the dynamics of inclusion and exclusion (cf. Dean 1999; Rose 1999).

4 For example, see Westall (1984) on the impact of the First World War on perceptions of 'life' and 'security' in England. A number of historians of insurance note the emergence of actuarial techniques and statistics within insurance institutions were by no means a series of progressive developments. Actuarial thinking emerges through practices of gambling. See Ewald (1991) in Burchell et al (1991); Clark (1999).

5 Clark is referring to the emergence of life assurance in England. The practice of using financial instruments (information technologies) for governing aspects of commerce appears within Semitic and Hellenic trade cultures in the 4th Century BC. See Raynes 1964.

which have, in turn, forced traditional companies to shape their marketing strategy toward ICT distribution (Bennett and Koudelova 2002; Castells 2001; Hughes 2001, 2002). Indeed, some suggested that in organizational terms the financial services sector would witness *the* most radical transformation as a result of e-commerce, due to the potential impact across organizational structures, distribution strategies and even the products themselves (Birch and Young 1997; Durkin and Bennett 1999; Hughes 2001, 2002). It was thought that the digital restructuring of business, plus the reformulation of business to consumer relationships, would foster a 'culture change' where the entrepreneur becomes the model for both wealth creation and consumption. The ability of firms to develop real time interactivity, conduct the majority of their business on-line, continually adapt to emerging consumer trends through the 'strategy', and foster entrepreneurial activity has become central to the dominant image of successful business in reflexive or 'soft' capitalism.[6] The inevitability and ease of this transition is often cited in state sponsored foresight research:

> There is tremendous potential for the delivery of services through ICT's. For example, the vast majority of financial transactions could be made 'on-line'. Furthermore, a large proportion of routine shopping (perhaps even the vast majority) could be ordered 'on-line'. There is no reason why these changes could not come about very quickly – within five years.[7]

Typically, these narratives of promise conceived the Web as the new motor of radical innovation and re-engineering, and thought of business organizations as somewhat homogenous cultures to be universally transformed through the impact of its novel technological infrastructure.[8] But what happened to this particular transformative vision? We know much about the success of companies such as *Amazon.com* or ventures like *eBay*, but what of those for whom key promises of radical innovation failed to materialize in quite the same way?

Within popular or foresight accounts, a series of features conventionally associated with ICT's – interactivity, immediacy, flexibility, global reach, and so forth – are invoked to anticipate changes in organizational structures and management strategies, in line with projected transformations of the global marketplace and 'consumer behaviours' (cf. Kelly 1999; OECD 2000; Tapscott 1996; WTO 1998). While the crude determinism of such accounts is problematic in terms of explanation alone, it

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6 These themes appear across international frameworks at this time. For example, see European Commission (1994) *Europe's Way to the Information Society: an Action Plan*. COM(94) 347. Brussels: EC; OECD (1999) *The Economic and Social Impact of Electronic Commerce*. Paris: Organization for Economic Cooperation and Development; OECD (2000) *A New Economy? The Changing Role of Innovation and Information Technology in Growth*. Paris: OECD; US Department of Commerce (1999) *The Emerging Digital Economy*. Washington, DC: ESDC; WTO (1998) *Electronic Commerce and the Role of the WTO*. Geneva: World Trade Organization.

7 *A Scenario for Success in 2005: Information and Communication Technologies in the UK*, (2000) DTI/Pub 5090/1K/11/00/NP. p. 14.

8 This kind of model of techno-organizational change is common within traditional 'innovation studies'. For an STS critique, see McLaughlin et al (1998).

is precisely such narratives which circulate inside financial service organizations, and as such they need to be taken seriously in framing the possibilities of organizational consumption and integration of digital technologies.

Much of the large body of social science literature on e-commerce, encompassing research and commentary from economics and business studies, sociology, management and innovation studies, has cohered around three key perspectives, familiar from Chapters two and three. Firstly, there is what we might call a discourse of discontinuity, whereby a genuinely 'new economy' is thought to be resulting, in part, from the application of ICT's to all aspects of economic life (Castells 1996, 2001). This perspective emphasizes the external reality of a 'network society' and the corollary responses of organizations to become more 'virtual', horizontal and networked:

> The entire business organization needs to conform to the Internet-based technology through which it relates to customers and suppliers. Furthermore, as individual entrepreneurs blossom in this kind of economy, linkages between consultants, subcontractors, and firms over the web become as significant as the firm's own operations. What is emerging is not a dot.com economy, but a networked economy with an electronic nervous system (Castells 2001: 65).

In Castells' 'bird's eye' view of the informational economy, he asserts that there are specific properties of the Net which can not only be harnessed by organizations but should be the model for organizational change.[9] Organizational action here is conceptualized as a largely rational response to remorseless technical change and the emergence of a new type of 'demanding' and more reflexive consumer. The kinds of 'virtual organizations' cited are seen as freed from geographic, economic and spatiotemporal constraints, consisting of semi-autonomous, horizontal 'sections' (both in-sourced and out-sourced), and moving many operations into the non-territorial realm of digital information. While we might argue that organizations are always imagined, it has been suggested that the very idea of organization as a place or structural reality is problematized through digitization:

> …as information technology catapults us into the reality of an Einsteinian world where old structures and forms of organization dissolve and at times become almost invisible, the old approach no longer works. Through the use of telephone, fax, electronic mail, computers, video, and other information technology, people and their organizations are becoming disembodied (Morgan 1993: 5).

These novel imbrications of corporation and consumer proposed in the model of the network or virtual organization will serve to enhance the functioning of the e-economy as a whole:

> Innovative and demanding consumers also play a central role in the diffusion of new technologies and new business models. New ICT's, and products and services based on

9 One of the key promises of the Internet, particularly during the mid to late 1990s, was that commercial organizations and consumption practices would be transformed *beyond recognition* (Dyson 1998; Gates 1999; Leadbeater 1999).

> – or delivered through – ICT's, offer potentially enormous advantages to consumers in several ways. These include improved transparency – making it easier to compare products and prices between providers, freeing up time – no longer will consumers have to actually visit banks or shops if they do not wish to. There is tremendous scope for ICT's to enhance the quality of life in Britain.[10]

Looking at the statistics, there has clearly been considerable growth in online banking and insurance sales, but almost no online sales of life insurance policies.[11] Importantly for this chapter, the failure of traditional banking and insurance institutions to fully embrace these discontinuous models is often seen as a result of simple conservatism, inertia, resistance, or 'stuffy-ness' (Economist 2001; Leadbeater 1999).

Secondly, also among the technological modernisms of Chapter 3 there is a literature about continuity (often as a direct response to Castells' work), focusing largely upon corporate practices, arguing that the former ideas are essentially hyperbole, conveniently ignoring the concrete ways that commercial institutions and organizations are socially shaping digital technologies in their own historically embedded interests related to post-industrial capitalism (for example Robins and Webster 1999; Webster 2004). Visions of e-commerce, like prior management vogues, are 'evangelical fantasies' which have little relation to reality (Cassidy 2002; Knights and McCabe 1998), but do have the real effect of 'hardening' existing power relations related to production and consumption. In other words, narratives of e-commercial promise are utilized by managerial classes to legitimately pursue instrumental efficiency and profit, rather than referring to or producing genuinely transformative processes. Again, this tends to promote the hype/reality model of e-commerce, where any failure to enact the hyperbolic vision is no surprise, due to the rather more mundane reality of socioeconomic continuity.

In pursuing the relational materialist thread drawn upon so far, the perspective pursued here is more anthropological in nature, looking at how local practices of commercial and non-commercial organizations are inextricably linked to the 'agency' of economic hyperbole, or more correctly, economic 'abstractions' (Barry and Slater 2002; Green et al 2005; Leyshon et al 2005; Miller 1998). Inspired in part by the work of Michel Callon and related work in the sociology of associations (Latour 2005), this literature uses the notion of 'virtualism' to understand how the abstract discipline of economics invisibly constructs the world of production and consumption in its own image (Miller 1998, 2002). Instead of viewing economic theory as a 'distortion' to which 'reality' can never live up to, these accounts have focused upon how it is an agent in constructing the very reality it describes. In the case of e-commerce, it is argued that a 'rhetorical arms race' of exaggeration during the 1990s led to a suspension of normal lending procedures, in turn fostering a

10 *A Scenario for Success in 2005: Information and Communication Technologies in the UK*, (2000) DTI/Pub 5090/1K/11/00/NP. p. 16.

11 To cite one example, figures from the Insurance Information Institute in the US show how between 1998 and 2005 the number of consumers using online banking and bill payments services increased from 13 per cent to 41 per cent. See www.iii.org for a variety of statistical tables. See www.fin.gc.ca for details of the insurance industries in Canada, provided by the Government of Canada.

creative industry around e-commercial and software development. Combinations of favourable macroeconomic conditions, a 'rhetorical echoing' of the notion that a new economy was emerging, and changes in IT itself, allowed a number of key abstractions to become common currency (Leyshon et al 2005). In other words, the widespread circulation of the terminology of 'e-commerce' became a prime force for self-fulfilment across many organizations.[12] This is less about hyperbole as false representation, but about how specific abstractions become actively embedded within sociotechnical routine, convention and normal practice within organizations:

> E-commerce did not come fully formed into the world. It emerged from conscious decisions about the use of various logistical technologies. These technologies in turn were shaped by such decisions and the kinds of conventions that formed around them as agreement upon effective uses developed. Decisions were often made from a basis of practical experimentation, which took place within both commercial and non-commercial environments (Leyshon et al 2005).

While arguably overplaying the influence of economists and formal economic theory (see Lash 2007), such work suggests that the focus should be upon the local specificity of socio-technical arrangements involved in the enactment of e-commerce, emphasizing the interpretive and contested nature of the outcomes. As I have argued so far, this kind of approach avoids the pitfalls of both technological and cultural determinism stressing that the organizational consumption of new technologies involves altering existing organizational practices, but also organizing the technologies in the context of existing practices (see also McLaughlin et al 1998). Most importantly, the discourse of the 'new economy' is not dismissed as 'mere' talk. Rather, directorial and managerial narratives are taken to have material effects, which may be unpredictable or long-term, but significant nonetheless. Drawing upon this approach, but utilizing aspects of new media theory, the enactment of e-commerce is modelled as experiments of performative integration where digital ideals, devices and wider organizational practices are tied together, producing a variety of uneven and unpredictable consequences (cf. Green et al 2005; Miller and Slater 2000; Leyshon et al 2005). In the case discussed here, the 'practical experiment' to make digital products involved the abstraction of various materials into offline and online categories and then trying to integrate them. The process of trying to plan a reorganization of this kind created a series of seemingly irresolvable problems associated with making technical systems interoperable, removing human intermediaries, and fulfilling the imaginary needs of 'ghost' consumers.

Following in this tradition, the remainder of chapter is organized as follows. The first part outlines the managerial narrative of becoming 'more direct' and the associated promises to consumers. This highlights the discourse of inevitability at work here, situating it in relation to ideas about the new economy and to two models of interactivity. My aim is to focus on how what became known as the 'on-line products project' was conceived and debated among and between different work

12 Leyshon et al (2005) show how this operated through key publications from the early 1990s to the present. This is one way in which abstractions circulate and produce the phenomenon they describe. See also Miller (2000).

teams as they attempted to produce a consensual map and method for implementing digitally-facilitated organizational change. Three key moments of the project are described as a way of focusing upon the discursive and practical problems of producing and enacting interactivity through disintermediation.

Visions of Becoming Direct: Moving from Representation to Flow

> Advanced thought in this area is concerned with how to create 'frictionless' business, in which the firm's relations with its suppliers, its customers and its own departments can take place in a single electronic space (Miller and Slater 2000: 15).

> [*LifeCo's*] strategy is to be an efficient provider of quality insurance and asset management through a range of distribution channels. Internet technology is central to this aim. It is helping [the company] not just to do existing things better, but to explore radical new ways of conducting business (LifeCo Annual Review 1999).

If there was a broad strategic aim articulated at the directorial level and by senior management, it was that all the expansive potential of the organization could be realized by offering its products and services 'on-line'. Much of this relied upon the assumption that the 'new economy' would inaugurate a move toward completely electronic forms of distribution. This included a number of possible sites for the consumption of products: ATMs and information kiosks, smart cards and 'electronic purses', telephone, PC and Internet banking services, 'interactive television', and so on.[13] At the time of this research (2000-2003), the major stand alone financial service organizations were trying to develop a 'fully electronic product' – one which could be produced, marketed, consumed, and managed in a purely digital format. This would then allow them to offer this product across these other distribution channels. This was considered a form of radical re-engineering which would establish conditions for further expansion in the form of circulating and embedding financial service products within a series of 'everyday' consumer technologies. In other words, the products of financial services were to be lifted out of print forms and files and placed in interactive platforms and software.

The first key moment involved debates about the rationale for the genesis of the project. As in much contemporary organizational discourse, the idea of forging more 'direct' relationships between company and consumer is prevalent and deemed to be fundamental within insurance industries. The desire to remove the 'middle man' appears to be a particular preoccupation of current marketing strategies and business models.[14] This can be seen elsewhere in the move toward ATM's in lending services, 'brands' as dynamic 'spaces of proximity' which organize relations

13 This is an inexhaustive list of possible outlets identified by the 'distributions strategy team' within LifeCo. Initial meetings focused upon the potential connectivity and disconnectivity of electronic products across these future conduits; later meetings discarded these issues as the 'innovative technologies' either failed to materialize or became highly specialized.

14 Think of the sheer number of companies which now operate with the prefix or suffix 'direct': Direct Line; Claims Direct; Direct Banking, ING Direct and so on.

between production and consumption (Arvidsson 2006; Lury 2004; Moor 2003), and so forth. Interactivity as a mode of inter-connectivity between organizations and their customers is most commonly understood in these terms, with the Web seen as affording such changes in organizational performance, removing constraints of time, space and even economic history (Lash 2002; Mosco 2004; Wittel et al 2002). Much of this depends upon being involved and being *first*.

> Success for the UK in ICT's also requires firms to be both locally and globally networked ... In this area, success breeds success, which makes a 'seat at the table' doubly important ... Firms should also network locally – as demanding customers of each others' products and services.[15]

The imperative of 'first mover advantage' has primarily been discussed in relation to dot.com start up companies during the 1990s, where assumptions about network and scale effects for those using the Internet first, arguably underpinned the boom (Leibowitz 2002; Leyshon et al 2005; Mosco 2004). This FMA narrative played out somewhat differently within older established companies such as LifeCo. The notion of being 'first' was a powerful one, in this case as a response to novel forms of competition, partly from start-ups, but mainly from the large UK supermarket chains such as Tesco who have more recently moved into the financial services market (see Knights et al 2002).[16] Initially, such pressure was simply about 'getting involved' in e-commerce, with no real understanding of what that might mean, alongside a generic belief that these 'new players' were inherently more innovative and flexible organizations. Susan, the manager of human resources in LifeCo remarked that 'we need more long hairs in the company'. During an informal discussion about the parameters of my research, Susan talked about how the 'traditional' culture of insurance was somewhat antithetical to the requirements of digital innovation – giving a sense that 'new kinds of people' need to be recruited, people who have no interest or expertise in economics, administration, or actuarialism, and not in IT as such but in software management, networking and flexibility. As Knights et al (2002) argue, during the late 1990s the Internet tended to be understood in either 'future shock' or 'emperor's new clothes' terms. In LifeCo, the dominant way of speaking about e-commerce was certainly in the future shock territory allied to uncertainty and confusion about what the possibilities of the Web might actually be, and how to recruit the appropriate people.

More specifically, for the senior managers across the New Markets (Mike), Compliance (Steve), Distribution (Jack), and Software and Systems (David) teams,

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15 *A Scenario for Success in 2005: Information and Communication Technologies in the UK* (2000) DTI/Pub 5090/1K/11/00/NP. p. 15

16 This has been one of the major changes resulting from deregulation in the UK. LifeCo identified the food retail giant Tesco as their main competitive concern, rather than other traditional assurance and insurance companies. This is partly to do with the apparent ubiquity of Tesco as a brand, but also with the belief that retail industries are able to engage in forms of innovation and experimentation more quickly than traditional companies. The difficulty then is how to 'capture' consumers in a context of seemingly infinite choice, where 'the Internet is an increasingly important market-place' (LifeCo newsletter 1999).

there was general agreement on the need to make an electronic space of transactions. The company must move from a prior model of interactivity as marketing (a web presence) to interactivity as a total and 'seamless' transaction between business and consumer (a performance).[17] Within some early meetings between these managers, it was agreed that there was something very different about a 'purely on-line transaction' and only this would differentiate the company from other insurance providers, where existing products and their pricing varies very little. The notion that the Web was no longer simply a marketing tool, but might be more interventionist and actually enable the constitution of new 'virtual' markets, was expressed by Mike in terms of how to 'go out and grab' and 'segment' novel 'open spaces'. Further to this, the idea was seen as 'spearheading' a necessary response to an external and inevitable reality, revolving around the following claims, talked up by senior management as a 'coherent vision' within meetings and internally circulating literatures of organizational performativity in relation to the 'new economy':[18]

- Internet-based technologies represent the most important future channel for 'direct' retail in financial services.
- Consumers are demanding that financial services become 'direct' and 'interactive'.
- The Internet is an intrinsically direct and interactive medium of exchange.
- The Internet has created a series of new risks to the security of the organization.
- These risks can be addressed through further technical innovation.

Not surprisingly, these claims were spoken as indisputable 'common-sense' descriptions of what was going on 'out there'. Discussions about the relationship between the ability to provide on-line products and these general assumptions about the technological economy suggested two existing problems. Firstly, that existing use of the Web was underwhelming, operating as a standard form of marketing and advertising rather than a more dynamic element of re-branding. Secondly, that consumers are demanding immediate, real-time transactions in financial services as they might in the purchase of any other products and services. The metaphors of

17 This notion of interactivity as transactional should be explicitly distinguished from an earlier imperative to informationalize organizations. E-commerce ceases to be about connecting to networks in order to advertise and market 'real' products and services, but about providing and selling digital products and services through web-based transactions. It represents a shift away from the 'imperative to connect' notion discussed by Green et al (2005), partly because of the explicit morality of 'connecting' public services discussed in relation to networks which does not necessarily apply in this case of private companies (Hand 2005).

18 For example within the *Annual Review* and similar documentation. These claims are self-consciously rhetorical as strategies of organizational maintenance. They have subsequently become statements of fact when expressed by those with 'expert capital' – programmers and software purchasers for example. It should be noted that some members of the New Markets team were immersing themselves in Castells' and others texts at this time, and in one case, taking an MA in Media and Cultural Studies with the Open University.

'flows', 'flowing', and 'more flexibility' were used with enthusiasm to capture a sense of economic and cultural change to which new technologies could be directed. But how might this actually be achieved?

If there was visionary consensus between senior managers, tensions begin to emerge in relation to the particular responsibilities of their respective teams, divided as follows:

New Markets:	sub-section of the marketing department specifically concerned with developing and securing new markets. This increasingly revolves around the application of digital technologies in relation to the brand.
Compliance:	monitors the compliance of organizational procedures and practices with external and internal regulatory guidelines. These guidelines are set by the PIA (Personal Investment Authority) and the JMLSG (Joint Money Laundering Steering Group), with whom the organization must comply.
Distribution Strategy:	responsible for relationships with all distribution channels, including other financial institutions and agents, the technologies of distribution, and innovations in future distribution channels.
Software and Systems:	responsible for maintenance, development and procurement of all technical systems, particularly in terms of compatibility and redundancy.

The 'on-line product project' was lead by Andrea, a member of the new markets team. At the outset, Andrea brought together relevant 'experts' from other teams in order to plan the process of website re-construction. The first task was to come to some agreement on how to design the 'fully on-line product': an ideal scenario of the consumer being able to complete a financial transaction with the organization via the Internet, requiring no paper, face-to-face contact, telephone conversations, or any other kind of intervention. Andrea sketched her view that the existing print-based transaction process should be 'mirrored' on the Web. If this could be achieved relatively quickly it could form the model for replacing all existing transactions with Web versions over an unspecified period of time. Any initial consensus about this ideal began to unravel in relation to the detail. Some of this detail is related to professional expertise in a similar way to those debates within the public library; in that, there are strong commitments to what the relationships between digital culture and (consumer) culture are, and such commitments are translated and distributed into registers of appropriate expertise. Individuals are passionate about their skills and knowledge and often argued for the coherence of their vision on this basis. What I will highlight here are two issues around which teams and their members mobilized these visions and their roles in bringing them to fruition. The first involves conceptions of the consumer in relation to this shift from semi-interactive marketing to seamless interactive transactions. The second concerns team-orientated theories of digital technology related to 'technical', 'consumer' and 'organizational' problems

and solutions. Tied together, debates about these issues produced incompatible repertoires upon which future discussions would be based.

Configuring Consumers: The Automatic Production of Lifestyle

While the on-line products project aims to digitize the processes of organization-consumer transaction, the website already offers a variety of interactive processes in a relatively 'closed' format (Lury 2004; Manovich 2001). In contrast to the simple promotion of products through advertising, the website uses information about consumers to shape 'suites of products'. This kind of two-way exchange is a well-known feature of contemporary brand marketing, where the marketing process takes an increasingly active stance toward *shaping* new markets (Lury 2004). How does this work? The website offers a software program allowing the consumer to make an assessment of their insurance 'needs'. The '60 Second Wealth Checker' allows consumers to input various details about their everyday lives, providing an assessment of which products they may need to purchase in order to address the 'risks' identified. Consumers are invited to report upon their existing knowledge of risks and their existing techniques for managing them through a series of multiple choice questions. The questions are divided into five categories: 'personal borrowing'; 'your home'; 'savings and investments'; 'planning for your retirement'; and 'protecting your wealth'. The 'financial well being' of the individual consumer (and the household) is calculated from the responses. Quotations for the 'required' auto, life and home insurance products are then produced. The emphasis is not upon the present but on the future; the future is one of increasing insecurity for the middle classes.[19]

What kind of interactivity is this? These are necessarily asymmetrical exchanges between company and consumer in the brand interface. In the terms of governmentality, the Wealth Checker is an exemplary technique of responsibilization and self-governance.[20] In terms of interactivity, these are two-way, dynamic, but

19 However, it was anticipated that this may change in the future, driven by technological change. For example, it was thought that the most significant future technologies would be Web TV, Digital TV, and mobile phone Internet access. The priority was that these developments would need to be kept in mind when formulating new procedures – would they be compatible with these new formats? Also, with these new technologies, would the possible market for investment and Life products change? At present, with the investment bond product, the users were anticipated to be middle-class homeowners with Internet access via PCs. They were considered to value convenience over price. However, if digital or web television became dominant, it was thought that the working class market may open, forcing a reconsideration of the products to be marketed more directly. This was indicative of the ways in which the middle classes were thought to prefer 'educational technologies', and the working classes 'leisure technologies'.

20 The Wealth Checker offers a series of products with which to become a more prudential consumer engaging in the appropriate securitization practices (insuring, assuring, investing, protecting). Specific threats to the individual, the household, the family, the future and so on, are constructed as normal facets of contemporary life. The risks are positioned as risks to financial well-being – to the protection of wealth. It is assumed that the prudential consumer

highly selective processes. In what we might call the 'automatic production of lifestyle', consumer data is sorted into lifestyle categories within which specific products are targeted.[21] There is nothing new about this process per se. The difference is that such processes of customer definition (and corollary definitions of need) used to be the business of financial intermediaries – the insurance brokers – gathered through statistical analysis of their client base. Here, it is the web platform, software and databases which do this work. These technologies both assign generic lifestyle identities to individual consumer data, in order to target them with related products, but they also appear to be 'personalized' and responsive to individual desires. But the products still need to be purchased offline, forms need to be signed, and telephone operators need to advise the consumer, and so on. The second model of interactivity as a purely electronic transaction intends to enhance this by stripping out any human and analogue objects and processes. It proposes a 'leaping over the intermediary' to conduct a seamless and total interactive exchange.

In terms of rhetorical strategies, diagrams of interactivity shift what was previously the work of the company toward the immaterial labour of the consumer in the name of offering choice. But there is nothing inherently interactive about any particular state of affairs. It has to be made so materially and it has to appear so symbolically. The symbolic and practical elements of interactivity have to be made performative. In the primary discussions an interesting debate about 'how much interactivity there should be' in relation to this consumer work took place. Andrea (New Markets) suggested that simple 'fact-finding data' such as name, address, and so forth, should be secured in interoperable databases, in order that the consumer 'will not have to input this more than once'. Mike (New Markets) agreed and added that in order to avoid an excessive amount of data having to be provided it may be possible to 'pre-populate' a number of the fields, which might also encourage the consumer to apply for 'a line of products'. Steven (Software and Systems) raised the issue that it may also be necessary to attach HTML texts that explain the security and data protection formats in place. It was thought that the customer needs to be continually reassured of these issues.

An ongoing dialogue between new markets and software and systems centred upon the consumer as demanding immediacy and convenience or being more concerned with security. S and S were pushing for the most efficient means of capturing and storing data across a variety of systems, while NM were primarily concerned with its visualization, and whether the 'demanding consumer' would be immediately irritated

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has an increasing number of assets which require securitization. As such, the risks to financial well-being are as much about threats to the rate of accumulation of financial capital in the future as they are with the protection of existing assets.

21 The formation of identity is considered to be inseparable from consumption practices; practices which are, in turn, increasingly culturalized in terms of 'lifestyle' rather than social class (cf. Bauman 2000; Giddens 1994; Featherstone 1991; Lury 1997; Slater 1997). This powerful discourse of consumer culture is not lost on profit-making organizations, which are increasingly aware of the role of lifestyle in mediating consumer behaviour. In his review of theories of consumption, Alan Warde (1997) argues that the economic model of the individual consumer has penetrated our understanding of consumption *per se*; certainly within corporations, but also within social theory. See also Barry and Slater (2002).

by multiple data screens. In seeking to negotiate these problems, Mike suggested there were two principle ways in which consumers were to be differentiated. Firstly, it was thought that the relationship between the organization and a non-business customer, and between the organization and another business customer, are quite different in the assumptions that can be made about the meaning of the data. The way in which the input fields are labelled might have to be different, taking into account the existing customer knowledge.[22] It was agreed that the 'context of the question' might be vital in getting the customer to actually succeed in progressing through the procedure, and thus in accepting the transaction. In this way, it was thought that 'channel-specific labelling' might be necessary – with 'channel' referring to business, consumer, advisor, and so on.

Secondly, in terms of business-to-consumer consumption, it was thought that the 'lifestyle' of the customer might be the most important factor. It was suggested that alternative paths through the application procedure should be facilitated, providing the appropriate information for the 'personalized consumer'. For example, if the consumer is a pensioner, the pathway should only encompass 'protection' policies, motor insurance, equity release, and so on. In contrast, the 'executive' consumer path might encompass information regarding life, pension, and trust/investment products.[23] The challenge was conceived as how to provide specific consumers with information relevant to them, instead of 'overloading' each consumer with general product information. This is indicative of the kind of mass customization and narrow-casting of identity models increasingly used by retail organizations.[24] In terms of interactivity, we see a highly coded and closed set of options where a preferred information pathway is navigated by the consumer, fulfilling the assumptions of the organization. Their identity as, say, a pensioner is reproduced as the data input is continually fed back to the organization. The data-fields are then pre-populated with

22 For example, the label 'Sum Assured' might be applicable for the financial advisor, but 'Benefit' might be suitable for the direct consumer.

23 The core assumptions behind this series of consumer identities (pensioners; professionals; executives; families) are generated through market research. Groups of individuals are asked to provide their preferences to financial advisors. Andrea (the New Markets Project Manager) commented that there were no intentions to alter these consumer definition processes, or explore how different consumers might interface with the website in different settings. She was concerned however that many of the decisions on these identity categories had already been made, and a such, might not be personalized or 'flexible' enough to encompass the different types of consumers who may use the website. As such, while the majority of organizational actors involved in the meetings stressed the importance of 'contemporary lifestyles' in mediating consumption, the irony was that the categories of lifestyle being used were static and traditional. In essence, older categories of class and socioeconomic position were being transposed into lifestyles: the pensioner, family member, executive, professional, and so on. As such, these categories remain defined by a limited understanding of occupation and status, and as such, excluded a range of types of persons, from the unemployed to the single parent.

24 Another example might be the loyalty cards used by the major supermarket chains. These instantiate interactivity in the form of financial rewards for the proffering of detailed consumption information, under the guise of loyalty.

this data, 'configuring the consumer' in a direct form through low-level automated processes (Manovich 2001). These objectives were at least agreed upon at this six-month stage of the project. The next task for Andrea was to begin assigning roles for teams and their members.

Distributing Technical and Cultural Expertise

One of the initial complications in planning and distributing the work required was a sense that each team had quite different ideas about what the Internet was and how it might relate to the organization as a whole. As has been observed elsewhere, to describe what a particular 'network' is, is also to constitute it in the form of producing the relations and elements that are connected to it (cf. Green et al 2005; Latour 1999; Riles 2000). In this case, the descriptions of the Internet itself involved explicitly defining the relations between Internet and organizational form, and implicitly demarcating between 'technical' things and 'organizational' or 'cultural' things. These different repertoires developed within teams become lay theories of technology in the form of claims about what is relevant and what is not, what is a problem, what is a solution, and so on:

New Markets:	the Net is a super-efficient marketing tool for re-positioning organizational spaces and consumption practices globally without physical relocation
Compliance:	the Net challenges existing frameworks of corporate governance, particularly legal relationships between organizations and consumers
Distributions Strategy:	the Net is a conduit for delivering existing products and globally in novel ways (remotely)
Software and Systems:	the Net offers the illusion of novelty, particularly where actual convergence and connectivity are concerned

Of course, these were not mutually exclusive but formed the 'frames' through which any subsequent issues would be conceptualized. In debate and discussion, a variety of sources were called upon to substantiate claims, such as newspaper reports, articles from marketing journals, plus common-sense descriptions where 'we all know that'. For Mike in New Markets, the Net was the ultimate image-production and dissemination machine – transforming everything into information, circulating the organizational image to an infinite number of locations. Steve in Compliance routinely 'corrected' this view with statements about 'in reality' or 'that's all very well but' and subsequent arguments about the levels of uncertainty and risk, where the Net was seen to literally produce novel problems of security, identity, and trust. In other words, while the Net was mobilized as a necessary place to enact this new model of organization-consumer interactivity, it is also the greatest threat to organizational security. While these views are partly the outcome of long-standing bodies of knowledge and team remits, they also raise important questions as to how some of these appeared to be more convincing at some times but not others, how they

legitimized resistance to specific organizational changes, and what the consequences were for developing a coherent innovation strategy (Woolgar 2002).

Each team argued for the facticity of their perspective which served as a vehicle for legitimating their existence – articulating their own values in terms of defining the relative merits of digital risks and opportunities, their own significance within the organization, and most importantly, their future role. These competing repertoires were not of equal organizational value. Each included claims which embodied forms of authoritative knowledge which appeared to 'trump' others in particular situations. This could be related to what was seen as either a cultural-organizational issue of a technical matter. For example, cultural issues like 'the law' emerged as the most important discursive repertoires within the majority of discussions.[25] One of the central difficulties for Andrea was that here efforts to draw a consensual map, in terms of simplifying the tasks, kept spilling out into further problems of definition and an ever-expanding remit. The attempt to bring together what were, at times, rather disparate ideas about how a digital transaction may operate also became an attempt to define and redefine the organizational context as a whole, specifically in terms of how it could and should adapt to the 'network society' (Castells 1997a), and what kinds of expertise this would require. In other words, the dialogues between perspectives or technological frames began to indicate competing 'cultures of organization' (cf. Coombs et al 1998; McLaughlin et al 1998; Morgan 1993).

After nine months, with the original vision of producing a purely on-line product still intact, disagreement about what the materials of digital culture are had begun to surface. And nowhere was this more evident than between those advocating the significance of image and the visual elements of any product and process, and those suggesting that this might be a chronically insecure process. Again, in a rather general sense, interactivity in a relatively closed form appeared desirable. But quite how this would be designed and managed was left open to question. For Andrea, the key problem was how to incorporate the movements between generic narratives of the new economy and networks (metaphors of flow, immediacy, flexibility) with the local team-orientated perspectives on what it is possible to integrate and make interoperable and inter-connected, and who might be best placed to do such work. Still pursuing the question of roles and expertise, Andrea and Mike from New Markets decided that a major workshop was required. When it became apparent to Andrea that the definition and construction of electronic transactional space, by implication, now encompassed every major team in the organization, all four were included in an attempt to model the processes involved. During the course of this workshop some significant problems began to emerge.

Forward and Reverse Engineering

> As well as strengthening relationships and making processes more efficient, e-commerce offers the chance to make fundamental changes to the business.[26]

25 This results from a variety of factors, including assumptions at a directorial level concerning what counts as expertise, and who the appropriate technological experts are.

26 The *LifeCo Annual Review* 1999.

The second key moment, then, was the workshop designed to map the effects of the proposed transaction across the organization conceived *as a whole* and to assign central tasks to the relevant teams. This required each team to imagine the whole organization, in terms of parts, functions, interrelations, and expertise. One of the commonalities underlying teams' descriptions of the project and the organization was the tendency to dis-embed technical artefacts. There is nothing necessarily novel about this (Grint and Woolgar 1997; Woolgar 2002) but the specific forms this took are worth discussing in more detail. Individuals and teams routinely distinguished between 'on-line' and 'off-line' technologies as discrete entities, enabling the generation of claims about their effects. As a result, novel problems were created in trying to then 'force' the integration of technology and organization, and of online and offline objects and processes to see if it would 'work' on paper. This had the real effect of a multiplication of 'offline' (old) technologies to maintain 'online' (new) ones. This is partly about competing 'enactments of the virtual' (Knights et al 2002); in this case with how such a state could actually be assembled and made to perform in the ways expected. Another way to think about this is the conventional distinction between 'front-end' and 'back-end' programming.

The rationale for the workshop was 'to take a step backward', and redefine what it is that the organization is trying to do, whether it is possible, and what the results might be. During this day-long workshop, it became clear that discussions about on-line transactions were now explorations of new organizational spaces, the re-organization of existing practices, and changing ideas about the anticipated practices of consumers. There were three principal ways in which the on-line products project generated opportunities to re-think a range of existing practices – how organizational elements are currently integrated; how products are currently defined; how products are currently configured in technologies of distribution:

- *Integration*: the on-line sales forces would need to be integrated with existing office processes, requiring the mutual adaptation of both, in terms of hours of work, and convergence of departments. All existing paper-based processes would need to be re-engineered in an effort to streamline the on-line processing; existing product structures and pricing would also need to be re-evaluated.
- *Simplification*: the actual features of existing products would need to be simplified in order to be available on-line, entailing a re-thinking of the products altogether, in terms of whether the organization would want to offer two different versions of the same product (on-line and off-line).
- *Re-design*: to re-design all existing services into formats which are more immediately compatible with a wider range of future 'technologies of distribution' (digital TV, mobile phones, Internet, and so on).

This was quite a dramatic contrast to how the original process was conceived. For Andrea and to some extent Mike in New Markets, there was a feeling of the project 'running away from them', and certainly that the more involved other teams became the less likely it was that they would maintain control of it. In the first key moment, the innovation process had been conceived as one of replication and substitution –

from bricks to clicks, analogue to digital, offline to online. This had been an effort in forward engineering, where substantively, this had focused all attention on the 'front-end' (website content) as a quite separate entity to the 'back-end' (informational structure of the organization).[27] This remained the position of the new markets team during the workshop. The other teams shifted to a position not of replication but of complete reverse engineering. That is, their focus switched to the whole 'back-end' structure of the organization needing to change in order to facilitate any such radical change at the front-end.

Given the significance of this, New Markets conceded that the project 'could not move forward' without changes across the board. The project was now not simply a matter of 'upgrading' the website and 'inserting' an on-line version of an existing product, with interactive links to a series of customer databases, but reorganizing the spatial dynamics of the organization itself: the convergence of departments and teams, out-sourcing specific processes, movement of equipment and people and convergence of technologies. In a sense, this embodied the creeping realization that the on-line transactional spaces proposed were always-already entangled within the off-line spaces (Hine 2000; Woolgar 2002). The dilemma here was that, given the size of the company, no single team or individual could identify what exactly the existing organizational structures and processes *were*. The task for Andrea then became one of 'finding out how the organizational back-end actually worked'.

In an effort to simplify what appeared a Herculean task, Andrea specified three key unknowns regarding the existing arrangements for transactions. First, what are the arrangements for collecting payments from clients? Second, what are the industries guidelines regarding fraud, in terms of what apparatus are required by external governing authorities? Third, can customer signatures, the collection of payments, and the securing of these processes be performed through new software? The hope for New Markets was still that, all being well, these existing processes could be 'lifted out' from print media and 'inserted' into digital media.

As these three unknowns were deliberated among the four teams they engaged in interesting debates about how to define the technology and the organizational into which they should be enfolded. Both were subject to contestation and are, in a sense, virtualizations (Shields 2003). Again, in the case of technology, routine demarcations were made between off and online technologies, but these were situated in relation to 'antinomies of organization', where offline technologies might be 'archaic' yet secure, and online technologies 'innovative' yet insecure, and so forth. It is not simply that the 'new' or the 'innovative' is universally conceived as superior, but that different combinations of technology and organization formed distinctive repertoires of how to reorient the company around digitization. The conception of these debates as simply 'reflective' (mirroring actual problems) rather than 'reflexive' (constructing actual problems) became an ongoing problem as during

27 This demarcation was made in a number of related ways – between online and offline, between virtual and real, between appearance and reality, and so on. It is not only about programming, but about visible and invisible elements of the organization conceived 'as a whole'.

the second year the planning process moved toward producing an ideal model of the seamless digital transaction.

Interactivity, Disintermediation and Reintermediation

The third moment highlighted here is the 'rethink'; where issues arising from the workshop were subject to further planning within and across individual teams. While never moving to practice in the sense of an actual transaction, it was in the planning of this transformation that relationships between discourse, materials and practices were articulated more fully, and the myths of interoperability and seamlessness revealed. The idealized model of organization-consumer transaction articulated by each team required two attributes. Firstly, that the experience for the consumer would be a 'digital one'; regardless of what the reality was, it should have the veneer of an entirely on-line process. This is indicative of the 'public display' of interactivity or connectivity that characterizes much of what we know of e-commerce. Secondly, that the transaction was able to function seamlessly without human intermediaries, thus performing the kind of 'direct' relationships between organization and consumer outlined earlier. This next set of discussions revolved around the idea that in integrating front and back end elements previously identified, the traditional intermediaries (humans) need to be removed. A series of heated disputes took centre stage, as increasingly elaborate diagrams of the imaginary transaction were produced, and in a way 'conspired' to prevent the desired innovation from being anything more than imaginary.

Image, Information and Connectivity

It is well known that one of the defining problems of e-commerce has been that of engendering trust, where consumers are thought to be concerned about Internet security (cf. Ratnasingham 1998; Rutter 2001). Such debates have mostly been concerned with the demise of traditional mechanisms of trust (for example in Giddens 1991; Fukuyama 1995). In this case Andrea and Mike argued that, as far as the consumer is concerned, if the website becomes fully transactional, it *becomes the organization*. The abstract ideal spoken of here was directly analogous to the notion of remediation offered by Bolter and Grusin (1999) discussed earlier, in that the new media of the Web is thought to enable a 'pure' relation between, in this case company and consumer, to be established. The website itself (as an amalgamation of html text and graphic objects, connected to databases) is to become the invisible intermediary between the organization and remote consumers. This would require the replacement of a human intermediary by digital agents or 'infomediaries'. For New Markets, this would exemplify the 'symbolic importance of the direct channel', a public demonstration of an intimate relationship between consumer and organization. The image of the product *is* the product. As Mike explained, this might be a matter of 'disguise' – the 'transaction process needs to look smooth', conveying an image of ease, reliability, security, interactivity, and so forth, regardless of what is happening 'behind the scenes'.

The issue of what is so significant about this and what software would be required to facilitate this, and what it would need to do was highly contested between new markets and software and systems. Members of new markets argued that it is not simple a question of image per se, as in the promotion of a product, but that the image of the product (as software) may in fact sell the product. As the programming (the 'infomediaries') would replace human intermediaries (brokers/advisors), it has to not only accept, capture, save, validate, and print the information input, but also be visually compatible with the brand image and do some of the 'selling work'. For new markets, in an almost Baudrillardian sense, the future is symbolically orientated, where the images of products and services are indistinguishable from actual products and services, where 'the customer can be lost in three clicks'. Andrea's comment was directed at the DSS team's assumptions about the primary role of technical capabilities. Andrea and Mike's increasingly exasperated insistence that that the screen appearance would be paramount in whether or not the products would ever actually be purchased remained a constant feature of the negotiations. Indeed, Andrea expressed her concerns privately that 'software development still drives projects in this field', suggesting that software and systems were 'out of touch' with consumers and that new markets were 'constantly following rather than leading' efforts at marketability.

In contrast, Steve from the software and systems team was primarily concerned not with image but how different kinds of information might actually be connected and 'flow', particularly how to ensure the *future* connectivity of software systems. He argued that the image of software has a limited purpose if it becomes obsolete through dis-connectivity in the future. Further to this, it is not simply the software which needs to be inter-connectible, but different departments and organizational teams.[28] At this time, the Distribution Strategy team envisaged the future of life insurance distribution through digital television, the consumer website, and mobile phone WAP technology. The software thus requires 'ultimate flexibility' in that the distribution channels of the future remain unclear. This is necessary for both unlimited technical connectivity and convergence, but also to enable the construction of auditable trails for security and policing techniques. For software and systems, then, the future is similarly defined by 'information', but in IT sense of developing organization-wide system connectivity rather than its symbolic value. While these were not necessarily incompatible, what became important was how they framed different orientations to questions of 'informational insecurity'.

28 A pilot report concluded that an electronic procedure would be cost efficient in terms of administration and staffing. However, the report also concluded that there are considerable differences in attitude and competence within different company teams: 'The connectivity between technology and software developers, training, and administration teams, is very poor. They are using incompatible systems and working practices for the most part. There needs to be a "cultural shift" in attitude towards simplifying these differences'.

Insecurity and Immutability

The question of insecurity emerged during meetings between new markets and compliance. The image centred-ness favoured by new markets raised problems of 'informational authenticity', whereas the connectivity focus of software and systems produced the spectre of cybercrime. In the first case, if the transaction between consumer and organization is to be entirely conducted through data input fields, given the variability of digital information, how could the organization guarantee and secure the meaning and authenticity of those fields? Each of these data fields (name, address, occupation, and so on) is subject to the *Financial Services Authority* (FSA) guidelines on 'bad advice'. After the 'pension's scandal' of the 1980s, industry guidelines have attempted to prevent any consumer 'confusion' or the inappropriate selling of products.[29] Accordingly, any information provided by either the organization or the consumer 'needs to be free from any misinterpretation'. If the front-end screen programming *is* the intermediary, then it needs to receive and send information which remains *immutable* as it 'moves' between consumer and organization. The problem here is one of translation, in trying to avoid transformation and produce immutable mobiles (Latour 1999).

On the second issue, the image of the 'digital threat' to existing legal frameworks had a rhetorical power that often 'trumped' other descriptions, especially when invoked as a threat to the organization in its entirety. The compliance team argued that dis-intermediation may increase the level of criminal activity operating through the organization. The insurance industry has always been a conduit for laundering money.[30] In globally dispersed 'direct' channel business, this is seen as more likely partly because customer identity can no longer be guaranteed through a face-to-face intermediary (usually an independent financial advisor, or 'tied agent').[31] With an independent (human) intermediary, traceable and auditable links are established which build upon the various proofs of identity required in any legal-financial transaction. These might include an intimate knowledge of family history, face-to-face contact, verbal corroboration, and so on. It is here that trust becomes central. The tension is between the ability to offer a transaction to potential customers which conforms to the 'image' of digital services (usability; direct-ness; real-time;

29 The need to fulfil obligations to the public in terms of not giving 'bad advice'. This may necessitate the removal of options available to the customer. If the electronic process has to be 'customer focused', the ability to 'make mistakes' must be eliminated as far as possible. However, the problem here is the narrowing of 'customer choice'. The legal and consumer association's requirement of 'selling with consultation' will need to be negotiated.

30 The compliance team explained how money is currently laundered within the assurance industry. This involves a consumer investing a sum of 'dirty' money in an investment policy, and subsequently cancels the policy within the specified fourteen days. The organization returns the money to the consumer in the form of a cheque, therefore returning a 'clean' version of the money. This is difficult to monitor as small amounts of money are used.

31 *Tied agents* are financial advisors who belong to an organization which has made an agreement to promote the insurance/assurance organization's products in the first instance. For example, a particular building society might become a tied agent, promoting its own mortgage products alongside the protection policies of the other organization.

and so on) while appearing trustworthy to the consumer, [32] but can also deliver a variety of mechanisms which assure security to the organization (often involving, paradoxically, a multiplication of paperwork and traditional 'proofs of identity').

The key issue here articulated by the compliance team was whether there are insurmountable difficulties in knowing who 'remote' consumers are. The application process may be electronic, but the 'physical' transaction of a sum of money would still take place, and therefore could be subject to the same regulatory techniques. The problem is one of the infomediary. The intermediary (a financial advisor) is expected to 'know their customer'. For example, when the intermediary is human, a third party may sign the cheque; that is, a person not actually applying for the product (applicants' relative or such like). This kind of 'verification of identity' can be achieved through face-to-face meeting, intimate knowledge of family, and so on. In a 'direct' purely on-line version, the signature on the cheque would need to be the same as that on the application form. This is the only way to ensure a mechanism of 'truth correspondence' between the two documents, enabling recognition of individual identity. Again, Andrea raised concerns that whilst this requirement might offset the problems of money laundering; the restrictions would probably put off any investors investing through a 'lack of convenience'.

So, as Mike proposed, what of making the payment collection process itself electronic? With the on-line transaction, it is a question of matching a print format (cheque and signature) to an electronic format (on-line application form). There were two possibilities for collecting payment: to collect the money via a single 'direct debit', or to use the 'lock-box' procedure. In the first case, the single direct debit procedure keeps the process electronic for the customer, without the transfer of money in the physical form of a cheque between the customer and the organization. The problem here is one of compatibility with other institutions, in this case the building societies[33], which do not transfer money via this method. The customer would have to physically transfer the money from the building society to a bank, again increasing the number of 'physical' transactions for the consumer. For Andrea this presented a level of inconvenience for the consumer which is 'simply unacceptable', where the

32 A central concern of the new markets team was to gain consumer trust and loyalty after deregulation (allowing consumers to choose between a vast array of services and products). One aspect of this was whether the website 'front end' could be simulated, whereby consumers would complete transactions with a 'bogus' website, handing over large sums of money. While this was raised as a genuine fear, and there is much literature on this as a series of technical possibilities (Denning and Denning 1998), the problem was interpreted as un-resolvable to the extent that the organization could not actually prevent this occurring, but could only attempt to reassure the customer that theirs was the genuine website. Other companies – such as ING – have increased the number of verification screens the customer has to move through in order to verify the authenticity of the webpage.

33 Building Societies are UK financial institutions that offer most of the same products as banks, but have traditionally been co-operatives owned by their members. Most of these have now been 'de-mutualized' and have either merged with banks or have become independent limited companies. The point here is that they have different *routine* administrative practices which may not be interoperable with other financial institutions.

consumer is expected to pay by cheque in the normal fashion. Andrea argued that the transaction process would remain predominantly 'material' as opposed to 'digital'.

The 'lock-box' procedure initially appeared more suitable. This involved the on-line generation of a payment slip, completed by the customer, attached to the cheque, and then processed by a third party – in this case a major high street banking institution. The onus of administration would be upon the banking institution, removing the related problems of administration, volume control, and responsibility from LifeCo. Again, the problem with this procedure is that it requires customers to perform print-based tasks. It requires paperwork, and the responsibility of the customer to produce a cheque and payment slip within the timescales required. The problem of the signature is also involved in this process, in that a form needs to be returned to the life organization at some point in time demonstrating *consent* on the part of the customer, but payment is to be sent to the banking institution.

Fixity and Variability: Digital and Non-digital Technologies of Intent and Consent

The debates about how to authenticate the consumer was indicative of an ongoing 'struggle' between print and digital media within the organization (deWit et al 2002). These rather mundane problems of obdurate administrative practices reached their apogee with the attempt to remove the written signature. The compliance team explained in some detail how inscriptions in different media, the signifying logics of the graphic signature as opposed to the digital signature, operate rather differently as 'technologies of intent and consent'. Much as they wished it to be the case, Steve stressed that these cannot be reduced to problems of 'technical innovation'. In what turned out to be the final meetings for the original project, members of compliance suggested the notion of simply digitally replicating the print-based proposal form neglected the broader 'status' or wider cultural meaning of the print version.[34] The existing proposal form was described by the compliance team as having 'holy properties': properties of 'permission giving' and 'promises made' which would themselves need to be replicated in digital form. The obstacle preventing a straightforward assignation of such 'holy properties' to digitally encoded data is the cultural perception that it has indefinite variability: the assumption it can be altered by those in receipt of it (the organization). If the digital proposal form is to constitute 'evidence of intent' then it *must* be collected by a human intermediary (financial advisor), an element in the network that is precisely the one to be removed from this 'direct' channel business process (between consumer and organization). In a last-ditch effort to get around this, Mike in New Markets suggested circumventing this problem by 'building in' a requirement that the customer was 'solely responsible for the data they have input' – but, in a further form of responsibilization, it would be up to them to confirm or deny its status at a later date by returning a printed version and confirmation slip. As shown below, efforts to negotiate around this in the form of diagrams produced successively proliferating forms of paperwork and administration quite at odds with a 'direct' and seamless interactive transaction.

34 The term 'proposal form' refers to the paper application form used in applying for a particular product. These differ according to the product.

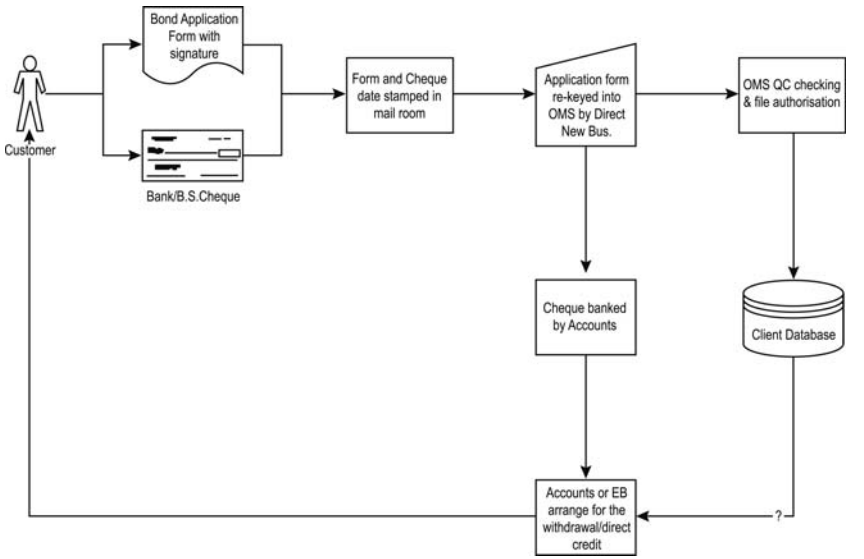

Figure 1 Transaction Diagram Version 1

For new markets, in line with this desire to remove paper-based processes where possible at all levels, the written signature should be simply dispensed with as an anachronistic mechanism of authentication and recognition. The signature is an 'old' technology, not suitable for on-line transactions and the image of the organization. But the signature remained ultimately obdurate because its meaning is institutionally embedded across other networks outside of the organizations' control and as part of a human/non-human association. As such, changing the 'declaration approach' to intent and consent was seen as being far too large in scope to be dealt with in the near future. The emergence of digital signatures was at this stage mooted as possible replacement for the graphic signature, but the legislation covering the organization in terms of the legality of transactions was not yet in place. On returning to the organization in 2004, digital signatures were still not regarded as appropriate in this respect despite new legislation for two reasons. Firstly, digital signatures do not actually signify the intent of the consumer, but rather the authenticity and location of the hardware they are using. In stripping out the human they lose their verifiable intentionality. Secondly, the government legislation in place was not believed to be sufficient if a case actually came to court, and consequently 'not worth the risk'. This remains the directorial position at the time of writing; the website remains a 'limited' interactive marketing venture.

So, what happened to the 'on-line products project' and the teams associated with it? The failure to implement any of the explicit changes expected left the New Markets team in an awkward position. The project split and elements were morphed into new projects. Some key personnel left the company and in a major process of organizational forgetting another substantial merger took place during 2004.

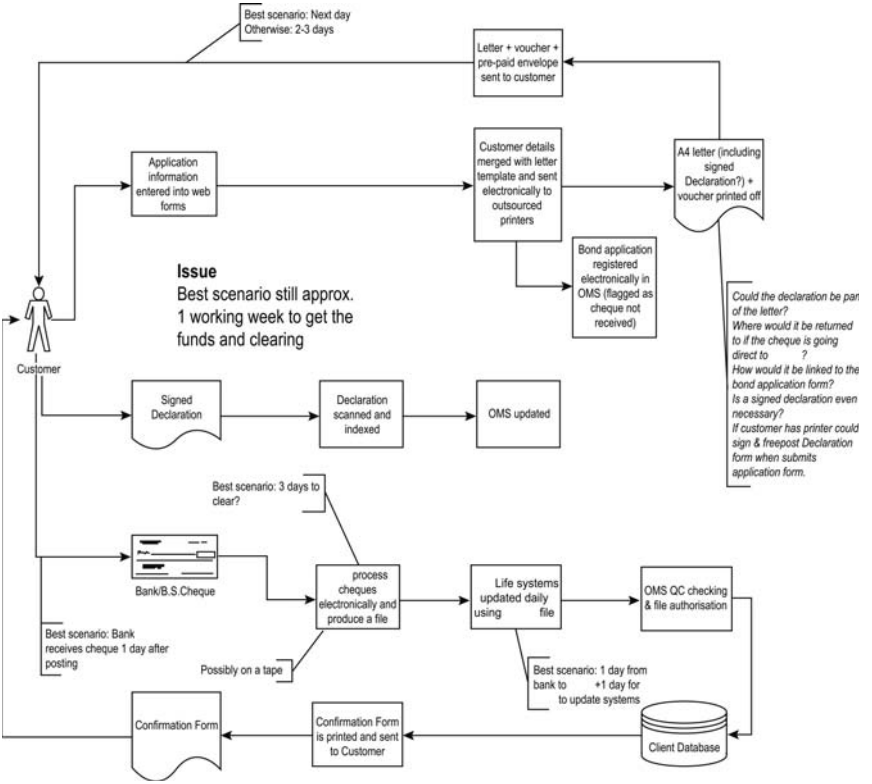

Figure 2 Transaction Diagram Version 2

Teams and their members were dispersed and replaced as a result. In some ways, the failure of this project seems to have little consequence in terms of market share, shareholder value, and global position in insurance provision. The kinds of problems encountered here are partly related to similar failures resulting from attempts to enact e-commercial hype. But some of the local details are important for considering just how difficult it is to practically *produce* the supposed inevitable conditions of digital culture, especially 'interactivity' and the movement of information through networks. The teams were asked to deliver on the myth that new technologies will simply supplant old ones (digital information will replace print). In contrast to the public library's efforts to enact digital culture, there is a relentless emphasis on discontinuity and chasing novelty among management within the organization. The digital culture out there – the 'network society' in this case – is perceived as fast and dynamic, and the company positioned in terms of having to 'catch up' with the new modes of digital innovation. But in practice the ways in which older technology have inscribed and been enfolded into the social fabric are not easily displaced by new technologies and the rather different scripts they bring with them. If anything, the residuality of older media – the persistence of the graphic signature on paper in

this case – takes on a new obduracy when challenged by the potential variability of digital information. This problematization of existing technologies of transaction and verification (forms of print, graphic signatures) reveals them to be complex 'force fields' of ethicopolitical conditions and human/non-human configurations. To conceive of the obstacles to their digitization as ones of technical innovation (as the organizational teams initially do) creates some significant problems.

Firstly, the 'first mover' narrative appears to penetrate each individual team in the sense that the on-line products project provides a vehicle for each to distinguish themselves from each other. Each team articulates a fantasy of technology as providing specific solutions without becoming 'contaminated' by existing organizational problems (see Green et al 2005). As rather generic narratives of e-commerce became locally contextualized within different teams, the properties and effects of the technologies were situationally constructed and simultaneously used as premises for the specific aims of that team. It could be that the individuals concerned genuinely accepted the generic narratives as an accurate reflection of the future. But we must also consider the idea that this may be a result of hope or desperation rather than naiveté (cf. Heim 1999; Green et al 2005). What may be important here is how each team relied upon others' acceptance of the facticity of their account of, say, software, hardware, connectivity, security, and so forth. In other words, we have to be sensitive to how local narratives of technological de-contextualization work to frame and solve rather specific practical problems, and often may be heuristic. The fact that they simultaneously generate new complications is indicative of a far broader issue regarding 'reflection' and 'reflexivity' in relation to technology intimated in Chapter 3 (see Sandywell 2004). In this case, each team positions their account (often given further 'weight' through a complex diagram) as simply reflective of 'reality', a reality often drawn from academic theories and popular cultural discourses of the emerging 'network society', providing a persuasive narrative of why particular actions need to be taken. We can see that, analytically at least, it makes more sense to see the teams' accounts as reflexive in that they simultaneously constitute the context (reality) and the solution (technology) in their descriptions. In contrast to the interminable debate over relative 'social' and technical' shaping, what is important is the recognition that the multiple fantasies of e-commerce at work here rest upon the de-contextualization of technology, organization, and the 'demanding consumer' simultaneously.[35]

Secondly, a recurring issue has been the notion of 'expertise'. Clearly, there are always different forms of expertise at work in organizational projects, but there are

35 The 'new consumers' of reflexive capitalism: increasingly demanding, seeking lifestyle products and personalized services, continually re-evaluating their needs, and reformulating their identities. This figure is inscribed within the organization in a variety of different ways.: (1) products and services are positioned toward the promotion of demanding and prudential consumers; (2) specific 'lifestyle channels' for these products demonstrates the move toward personalization, despite the simple transposition of traditional socioeconomic categories into 'lifestyles' in the form of market 'niches'; (3) the digitization of transactions remains a chimera due, in part, to the imagined 'demands' of the consumer – for ever more 'convenient', 'interactive' and 'immediate' transactions.

two elements here which may be particularly important to explore further. On the one hand, it is arguable that the notion of expertise has been deeply problematized by digital technology in the sense that the pace of change appears to conflict with the temporality of organizational learning and training. It is not clear what an expert in 'digitization' in this case would look like, and it is clear that this pervades the teams in question. It is perhaps as a consequence of this, that there is a clear tension between those whose expertise is specifically 'technical' and 'organizational'. An intriguing aspect of this is where new markets redefine the whole question of technology in symbolic terms, in contrast to more the more traditional accounts of 'technicality' offered by software and systems. New registers of technological expertise are opened up here, echoing the theoretical position that technology has become fundamentally cultural in novel ways (Lash and Lury 2007; Poster 2001, 2006). The focus upon expertise is one way of looking at how technology and organization are routinely conceived as habiting different contexts, a further way in which complications necessarily arise when actors attempt to bring the two spheres together as if they have been previously separate. This is most acute where it is assumed (or hoped) that digital techniques of verification and consent-giving will simply override or replace previously embedded trust relations between consumer and organization.

Concluding Remarks: immaterialization of digital culture

> dot coms spurred traditional companies to make use of the internet to disguise their business processes and become more innovative…At the same time, dot coms started adding bricks to their clicks so as to honour their customer promises. As companies became more virtual, dot coms became less so (Kim 2001 in Shields 2003: 181).

This chapter has shown how the attempt to enact a particular ideal of e-commerce – a seamless and wholly digital transaction between organization and consumer – seemed to generate a series of locally competing visions of the organization as a digital culture, each of which failed to move from description to actuality. The intense team based focus upon such a specific agenda channelled all energies toward a limited vision, producing many kinds of problems and dilemmas which may not have emerged within another e-commerce project. Whether this can actually be regarded as a 'failure' is of course open to debate, given that each team within the organization had quite different perceptions of what 'success' would have meant, and operated with alternative measures of judgement (marketing aesthetics versus interoperable connectivity for example). Each team tried to 'squash' their account of what the transaction would involve into the idealized 'purely on-line' model. In some ways this is a story about the difference that digitization doesn't make, where what we might call an 'ineffective configuration' existed in diagrammatic form but could never be put into practice. That is, it is a good example of how new technologies may be appropriated to transform a state of affairs but serve to solidify established practices in the end. The company examined here has changed its web presence and operations very little since 2000. But how this became so is what has been of interest here.

Firstly, there is nothing inevitable or straightforward about connecting things together in a network. In terms of interactivity, as I argued in Chapter 3, the

interoperability of technologies and of systems can be inscribed at the level of design but interactivity has to be *enacted* in contexts other than that of the laboratory and the technical manual. As Barry (2001) and others have argued, technologies have to be 'made amenable' to connection. In this case, it is not that the teams and their members conceived the problems in purely technical terms. On the contrary, it is the separation and compartmentalization of the different materials which stands out. The 'technical side of things' was seen to be free of context and could be dealt with by those with that kind of expertise. Others were expected to concentrate of the 'other aspects', such as image, legality and consumer behaviour. It was often thought that interconnecting the technical devices – the database, the HTML front end, pre-populated data – would overcome existing problems of interactivity between departments and teams. The entanglements involved in putting this into practice result in part from efforts to enact idealized models of digital culture in a local environment. In reality, digital technologies are all of these dimensions at once – this is how we experience technology; as full of contradictions and constraints. The dogged persistence of writing, of the signature, exemplifies the localization of remediation. While the Web may incorporate previous media without much difficulty, as in Web 2.0, at the local level the dynamics of inter-media are rather more complicated.

Secondly, it is worth speculating about the why the rather specific vision of interactivity as dis-intermediation – the seamless transaction between organization and consumer – appears so powerful to all in the relevant actors observed here. The explanation could be the continuing salience of the generalized myth of e-commerce as heralding the transcendence of traditional material, geographic and economic constraints and the inauguration of limitless expansion and efficiency (Mosco 2004; Webster 2004). Also, this vision appeared to provide concrete practical opportunities for each of the teams to solidify and expand their own profiles and relative position. What may also be worth considering in a speculative vein, is whether it may also be indicative of a longer standing and culturally pervasive idea of media technologies establishing 'purer relationships' between observer and observed, or in this case between organization and consumer. For Bolter and Grusin (1999), digital culture works around the contradictory logics of immediacy and hyper-mediacy. Contemporary culture attempts to both erase any sense of mediation while at the same time, through convergence, conjoins different media together, producing a 'fascination' with media forms. Bolter and Grusin argue 'our culture wants both to multiply its media and to erase all traces of mediation: ideally, it wants to erase its media in the very act of multiplying them' (1999: 5). This myth of new media instantiating such 'direct-ness' has been discussed in relation to painting and photography, and can be seen at work contemporaneously in the 'live cam', 'reality television', and so on and so forth (Bolter and Grusin 1999). It is important because it arguably frames the ways in which the project is conceived. The problem does then indeed become one of 'hyper-mediation' (Bolter and Grusin 1999) – the eventual realization that 'new media' *necessarily* embody aspects of 'old media' – and it can be seen here in the problematic relationships between print and digital technologies, particularly the social and ethical contexts of trust and recognition that do not simply vanish through digitization. Cultural values of trust and recognition, which are

configured in objects and instruments, seem more significant than in the majority of relational materialist work.

Thirdly, the model of interactivity pursued here involves getting information to 'move'. It requires information to be both mobile and immutable. Information from the consumer needs to travel through interconnected systems maintaining its exact form and conformity to legal requirements. But as Latour (1999) argues, there is no translation (by which he does not mean movement) which is not at the same time transformation. It is the efforts to reduce the transformation of the information through verification techniques that prevent the transaction becoming a reality. While the information theorists speak of mobility and flows of information I suggest here that the seamlessness and inevitability of informational mobility is rather messier in practice. The company wanted to immaterialize transactions, and their efforts remained largely that. In the next chapter I will explore an effort to resist immaterialization in the name of authenticity and memory.

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Chapter 6

Lost In Translation: Authenticity and the Ontology of the Archive

Introduction

In the previous chapter I looked at an effort to put a vision of seamless interactivity into practice. In following a project from an abstract imperative during the dot. com boom, through a complex rethinking, to a resigned 'rethink', I argued that the veneer of digital culture is made and sustained through a proliferation of non-digital elements. With some of these elements come powerful cultural inscriptions, such as the trust relation between printing and human intent, which are difficult to enfold into digital versions. Of particular significance were notions of immaterialization and the practical difficulties of making information mobile and immutable. In this chapter I will explore these notions further in relation to the instability and resilience of authenticity and memory. The digitization of national archives at the present time provides the cultural site for such an exploration. One of the central lines of argument to be developed, in accordance with the overall theme of the book, is that in social theory the modern archive tends to be positioned in direct opposition to the digital archive, often in terms of written texts versus digital media. But this bears little relation to the wrappings of non-digital and digital objects inside the archive, where material objects are digitized, objects 'born digital' are archived, and non-digital and digital copies of the same object circulate. Again, as I have argued throughout, a focus upon the interrelations between analogue and digital forms challenges the notion of archive/network that underpins recent theorizing (cf. Appadurai 2003; Gane and Beer 2008; Featherstone 2000; Lash 2003).

I suggested in Chapter 1 that the rise of digital media is accompanied by the rise of print in certain locales. As we have seen, we do not have public libraries without books, as yet, and as most academics will attest nor do we have offices without paper. This is not to say that there is nothing new about digital archives. Nothing could be further from the truth. There are new ways of recording and living with the past, and forms of malleability to databasing in terms of how we might order the past, which are not apparent in print. But there is little predictability to such remediation in practice; we find uneasy and contested relations between analogue and digital which may take a variety of forms, particularly with respect to how practitioners make demands of technologies and objects which at the same time produce reciprocal demands and offer new possibilities. In the previous two chapters I emphasized how the 'inventiveness' of new technologies may be more or less realized in practice (Barry 2001), and that there is often a residuality to 'old' media and the cultural values associated with them that is hard to predict and reconfigure (Acland 2007).

In this chapter, these notions will be ever present in the background as attention is given to debates about how to weave existing conventions of archiving practice into digital culture.

The chapter is organized along two broad dimensions related to ideas about authenticity. The first has to do with what happens to the institutionally defined authenticity of archival records (the 'integrity of the fond') in terms of what and how objects are selected, acquired, and described in digital culture. The second more specific concern has to do with the relation between access and storage of digital archival things. This is about a 'crisis of preservation' as the archive becomes an increasingly digital culture, as it is expected to *make things accessible* in digital form. The business of making archival things more accessible involves three major initiatives: firstly, the digitization of as many things as possible; secondly, the production of web-based exhibitions of archival things; thirdly, the 'ingestion' of things that have been 'born digital'. The dilemma is whether it is possible to make things accessible in this way while preserving an archival ontology. This is indeed an ontological question for archivists, in that it concerns what is happening to the *nature* of archival things in digital culture. The relation between analogue and digital materials is central in this debate, where a specific understanding of the reliability and authenticity of analogue and print positions the nature of the digital; where the analogue is both symbolically reanimated in terms of almost holy properties, and sometimes literally reanimated as digital surrogate; and where the digital appears ephemeral in a host of senses in relation to the analogue. I will show how this has become an acute problem for archivists and the legitimacy of archiving practice, particularly in the face of the new mobile digital objects associated with Web 2.0. If archival practices have been concerned to locate and fix meaning in relation to the specific contextual qualities of material things, what are the implications for this understanding of modern memory when archival things have become largely digitally mediated? What happens when these things are seen to 'lack context', to lack the *authenticity* of their analogue equivalents, where their meaning can be lost in translation?

These introductory remarks sound somewhat similar to the modern/postmodern dialogue in the public library and this is not entirely unfounded.[1] While it is tempting to see digitization of archives as straightforwardly analogous to public libraries, especially as in both Britain and North America they tend to fall under the same governmental rubric of 'access' and 'social inclusion' among other economic and social agendas, there are some significant differences in what the notion of accessibility entails and how it is interpreted and negotiated on the ground.[2] In the terms of cultural theory there are many conceptions of the archive: the abstract archive as a regime for modern epistemological credibility, as a powerful centre

1 The theme of how postmodern theories of knowledge are related to archives has been discussed at length within the academic archive community. See for example Cook 1997, Cook and Schwartz 2002, Hamilton 2002, Nesmith 2002.

2 To assume so would be to produce the kind of backward reading account I am trying to avoid. The point here is to be open to locally and historically specific forms of digitization as they are occurring rather than after the event.

or technology of interpretation, or as a literal dusty storehouse of national memory and culture, among others. Despite this attention given to the archive, we have little understanding of what archivists do and how they position themselves in relation to established practices and to technological change in a more nuanced fashion (cf. Bradley 1999; DeLanda 2003; Featherstone 2000; Lynch 1999; Osborne 1999; Steedman 1998). A very clear difference is where access is the de facto goal for public libraries in terms of meeting their obligations to their governing local authorities. For archives, whether regional or national, access is only the potential *outcome* of preservation, and preservation is inextricably linked to authenticity. This difference in remit and orientation to culture underpins subtly alternative articulations of digital culture. Archivists, for the most part, stand in a different relation to discourses of postmodern culture than librarians. They differ primarily in terms of what counts as memory, meaning and knowledge acquisition, storage and retrieval. Such differences tell us a great deal about the efficacy of macro models of digital culture, especially the idea that digital technologies enable previously discrete institutions to merge their operations and practices and perhaps their roles in a 'convergence culture' (Jenkins 2006) While this is true at a certain level of documentation and publicity, I will draw upon archivists' accounts of their own practices, through relevant publications, tour-based observation and in-depth interviews. Furthermore, in looking at Library and Archives Canada these questions take on a specificity which questions the view that archives were primarily collections of public documents (texts) and that the digital archive is largely multi-media in form. LAC is a 'total archive', containing public and private documents rather than either government or private records, and rather unusually, a vast collection of photographs which are conceptualized as documents. The total archive, then, has always dealt with different media – film, print, photography, or other material objects – and would seem well placed to enfold new digital media into its operations.

Opening the Archive: Making Things Accessible

As with the library and the museum, the idea that the archive should be more accessible is common across northern Europe and North America. In the UK for example, since the year 2000, policy for museums, libraries and archives comes under a single governing body (the MLAC). One effect of such reorganization is the de-differentiation of policy *discourse* across museums, libraries and archives. Not surprisingly, given the account given in Chapter 4, we see a series of key metaphors – access, interactivity, participation, life long learning – used to legitimate a variety of institutional changes across sites regardless of cultural specificity. In the 1998 *Modernising Government* white paper all sites are described as a 'cultural sector' whose central problem is a lack of interconnection: if only citizens could access cultural resources (now 'information') seamlessly across these sites then the progressive modernizing agenda could move forward. It is digital information that can make this happen. In government policy, public access initiatives are all about modernization in terms of an efficient relation between information and citizenship.

Inside the library, museum and archive, they are seen as 'post-modernization' in relation to post-custodial knowledge practices.

A similar list of policy objectives are mentioned in relation to archives: public access; modernization of public services through inter-compatibility of information systems; open and accountable government; education in the form of immediacy of contact with historical events; self-directed learning; social inclusion as 'services for all citizens'; economic regeneration where digitization makes archive materials more accessible to creative industries in the cultural sector; and regionalism as local and regional archives. There is a sense of a complete internal restructuring in relation to a new external digital environment: 'The outcome [of new data standards] will be that the archive sector will adapt itself to the information revolution' (UK Government 2000: 17). Superficially, one might consider libraries and archives as undergoing the same kinds of changes in relation to these objectives – objectives which do indeed allocate economic resources and shape the trajectories of institutional change. But for professionals, libraries and archives are very different creatures. While both are quintessentially modern, 'liberal' institutions, they are thought to have quite different agendas, relations to publics, and local practices. There is much truth in this observation. It is nowhere more compelling than when library and archive institutions are asked to 'merge', as in the case of Library and Archives Canada (LAC), partly in relation to the notion that the digitization of cultural artefacts simply erases some of these differences.

Library and Archives Canada (LAC), as its new name indicates, is the outcome of a recent merger between national library and archive institutions. Much of this de-differentiation is, rhetorically at least, organized around particular ideas about digitization. As suggested in Chapter 1, when we talk of digital culture we are talking as much about an intellectual and semantic effort to supplant the analogue with the digital as we are about the use of specific technologies and techniques. This can be seen clearly in this case, where almost all functions and processes of the LAC are being redefined in the terminology of the digital within directorial and management documentation. In November 2006, management at Library and Archives Canada unveiled a 'strategic framework' to be implemented during 2006-2011.[3] There are many familiar management initiatives which we have seen within the public library context: a specific conception of the information-hungry citizen, the imagined needs of which are becoming the focus of any changes; the network as the ideal model of service delivery; and the horizontalization of departments internally and across government more generally. All of these 'strategic contexts' are located within digital activities and 'ways of doing business', where the number one priority (quite literally) is *going digital in all aspects*. Most importantly, it is thought that there is an existing 'digital information environment' out there with 'needs' and 'opportunities' to which LAC will 'adjust all aspects of its activities' toward. Failure to adapt to this environment will result in a loss of credibility as a key centre of interpretation but

3 'Building on Directions for Change: from strategies to results'; Management Forum, 20 November 2006. *Library and Archives Canada*.

also a loss of Canadian heritage and national memory more generally. This is not only 'cultural' heritage but the memory of the Government of Canada.[4]

At the heart of this strategic framework is a specific conception of digital information: not only is it 'alive', its survival is the key question of our times. Digital information, given this fragility, requires careful management and stewardship. This requires a 'major cultural change'. In other words, LAC must become a digital culture in terms of the priorities given to digitization order to 'match' the wider cultural environment. If this is achieved, then there are opportunities for unprecedented access to heritage and other documentary materials by the Canadian citizen. The goal here is to provide 'client-centered access':

> LAC will acquire for access, preserve for long-term access, describe for access, digitize for access, drive policy toward access, innovate with technology for access, and ensure that the ways in which we provide access effectively meet users' needs. Everybody at LAC is in the access business.

As in the two previous sites, such an 'inevitable' reshuffling also reanimates older discussions about the very business of archiving and in some cases revalues traditional practices, standards and conventions associated with analogue materials and processes. On the surface though, digitization simply makes archive and library materials more available and accessible to the public:

> Our content, once locked in vaults, has proved to be valued and used in cyberspace; we must continue to put it there. Through technology, we can make our collection accessible as never before.

At some level this is a truism. A casual visit to the LAC website can yield an extraordinary amount of historical material, especially photographs. What would have involved a visit to the vaults in Ottawa now requires the clicking of mice. Indeed, unlike the public library, this kind of access does not entail making the archive site itself more accessible and user-friendly. Here we are primarily talking about the virtualization of the site for on-line users, where archival things are made available for viewing in an immediate context:

> Also key to being client-centric is to make it simple. The complexities inherent in our work must be hidden from clients. It must be simple for users to find, use, and understand our resources. Online users increasingly expect to conduct a variety of end-to-end transactions with us in real time.

There are, however, competing narratives of what exactly this immediacy entails inside the archive. Firstly, the mediation of archival things through the web requires

4 The question of how to archive the millions of electronic messages accumulated by governments is a complex one which cannot be adequately addressed here, suffice to say that aside from preservation, organization and cataloguing issues there are confidentiality, alterability and accountability concerns as more government communication and decision making occurs through email.

massive amounts of storage space.[5] Secondly, there has been a vast increase in the number of archival things 'born digital' which are increasing exponentially in size and require ongoing digital management. Thirdly, as expressed below, it is thought that memory traces and practices are becoming more immediate and disposable in everyday life, regardless of what occurs in the archive:

> We're storing almost all of the world's total information on hard drives with one-year limited warranties. What's to become of our cultural and personal history? If you're under 30, the way you take pictures today is not about securing any part of your history at all, it's about the now, it's the moment…and you shoot something, show your friend and you delete it…we have no control…we used to have time, today we have to interact with you directly, up front immediate.

There are clear tensions between making collections of things available online – making them more accessible to greater numbers of potential clients – and the traditional archival practices of acquisition, storage and preservation. Why is this? What exactly is different about digital and non-digital things in the archive? I will briefly highlight three contested issues here: what to acquire and how to acquire it; how to judge the authenticity of digital objects; and how to preserve the context of digital objects. The nature of such contestations will then be explored in more detail through their location within competing preservation strategies – strategies which try to configure objects, practices and processes of digitization in different ways.

The Acquisition of Potential Memory

> The ensemble of techniques that make up the world wide web and its technological basis in the interlinked servers of the Internet seem to promise a new art of memory in which knowledge as technological invention replaces knowledge as recollection, and in which the archive appears as an effect of the links made possible by the technological work of memory rather than a given (and carefully policed) store of information (Caygill 1999: 2).

In Chapter 2 I discussed the idea within recent cultural theory that contemporary culture is characterized by the increasing 'movement' or 'circulation' of things, many of which are made of digital information (Lash 2002; Lash and Lury 2007; Lury 2004; Urry 2000; cf. Gane 2006). In provisionally accepting this argument, Gane (2006) asks how theory can and ought to respond to the 'speeding up' of cultural processes enacted through and constituted by informational media. Such a question might apply equally well to cultural practitioners of a different sort: those traditionally concerned with *slowing things down* through careful accumulation, storage and preservation in time. My suggestion here is that this is a useful way of looking at archival practice, particularly as many internal debates focus upon how to preserve this practice of archiving as fixing the content and context of an object. The policy that the archive needs to be opened (or unbound) through digitization

5 This is now discussed in terms of how many terabytes of information can be stored on site.

is producing intense reflection upon all aspects of digital archiving. This includes questions of how to acquire digital materials that are 'lively' such as websites, where to search for these and through what means, and how such materials can be 'ingested' and managed within the archive site. In a sense, where the modern archive searched backwards for its things (in the recent or far past), the digital archive searches for potential memories using software probing machines. The temporal differences between past and future archival things present difficult practical problems for knowing what to acquire:

> So you see one of the things that we've got to do, is to determine, to what extent is the electronic creation something that we want to get? What is the nature of it that we want to get? And then convince the people that are creating this, that this is something worth keeping, so it eventually can be archived, if in fact anything that you're producing is worth archiving. And we have to get that word out, it's not something that can be done post-hoc, it's has to be done pre-hoc. But how can you do that without, in effect, telling people 'I think what you've got is archival' when in fact it may not be. We have to use whatever resources we have, those who come to us, those who query what is that we are doing, those who report on what it is that we are doing, those who have three year grants in order to do it. We have to use whatever sources we have in order to get the word out, that the material that is being produced by an individual or by an organization—not all of it is worth archiving, but a lot of it which is being treated as ephemeral, may well be worth archiving. But because of its very ephemeral nature, we don't know, because it no longer exists (David LAC).

One of the means through which the archive searches forward rather than backwards is 'web domain crawling' using Metaprobe and Heritrix software. This process treats the web space associated with a particular nation state as a *potential* archival object. Some of the national archives (which store public documents) in Europe have begun to crawl entire national web domains – Denmark has completed a crawl of the .dk domain, France has crawled the .fr domain, and so on, copying web pages and attached documents such as PDF files deemed to be significant as public archival records. The remit for LAC is simply to collect a 'representative sample' of web sites for the purpose of preservation.[6] Within LAC, the individual overseeing the 'Archiving the Canadian Web' project is a librarian. She explained how one of the key issues is deciding what exactly a web site or page *is*, and what the appropriate way of ingesting would then be:

> What we found was that there started to be very much of a blurry line between an electronic publication, like for example a PDF document, and a website which might be you know, a Journal of Canadian X, Y and Z and really the website was an electronic publication but it was a website. And so we started trying to figure out how we were going to deal with electronic publications that weren't sorta traditionally the HTML or the PDF formats but were actually websites. And we wanted to figure out how to bring them in and the reason that is more complicated for us was that a website has many types of files. Whereas a PDF file is just a PDF file. And so we really had to figure how to deal with all kinds of multiple

6 Archiving the Canadian Web Project (2006) 'Tools for Web Archiving'; Presentation to IIPC, November 2006.

> file types, and images and all that sort of stuff…and that's where the challenge lay at that time was, it's okay to just get a PDF, someone can attach it to an e-mail and send it to us. But to get a website we actually had to go out and suck them in ... to bring them in (Ruth LAC).

Not only are websites often constellations of thousands of files,[7] each of which can be thought of as an archival record or a publication, decisions have to be made about the appropriate 'depth' of web 'harvesting':

> You know, you can click and click and click and click and click and click and click and the last click you get, you're twenty levels down. If you decide, if you configure your software to say, 'you're going to capture this and keep going from link, to link, to link to link' until you reach the end, you've got all this data. But if you decide, 'okay, we want to do once over lightly' which is what we call it, we're only going to go five levels down, or six levels down. One, two, three, four, five, six – and the software stops and goes on to the next site. So you've missed this stuff, but you've at least, at least got a sample, a representative picture of what that website looks like. The government of Canada one we tried to go all the way down. And the only time we didn't do that is when we found we were getting like literally, you know, fifty gigabytes of data on one site. I mean that's just a lot of data. And you kind of go, 'I think we'll stop this now' because we were doing it manually at that time and move on. You know? (Ruth LAC).

So what does it actually mean to 'suck them in' or 'crawl that site and bring it back'? Ruth explained that 'it's basically taking a copy of the site. A complete and full copy of the site. At the moment that you captured it ... and that site would be date and time stamped'. The broader notion here is that in digital culture many events occur entirely online and need to be conceptualized as potentially significant archival objects not only as they refer to, say, political events, but in some cases they are the *events in their own right*:

> We also are trying umm ... to capture if you will, event based--which will be like the liberal leadership race. Last January we did a crawl for all the websites related to the election, the federal election. So we got all the political parties, we got elections Canada; we got political blogs where people were blogging. We got all that stuff, so it's all in there. It's treasure trough for historians, for sociologists, for economists, for anybody who wants to do that type of research (Ruth LAC).

There are vast amounts of data that could potentially be archived, and this requires speculation on what might be deemed significant at a future date. This is in addition to archiving traditional materials and represents a significant proliferation of potentially archivable things.[8] An increasing number of selection and acquisition decisions have to be made, but it was suggested that the criteria for archiving this

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7 For example, the '1st Harvest of gc.ca' between December 2005 and March 2006 involved 409 crawl jobs, ingesting 40, 928, 205 digital objects, at a total size of 1.8 Terabytes. The '2nd Harvest' during 2006 involved 17 concurrent crawl jobs, collecting 2.2 million digital objects per month.

8 Mike Featherstone (2000) argues that 'archive reason' sees everything as potentially significant and archivable but is paralyzed in the face of the multi-directional information

kind of digital material might have as much to do with storage space as with its imagined cultural significance:

> For example in the election 2006, last January a lot of the candidates had videos, on the websites. We actually got most of that stuff but it took up a tremendous amount of space. So it's an issue, it's a decision, if you will; we would call it a selection decision. Do you decide to select and take that? Or do you not and only take part of it? Or, do you just throw the videos out and get the rest? You know…there isn't a policy on that particular question right now, but there will be. And I think we have to take in consideration the value of what it is we're getting, and also the historical value of what we're getting, and also our own resources. Cause, you know, once it's full, it's full (Ruth LAC).

The definitions of what access entails and how it should be regulated are also questioned by this kind of acquisition. To make matters more complicated there are significant differences in how archivists and librarians conceptualize what it is they have got; is a website a document or a publication? As stated earlier these are quite different objects – in theory, in practice, and as constituted in legal and regulatory frameworks – and also in deciding whether it was publicly available prior to it being archived:

> Now I have to tell you, there is umm ... what I call an access issue here. Our legislation explicitly states you can gather websites 'for the purpose of preservation.' It does not say that we can make them ... explicitly it does not say we can make them accessible. This is a very cautious institution, Library and Archives Canada. Umm ... so even though these websites which we've archived were in fact 'publicly accessible.' The whole issue of making them publicly accessible once they're in our archive is something that's been debated at great length here. Um ... but people come down on one side and say 'Oh you can't do that unless you get explicit permission.' People come down on the other side and say 'Umm you know what? They already were publicly accessible. What's the big deal?' Okay (Ruth LAC).

Once the materials have been acquired and ingested there are ongoing practices of ensuring and managing authenticity. Officially, there are sets of standards which govern reliability and authenticity, some of which are problematized by digital objects.[9] But behind these, in practice, a host of other concerns about authentic interpretation of digital cultural materials are enfolded into them.

Alterability and Fixity in the Archive

> Products no longer circulate as identical objects, already fixed, static and discrete, determined by the intentions of their producers. Instead cultural entities spin out of the control of their makers: in their circulation they move and change through transposition and translation, transformation and transmogrifications (Lash and Lury 2007: 4).

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flows of the Web. According to that line of thought, it is the serendipitous hyper-linking and its concomitant un-formed data that sees the end of the archive as a physical place.

9 Duranti (2001) outlines such a positivist model of technology, information and archival knowledge.

As we have seen, another key characteristic of digital cultural forms is their alterability (Lash and Lury 2007; Manovich 2001; Poster 2006). While new media scholars identify this in a variety of forms as central in understanding what is new about digital technology, drawing upon work in STS I have argued that it may be more or less the case depending upon the particular arrangements with which it is associated and the practices to which it becomes integral. Nonetheless, issues of authenticity recur within narratives of digital culture, especially with respect to images in what is arguably an increasingly visual culture. As any historian of photography can tell us, there is nothing new about the variability and manipulation of images. But there appears something particularly salient and sometimes troubling about the alterability of the digital image in contemporary culture, whether it is the 'enhanced' reportage of war reporting, the less than favorable representations of the high school teacher on YouTube, or the epistemological anxiety surrounding the digitized medical image and its circulation (Kember 1998). For Mitchell (2002), we are seeing nothing less that the end of the photographic era and all that goes with it, in terms of regimes of truth, representation and modern understandings of the real.[10] The notion of authenticity here appears to be a relic of a bygone age, a naiveté to which only the unreconstructed realist would adhere. Some have assumed that the physical archive will effectively disappear as it cannot subject digital culture to the ordering techniques of print documents (Featherstone 2000). While this appears relatively convincing, it remains to be seen how modern conventions will adjust to digital circulation, particularly as there are many debates around the notion of authenticity inside the archive. In some archival theory, it is a question of applying the fundamental concepts of archiving (science) to the 'electronic record'. Here, authenticity denotes that the record in question 'is what it purports to be and has not been tampered with or corrupted since its creation' (Duranti 2001: 44). For other archivists and curators, the primary effect of digitization is to point to the inadequacy of long-held enlightenment views on archival practices, revealing the 'postmodern condition' of knowledge making:

> …to chase memory before experience, to focus not on the was, but on the proliferating might be, to rebut teleology, to see life not as pieced and stitched into an ordered determinable, and necessary whole, but as unavoidably porous and multiple, subject to particularized, decentred individual perspectives, meshed in continually and rapidly diversifying, never finally coalescing, always contesting discourses. Although not unique to digitization, the new medium has highlighted this polysemic postmodern condition (Koltun 1998: 120).

10 What appears common to existing scholarly work on digital imaging is the rather general and often unsupported claim that digital imaging and photography automatically problematize and transform the existing social values and practices surrounding the function of the image in culture, particularly in terms of how images are regulated, mediate trust, represent truth, and enable memory sharing and storage at the individual and collective level. While yielding important insights, this works limitations lie in its largely speculative assumptions about what the effects of digital imaging and photography on society will be, in a supposedly 'post-photographic age' (Mitchell 1992).

But in more grounded terms, what is an archival 'document' and what is its relation to memory in practice? Let's take the example of a photograph, which in the terms of the total archive, is conceptualized and anchored as a document:

> The reason we acquire photography at the archives is photographs are documents, not just written documents, not just maps or plans, but photographs too are documents. They require the same sort of treatment as do written documents, they have to be given the critical apparatus, the same sort of critical understanding as written documents are, but you also have to bear in mind that they have an affective sort of nature as well. You can be umm…impressed in one way or another by something that somebody has written, it maybe extremely poetic and you…it causes some sort of sympathetic reaction in you, but photographs probably engender this an awful lot more easily, than the written word does. This, unfortunately, is about the point where people have a great tendency to stop, they see the image and they don't see the contents (David LAC).

The emphasis on the 'contents' of the photograph as document is highly significant for the archivist; requiring careful 'description' which is in part singular and partly relational. On the one hand, there is specificity to the particular document which necessitates detailed description in terms of its content. Such a description is problematized by digitization, most obviously where the document (a moving image, digital photo, and so on) is 'born digital':

> ... what is the record you've got? I'm thinking of the born digital thing here, because you can reproduce digital records very, very easily ... where did the original come from? ... this one was for Carlton beer, it was on YouTube and I think there were six or seven different uploads of this ad and they were all slightly different lengths. 59 seconds, 1 minute 1 second, and I don't know because I didn't go through looking at them all but it's entirely possible that they came from different markets, and may have been subtly different (David LAC).

The authenticity of the archival record through its description is challenged by the multiplication and seemingly endless *translation* and transformation of digital things:

> Our manner of acquisition is going to change in that we may be acquiring material through the internet as a transportation system. It was assumed, in fact, by the people who are building this…this conduit, those IT people who are doing it. And they gave a presentation in March this past year and they were very, very pleased to say that one of the ways they were going to make it efficient was by compressing everything before it came through…I and another person who's responsible for the National Air photo library said 'Well, go ahead. We can't use it.' Because of my activity with Inter-Pares which is concerned with the authenticity of the electronic record, I said 'How are you proving that the document that went in is the same as the document that came out?' (David LAC).

On the other hand, the singularity of the document must also be contextualized in relation to a collection. Each document or photograph is part of an 'archival fond' or a collection, where in series they may be related to a particular activity of an individual or organization. Archivists at LAC talked enthusiastically about the possibilities of getting the collections 'out there' through the web, much of which

involves detailed and rewarding archival work on developing novel juxtapositions of documents, especially photographs, and the ability to do the kind of custodial, educative, out-reach work they were trained to do. Such enthusiasm is tempered by three concerns over authenticity in relation to digitized collections. Firstly, as above, the ability to understand the relation of the document to others is seen as a condition for the possibility of authentic interpretation. The second related issue is one of the skills in archival searching, which require an aptitude for 'experiment'. The archival description is provided in order to make the thing accessible, but it will have been described in a necessarily relational fashion:

> We cannot sit down and describe it in terms that will allow you to get at it in your own particular way, using your own particular descriptive terms, and your own understanding of what it is that you're looking for. You're going to have to exercise and exert a certain amount of…umm…your brain power in order to try figure out how this might be in the system…and well, to give an example, I remember reading in the New Yorker, an interview with a man who had been thirty or thirty-five years at the New York Public Library in their picture area and umm…he was given some examples of queries, 'how would you handle this?' He was asked 'how would you go about finding, for example' cats resting in the sunlight?' And he said, 'I would look for radiators' (David LAC).

Here we see an extension to the remit of archival science as a complex system of classification and regulation toward a distinctive valuing of the serendipitous practices of the researcher with time on their hands, a serendipity compared to the casual browsing of library stacks. With database search engines that navigate the infrastructure of digital archives it is thought that this 'authentic practice' will be lost. Indeed, in distinct opposition to the dominant idea that digitization involves more serendipity through hypertext linking and searching (Featherstone 2000; Lynch 1999), the archivists suggest that the card systems and vaults provided such conditions where the keyword databases erase the need for such longer term 'work' on the part of the researcher. In other words, the authenticity of the archival thing requires specific forms of competence on the part of the viewer, a competence that is distributed between archival system, archivist, and active researcher:

> We are losing contextualization, because you don't have to read through all this other stuff, which is going to give you little bits and pieces that you can bring together in your own mind and say 'Oh yeah, that's how it figures together.' And you're probably not going to get that if you've just got 50 or a 100 documents…they'll give you a whole bunch of thumbnails at least so, that you can see things in an order—you can see them in their context, to the extent that that context has been reproduced by the amount of material that has been copied, but in our case, you know, you go from image to image to image, how do you get access to those? Well, if you want all of the work of a gifted photographer, you can probably find it, that is all of his copied work you can probably find it. This is the other thing, of course too is that everything that is there represents only the tip of the iceberg (David LAC).

The third issue around digitization and authenticity that arises inside the archive again concerns the relation between the viewer and object, not in terms of viewer competence or the broader system but the ontology of the digital object. This is

not a result of digitization per se, but of the digitization of certain kinds of archival objects. In walking around the archive site, there are many intimations of the primacy of material things and the care and long term attention required in preserving them. Old manuscripts, photographs, maps, and such like are pointed out and described in terms of 'care' and 'fragility', of great skill and apprenticed patience in restorative techniques. For the archivist, the repair and maintenance of material culture and memory goes largely unnoticed in society at large, and there is a palpable sense of the physicality and handling of much of the material here. By contrast, discussions of the digitization of art objects, of 'three dimensional artefacts', illicit a major concern over an antithetical relation between technologies of presentation and the material culture they represent:

> 'I don't think they [online exhibitions] are authentic…what you try to do in a digital environment or in a reproduction is mimic as many of the original attributes of the document as you can. And if you do that successfully, sometimes that copy can replace the original document and that then becomes the authentic record. But, I think there is a big but there. I think in some types of media I think it's well done, and photography is a good example. Art. Fine art, prints and drawings, three dimensional objects, globes, maps, oversize material. Anything that really requires, anything that's really outside the area of what technology can truly offer up…what you are reading the book for is the content, whereas an e-book you're more worried about the technology, losing the technology rather than losing the book' (Mike LAC).

The record has several components from the point of view of archival science (medium, content, form, action, four persons, bond, and context) which all need to be reliable and authentic (Duranti 2001). But it is the *context* component that appears most troublesome for the local archivists spoken to here in that there is a disjuncture between materiality and digitization – particular kinds of materials can be represented digitally *but they are not the same thing*. It would be easy to see this almost in terms of digitization *versus* archiving, of archivists as engaging in some kind of resistance to new ways of knowing and doing enabled through digitization, but this is to pay insufficient attention to local negotiations over how to resolve this and deliver online materials. I will return to this later in more detail with respect to preservation strategies.

Such concerns over the relation between new technology and authenticity have a further dimension. In policy terms, in the same way as the public library and the financial services company, the whole institution needs rewriting around a locally and historically specific model of digital culture. As McLaughlin et al (1998) demonstrate, when such initiatives are actually put into practice this involves the redefinition of both the technological capacities of digital media and of professional practice.[11] In other words, we see the digitization of technological systems and of archiving as a professionalized practice:

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11 In that both the librarian and the manager require 'cultural' and 'technical' retraining, often without a clear idea of what digitally related skills or competencies are. This seems particularly acute in the private sector, where being an infinitely malleable actor appears to

> I think it's [digitization] going to result in poorer descriptions of the parts of the fond, through ignorance. And it is going to in some ways destroy our collections…umm… because people are going to be acquiring material which is ephemeral – I'm thinking particularly here of electronic materials. An awful lot of electronic materials have been acquired or are on deposit and we have not copied them because we are not allowed to copy them. If you've got a 15 year-old floppy disk it might not by copy-able. People are going to bring in a lot of beta…or well VHS cassettes, which maybe off-air checks from a television service. We have no idea what will be brought in, but material will be brought in and it will be retained. In the case say, of checking videos – are these people going to have the equipment? Well setting up a video desk does cost some money … are you going to set this up for every archivist? Or are you going to have … is it going to be available elsewhere…throughout the department? Or are you going to say 'the people who understand video they can take care of this' … so they become technicians. So there are a number of questions coming up just on the internal organization and the reorganization of the institution. In terms of what archivists actually carry out and what archivists actually do (David LAC).

This has implications for the literalism of archive thinking – what gets into the archive, how it can be preserved, and through what expertise – and the abstraction of Foucauldian inspired conceptions of the archive as the legitimating apparatus of statement making – the relation between archival space and its internal government, and the power-knowledge formations it makes possible and upholds. For the individual archivist and the collective body of LAC archivists the issues are how to translate *but not transform* material culture into data. In the financial services industry, the vision was of doing precisely that – an effort to transform material artefacts into immaterial processes – whereas in the archive it is this that needs to be avoided. What also needs to be avoided is the simple prioritization of access over preservation. This is highly significant because in many ways it is the *context* of the archival thing that requires preservation and presentation and it is this that fixes the conditions of authentic interpretation for the archive client.

Preservation and Contextualization

> One of the great losses of the Information Age is texture. The computer makes everything retrievable; but it doesn't retrieve everything. Only the surface. Scratch that surface and – look! – more surface. The rest is lost (Bywater 2005: 236).

In Chapter 4 I argued that rhetorics of access are central to understanding what is happening in public libraries in digital culture. As sketched earlier, this is entirely relevant in relation to national archives, in that they are subject to many of the same policy recommendations and initiatives, but crucially different in the sense that archivists are primarily committed to the preservation of, rather than access to, cultural materials. More than this, for many of the archivists here, access is highly problematic for preservation:

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be the essential qualification. For rather different views on this see Thrift (2005) and Sennett (2006).

> But if you look at the full cycle [of an object], preservation's at the very end of that cycle, pretty much. And sometime's it's not even tied to access. In fact, often it wasn't tied to access at all, in fact it restricted access…whereas on a library model they want everything to be accessible (Mike LAC).

The crux of the problem for the archivist is then one of fulfilling the (new) requirements of 'universal accessibility' while preserving preservation so to speak. The kind of access now expected to be delivered (web-based, real time, customized) is seen as the primary cause of nothing less than a 'crisis in preservation'. One well-known meaning of this is, quite literally, the disappearance and decay of electronic records, in the same way as the long-term resilience of digital images stored on personal computers is becoming a public matter of concern. This might involve the deterioration of the storage medium and the obsolescence of media, software and hardware. A second less understood meaning is that the *context* of the record requires long-term preservation and management, and this requires different kinds of strategies depending upon what the record and its medium are. It is the transformation of material culture into digital culture, of culture into data, of *mediation*, that will signal the end of modern memory practices unless one can duplicate existing strategies for managing authenticity toward digital objects. Otherwise, such objects will be disaggregated from their context without the kind of 'fixity' required for authentic interpretation.

The merger between libraries and archives has significant implications here in terms of which 'dominant cultural interests' might shape policy directions: the relative priority given to preservation and access, and for the ways in which the context (for example a series of DVD recordings) of the object allows its content (for example a specific film) to be interpreted in the appropriate way. This comes back to the issue of whether the object is a record or a publication, in that they are thought to have different relations to context and would be distributed among archivists and librarians differently, according to expertise:

> … [M]aking that distinction clarifies which staff, which areas, which branches, which sectors actually are responsible for handling the material. Because there's people whose job it is to handle records, and there's people whose job is to handle publications. And if they both dove in, and you know, then there would be like a real ... well chaos actually. And we were on the verge of chaos before we sorted it out. Umm ... basically in my mind it's just a way of dividing the work and figuring out who has the responsibility and the authority and so on to go after certain things (Ruth LAC).

More specifically in terms of the relational context of a record, Mike (LAC) who manages a team of archivists and librarians explains the relatively incompatible conceptions of how a publication is singular yet a record is almost always part of a broader context of a collection, series, album, and so on:

> I think, so they're not so concerned about authentic records, fixity and ensuring the integrity of the fond. That doesn't exist on the library side but it's very much one of the top three hitters on the archival side. And I think that is the defining moment for an archive. That separates from a library. And the way they organize a collection, and some people will say that the way they organize an archival collection is much more complex

> than a library collection. It's not necessarily so, but I think each of them bring to the table complexities, each of them are simplistic in some ways. And that's the ongoing between a librarian and archival science.

The policy debate is, in a sense, between public access at all costs and preservation at all costs. Among the librarians, as we have seen in a similar way in Chapter 4, access is the overriding professional value, and digitization appears a perfect vehicle for making more things even more accessible in line with e-government agendas both in Canada and Europe. But what is it that is being made so accessible? For the archivist, access is only a viable option if what you have is authentic, and that authenticity requires careful long-term preservation. Digitization presents a rather complicated set of difficulties in this regard, especially where it appears to supplant preservation in favour of access. These orientations to the role of digital media in LAC are not only 'cultural interests' but the outcome of professional and disciplinary training as well as the practical aspects of doing the work. As Mike explained, this is somewhat irresolvable:

> If you come out of information science or library science they will have taught you that providing ongoing long term access guarantees preservation. If you talk to an archivist they will tell you that preservation, the ongoing activities of preservation ensure access. And you know what; I'm not sure what it is.

In the following section I want to follow this dilemma by focusing on alternative strategies for the preservation of digital objects. While this is to concentrate on only one aspect of authenticity in the archive, it is the aspect which dominates discussion among the archivists themselves, and most clearly articulates their engagement with the promises and threats of digitization. I will explore these issues by following negotiations between archivists and librarians within the *Digital Collections Catalogue Initiative* at LAC, whose concern is to develop strategies for what it calls 'persistent object preservation'. In doing so, I will show how practical efforts to make LAC a digital culture that are focused upon access and immediacy continually invoke multiple notions of authenticity, and are part of broader debates about the nature of technology in relation to culture and how collective memory is being slowly but revolutionarily reorganized (Bowker 2005). While there has been much debate within the academic archival community about positivist and post-modern conceptions of archival practices, these have remained almost exclusively humanist accounts of the archive and power. The materials of the archive – whether non-digital or digital – are positioned as effects or drivers of institutional change, rather than active relays and anchors in the ongoing translation of many interests, competencies and cultural values.[12] On the ground, however, we see intimations of how digital objects are intervening and making demands of archivists, while also being inscribed in the terms of the archive.

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12 See Schwartz and Cook (2002a, 2002b) for important debates in the archival community concerning relations between archives, records, and power, after the 'postmodern turn'.

Authenticity and Care: How to Keep Digital Things Alive

> The difficulties of long term storage of information sit around three fundamental issues: the deterioration of the storage medium, so the physical format itself. So the tape, the disc, the CD, the DVD has a known life expectancy. And that depends on a number of fundamental issues around chemical deterioration, environment, heat, temperature, and light and so forth, standard stuff. Then there is the actual storage medium itself, so the obsolescence of the device that reads it. So the actual physical format may last a couple of hundred years, but the actual technology that can read it, may only last ten years. And then the whole administrative long term management of those, of that information. We are just, really, within business and within libraries, archives and other historical institutions we're really at the very baby steps of the long term management of electronic records and our digital objects (Mike LAC).

In the archive, then, there is a distance between the digital ideal of access and the traditional requirements of long-term preservation. How will such a distance be addressed, and with what implications for archiving, archivists, and the materials of collective memory? In what follows I discuss three currently dominant conceptions of what the appropriate access/preservation model should be: migration, standardization, and migration. In policy terms, these are not mutually exclusive and often overlap in management level strategy documents. Among the individual archivists and librarians in LAC who are leading specific components of these strategies, however, there are three kinds of disagreement as to which model can and should be pursued in the first instance that I will highlight: disagreement as to what an archival thing is[13]; which model of the future is the most convincing context for current strategy; and how the archive should respond to the apparent circulation and fluidity of new digital objects and processes. In what follows I will describe these entanglements in terms of how they position digitization in relation to preservation, authenticity and the ontology of the archive.

Migration Practices: Making Things Mobile

The preservation strategy known as 'migration' rests upon the idea that technological systems are changing and thus one has to move digital archival objects through new technical systems in order to preserve them. It is well known that the computer industry establishes a dynamic of innovation which has the effect of continuous obsolescence. Moving objects through these new systems is also well-known, a 'lay strategy', in a sense, where people transfer their vinyl record or CD collections to mp3 files; they re-photograph their print images for uploading onto PCs, and so on. The older format is seen to be in decay or reaching obsolescence and the key to survival of the information stored on it is to move it to the latest format. A number of issues are immediately apparent to do with what happens to, say, the vinyl sleeve and notes, the CD case, in terms of how they contextualize the content. Expressed

13 I use the term 'thing' here as it is a matter of debate whether it should be considered primarily an 'object' or a 'context', even after it has been positioned as a record, document or publication.

the other way around, the migration strategy explicitly de-materializes the content, conceptualizing the object *as* information, as a mobile code that can travel through different systems or mediums. The future is defined here as hardware obsolescence and as such there is little point in preserving the existing format of the image or document as it may not be readable in the long-term:

> You completely lose [the technology], it doesn't matter, you're moving it based on informational issues only, and that you still may have a loss, but going from say a word perfect one file and you go to a word seven file and that's what you are choosing to map to, you may have, there may be some information loss between that, but you're willing to give up some of that based on readability and presentation issues and ensuring that you actually can see that information in the future (Mike LAC).

Moreover, there is an acknowledgement that some data is also inevitably lost in this migration, and in this sense should be understood in terms of *translation*:

> We talked a little bit about migration of the formats, so you actually are moving it from one file format to another, and it may be a completely different file format schema completely. So there may be loss over time, that you mitigate that by looking at differences mapping one file format to another and making decisions (Mike LAC).

This is further complicated by a pull toward the preservation of every file format that the information has been translated into. The implication here is that digital objects not only move from one format to another, but that they are continually multiplied through file types. The analogy would be the continuing storage of the vinyl record collection and its duplication in CD then mp3 form. Each is different in terms of its contextual materials (packaging, notation, weight, feel, and so on) its content (audio information) and the practices it makes possible and is inscribed within (auditory mobility for example). In doing this, each may be remediated in relation to the other in terms of personal, emotional, cultural and economic value. But it also raises obvious questions of storage and management.

> They migrate to a new file format; they do not delete any of the old file formats. Because as we move forward we may find in a time that we actually have the technology or an application software or emulation to be able to go back to maybe the first instance of that file and then you can see all those files over its life cycle. So that's the theory, but if your collection is now actually evolving exponentially, not nice. So that's becoming a very difficult model, but an interesting one (Mike LAC).

The worst case scenario is that such a continual movement and multiplication ultimately means the complete loss of some materials.[14] What is taken to be more likely is that in conceptualizing digital objects as de-materialized information many of the important contextual notations will be lost in this translation. This is not entirely new. For example, in terms of photographic images the relation between

14 As Mike explains: 'I'm sure there are collections where there is absolutely no way given the existing resources we have, and the money we have, and the technology framework we have, that we can preserve those objects over the long haul. I simply cannot see it'.

preservation of information content and the context of that content produces similar practical difficulties. If archive reason is primarily concerned with *detail* (Osborne 1999), there is almost nothing that escapes the gaze of the archivist:

> Umm ... likewise, just within the ... our own operation here, when I arrived there was a tendency to take the original envelopes in which we found photographs, negatives usually, and to transfer the information to acid free envelopes, because the old envelopes were generally quite acid, and then get rid of the old envelope. I pointed out there was a lot of semiotic information – just in terms of handwriting, in terms of the way in which things were laid out on the envelope – that might have value. Since that time we have kept the envelopes. So we now have a number of bags of envelopes. [Laughs] (David LAC).

But the potential solutions are rather different. As above, with non-digital objects it is a matter of keeping all the material elements which make up the document and preserving them as a whole (in a box, a vault, a cabinet, and so on). Within digital objects it is not always apparent what some of these notations are, or whether there may be any at all, especially if the object has been 'born digital'. Most importantly, if the digital record is conceptualized as inherently unstable because it's technical vehicle is subject to rapid deterioration and obsolescence then it is 'lifted out' and re-embedded in a different technical environment (cf. Lash 2002). This presents a problem with migration in that, as stated earlier, authenticity is thought to be an outcome of the relation between object and viewer. If the object is being viewed in a technical environment which is different to the intended environment then the authenticity of this relation is lost. Two examples were talked about at length. The first concerned what might happen to migrated objects that were initially created and viewed in web environments:

> It goes back to the information is much more important than the context. But if your thesis is a piece of art that was only presented in a web context or a web environment, how do you represent that in future generations when it's changing, all the technology's changing and the way that we present that technology changes (Mike LAC).

The second concerned the issue of replicating alternative sensory perceptions of an object when it is migrated as 'pure information' (however oxymoronic that may be). The point is again one of the ontological implications of demarcating digital objects as immaterial and their other components as material, which have to be discarded to keep the digital aspects alive. The presentation of particular kinds of archival objects on the web is highly problematic here, when considered from this point of view:

> …the human being is very much a type of being that really is very much tactile. They like stuff, they want to touch it, they want to turn it around, and they want to hear it. All those kinds of things. Where digital doesn't offer those same kinds of things. It offers some things, but not the same. And there's also a three dimensional element to our lives. That a lot of people in a digital environment, it's not three dimensional, even if they try to make it three dimensional it's still not. So those things all impact I think on the context and what you think, or I think is valuable (Mike LAC)

I am arguing here that the strategy of migrating digital objects in order to preserve them is a specific configuration of discursive, material, and practical elements. Discursively, a strong account of future technological obsolescence requires the digital object to be conceptualized as immaterial information which can then be moved. The conventions of computing would appear to shape cultural processes (Manovich 2001). In practice, the materials are intervening in various ways. In archival terms, electronic documents and records are complex combinations of non-digital and digital components, all of which have to be preserved to maintain reliability and authenticity where 'context is everything' (Mike LAC). Moreover, according to archive theory, the digital object that is migrated isn't moved at all, it is *copied*. In other words, migration involves the multiplication of representations of a given object in a variety of technological media. In practical terms, the issue has yet to be addressed:

> In some ways people would argue that it actually is an actual digital object that is completely, it is a copy. And it is a copy of that existing file and it's the best representation of that file based on that existing file format that you're migrating to. So it's not, it can sometimes be exact one to one, sometimes it may not…in our institution we do not have a policy if where we did a migration we would actually delete the primary master for this new master. We currently have no policy on that. So quite frankly I don't know [if a digital object moves or is re-made through migration] (Mike LAC).

To return to the issue of circulation and speed, migration strategies are efforts to 'go with the flow'. They take the instability of technological systems as the marker of 'speed up' in digital culture and attempt to match this with the simultaneous movement of archival objects as information.

Standardization Practices: Flattening Things

A second preservation strategy is known as 'standardization'.[15] This is not so much about moving the information in anticipation of future technologies but converting the object to a different file format in the present. Metadata (data about data) standards are applied to ensure the interoperability of files in the future. It sees future innovation as a matter of complexity and difference, of endlessly proliferating file formats and the potential impossibility of managing such a complex ecology of things, given the millions of digital objects being crawled and ingested at any one time:

> Standardized formats essentially for an archives and library are what other people call normalization. You bring in something that is not in your standard file format type, it's automatically converted, some people would say refreshed, but it's converted to a format that's more consistent within your technology base. And then persistent object preservation, is being persistent in the way how you manage your long-term administrative care of that object (Mike LAC).

The conceptualization of the object shifts from the object-as-information toward the future recognition of objects through the standardization of file formats and

15 This is sometimes known as 'normalization' in other institutional contexts.

maintaining their description. The question is how to accurately describe the object *over time*, as it is continually 'refreshed'. This is a problem of meta-data and meta-metadata. The instability of the digital object is not then primarily due to its location within a deteriorating technological environment (VHS, DVD, Photoshop, HTML, Windows, and so forth) but the inability to know what the file type is and how to read it in the future. Archival objects are thought to have different life cycles here, where the material photograph is delimited by chemical agents and environmental conditions, and the digital image is delimited by its eventual incompatibility with available viewing technologies:

> I think there's some file formats and some environments that have a natural lifecycle and there's nothing we can do about it. And web archiving I think is one of them. How do you take an archive that has millions of objects and they're discrete objects that have different file formats, let's say you have a migration pattern, you're eventually, there is a point in time where parts of the website will simply not be able to be read by anything. So can you imagine if you have a website that has fifty different file formats in it, from you know proprietary ACC, iTunes with rights management software built into it, all that mumbo jumbo mixed in there with PDF's, all this different kinds of video formats are moving around and you're trying to read that and put it in context of what it was in 1999 or 2006. You may not have a hope (Mike LAC).

In this strategy it is essential then to mirror the refreshment of an object by accurate descriptions of its evolving biography through metadata. Metadata produces an audit trail for an archeology of the future where dead objects can be rediscovered and their previous lives understood:

> So in metadata there's a whole series of metadata beyond just description that actually talks about the object, talks about whether or not certain elements have been done to the object, and really what's really important is that metadata elements are important for reverse engineering. If something happens in the document, we can see what it's all about, what was done to it over time. And so it comes down to granularity: how much do you want to talk about yourself? So this allows you to see all the various components and what that object is actually made up of and if there are any parent child relationships it talks about those things (Mike LAC).

The merger of libraries and archives becomes central again, in that library and information science has quite a different definition of metadata than archival theory. For the librarian, the archival record is itself metadata about an object or publication which exists in multiple forms and locations and is in that sense *distributed*. For the archivist, the record is a *singular* object and thus has metadata attached to it. David (LAC) has been exploring some of the implications of this for the implementation of standardization practices:

> The archives or the library and archives as an institution look on metadata as the way in which we will identify documents in the future. It will be the thing that will save us time, it is the thing that will be used for identification purposes, it is the thing that will be used for sorting purposes, the thing that will be used for all of our purposes. When we can't even agree on what constitutes metadata, there may be some problems…as far as I can tell it's continuing on with the library sense of metadata… But there's one point that the

> librarians are not terribly interested in, which is…well they are interested in it, but they're not interested in it the same archivists are, which is the authenticity of the electronic record. In the past the big…um…the big problem for librarians, for bibliographers was finding all the editions, finding all the differences and that is I think is about as close as you can come to finding a librarian's equivalency to what is exists in archives, in the archives community as a whole. Is that you've got a number of different variations of the same thing, but in the case of the archives you don't have a number of variations of the same thing…what you've got is the records of this company, and somebody has the records of that company—they are variations of the same thing, only in the sense that both are companies, they both would be in the same field. They are totally different things.

The classification and ordering of national memory in specific ways is dependent upon archival practices of description. This requires not only the 'accurate' account of unique documents and records but the reliable description of the sequence, series, or order of those documents. With digital records, this requires a continual refreshment of the record in order to achieve standardization, with the requisite metadata recording the ongoing refreshment. A complex descriptive biography of things is developed here which attends to both the singularity and the relationality of things (cf. Kopytoff, 1986). Preservation extends to the preservation of the record, its description though metadata, and the archival processes of description through meta-meta-data. This strategy has a different relation to the future, where digital objects need to be de-versioned in order not so much to survive (as in migration) but for their complex histories to be reverse engineered at a later date. The question of how to preserve the meta-meta-data remains unanswered.

Emulation Practices: Slowing Things Down

The third strategy, known as 'emulation', is rather different and is currently dominant within LAC. There are important reasons for this, which, I will argue, tell us interesting things about the specific ethical relation between technology and culture in the archive, and speak to the competing demands of access and authenticity in relation to 'variability' (Manovich 2001). Emulation commits itself to a different conception of what an archival object is, what future innovation entails, and what access can and ought to mean. The simplest expression of this position is that, as stated earlier, a record or object has no characteristics without its 'proper context'. If the context is not being preserved, then what we have is no longer archival but is rather a digital surrogate a copy, a simulation, and so on. This may not matter so much to the client, the user, but it matters a great deal to the archivist in terms of their knowledge, competence and concern with a crisis of meaning and memory in the archive, in the possibilities of authentic interpretation in digital culture. This all sounds rather abstract and dystopian, perhaps elitist or a form of luddism, but this is far from the case. It might be seen, rather, as a commitment to a relational conception of artefacts, a practical instantiation of the notion that culture and technology stand in a reflexive relation to one another. The clearest sense of this position is the point at which it contradicts the notion that digital objects can be conceptualized only as information:

> In a digital world the information doesn't really exist. It exists only based on three levels really: it's sitting on a physical format, whatever that may be. It has an interaction between that software and a hardware application that gives us the presentation. So it doesn't really exist unless all those other pieces exist at the same time, that's the complexity, so that's where you try to move it forward in a mechanism that you can continuing (sic) allow you to be able to see that information. So context becomes, in some instances, very difficult to maintain (Michelle LAC).

In this way, the archival document or record can not be conceived as primarily the content (mobile information) or the media (standardized file type) but as the juxtaposition and constellation of discursive, material and practical elements of the whole. In other words, the archival object is not an object at all but a *dynamic configuration*. It is not that the object has a context, but that the object is itself a context – a context produced through a configuration of technical and cultural elements. So, rather than separating 'information' from 'technology' or homogenizing types of information, the archive has to preserve the entire configuration:

> …the current theory is now you preserve the old technology and by preserving the old technology you can actually run the physical format in the environment that was meant to be seen. So you see the way it was developed, then you look at the whole thing as an emulation, you can also emulate the operating system and the old technology so it appears, feels and tastes the same way that it was done, but it's actually in a new environment, but it's been emulated as if it's an old environment (Michelle LAC).

The future here is defined by de-contextualization processes – where the original technological environments of which the record is part are no longer available – which are simply exacerbated by 'going with the flow' or 'continual refreshment'. The response to the dynamism of digital culture here is not to go with the flow but to *slow things down*. How is this to be done? The preservation of technological environments involves the stockpiling of technical devices from VHS recorders, analogue televisions, turntables, cine cameras, and so on, to a variety of large film studio equipment procured from Hollywood. As older systems are discarded, the archive gathers them in, in an effort to preserve all aspects of the interpretive environment for the future. In this way, LAC should make itself a digital culture by translating digital things from the external world into the practices and processes of the archive.

However, there are some digital objects that make other kinds of demands not readily amenable to archival theory and practice. Whereas the above is largely concerned with issues of authentic representation and interpretation, much of the dynamism of digital culture is rather more immediate and concerns transmission rather than representation. In other words, how can the document or record as a configuration be preserved if the authentic context is actually one of dynamic use, of non-linear flows? The liquid objects and immediacy-in-use of Manovich's (2001) new media are paramount here. Mike talked at length about some of the potentially unruly objects of digital culture that, despite the crawling software, are dynamic entities that defy archival strategy:

> I mean in a lot information that you type in is really generated at the point where you hit the return button. So that information is dynamically sent to you through a whole number of different databases; it doesn't exist in one place. And the information doesn't exist, it's complied, and it's complied based on what your request is (Mike LAC).

This is not perceived as a problem for the librarian as the website is a publication and needs to be identified as such a static entity. In this way, the characteristics of digital objects are repositioned in regulatory and legal frameworks attached to disciplinary orientations. When a website is archived as a publication:

> There's a disclaimer in the front that this is a snapshot of a period in time, and that there are some issues, the way that it actually, functionality issues, it may not work. But it is, from a historical point of view, it is a snapshot of that website at that time in history (Ruth LAC).

In many ways it is concerns about the temporality of digital culture which structures debates among the archivists and librarians at LAC. A major preoccupation among all the practitioners I spoke with and who gave freely of so much of their time and expertise is the immediacy, instantaneity and dynamism 'going on out there' to which the institution is being asked to respond. This immediacy appears to be a condition of the digital objects being archived – their movement, alterability and ephemerality – and of new ways of capturing, recording and manipulating reality associated with digital devices such as cameraphones, iPods, networking sites, and so on. Whether the archive should imitate or work against these conditions is highly contested. Often this is considered in terms of the politics of representation – the accountability of the archive to the public in all its forms. Archiving the web presents no problem if the requisite disclaimers are in place. But for the LAC archivist the very notion of 'archiving the web' is something of an oxymoron. Web pages cannot be conceptualized as objects or things but rather as juxtapositions or configurations of objects, each of which would require ingestion and description. Moreover, the distinctive properties of a webpage are temporal – and it is a temporality quite at odds with archival temporality. Web pages are dispersed and fluid, archival things are singular and fixed. Given the discussion in Chapter 4, this is not necessarily the case for the librarian interpreting the web *as information*. It is not an artefact or artefacts in the archival sense, and is not problematized in the same way. The web is also tied to a different notion of learning through access, rather than as a non-linear process of discovery among authentic things. David is passionate about these issues of temporality and how they are changing the relation between archival ways of knowing and doing and the emerging practices of memory making in digital culture. While the sense of loss is palpable, it is not a romanticized vision of the past so much as recognition that all aspects of cultural memory are affected by digitization and that in the archive taking the digital turn there will be irrevocable change in what can be remembered, how, and with what kinds of ethics and expertise:

> The thing is that umm ... we're now at the point where photography has gone beyond something which is located in time, in the sense of you take the image and then you have to wait until you can see the image results, to something which is virtually instantaneous.

> You can take the image and you can transmit if it's on a cell phone to somebody else, through wireless. This sort of instantaneity is something which simply did not exist in the past. Even if in past, in the 1850s, with the wet-plate system, you had to develop the negative while the plate was still wet, still damp, otherwise you didn't have an image. And therefore you had a certain kind of movement, you had to carry out operations, otherwise you didn't have an image ... you had to understand what it was that you were doing, in a whole bunch of steps.

Concluding Remarks

In this chapter I began by asking how the modern archive is engaging with digitization and with what implications for authenticity, particularly in relation to 'national memory' and 'culture'. In digital culture there has been something of a democratization of memory making, especially in the realm of digital photography, where the practice has been both individualized in principle and also dispersed throughout a range of devices. While this is seen in a positive light by many archivists there are concerns about the future of *authentic memory* at a number of levels. I have constructed a narrative in which archivists' accounts of what they do are especially prominent. Archivists are keen practitioners of the view that memory is not a function of the mind. Rather, it is the effective organization of material traces, and this is thought to be problematized in various ways in relation to digitization (see Bowker 2005). The authenticity of memory is the central concern in terms of the correspondence between an artefact or record and its description, the ability to recognize it, the skills required to interpret it, the coherence of interpretation between artefact, archive and client, and as sensory perception and tactility of an artefact. All of these notions of authenticity are problematized by digitization in three main senses.

The first concerned debates about the authenticity of the archival record in terms of the ability of routine conventions to fix its ontological status. I showed how non-digital and digital objects are thought to have different ontologies, a recurring issue in acquisition, management and preservation strategies. The second theme was about the mobility of things in relation to preservation strategies. The supposed fluidity and malleability of digital objects was seen as a direct contrast with the fixity of the archival record, but it is not clear how the archive might respond. Should archival practices attempt to mirror this mobility, or perhaps resist the movement of objects through technical systems in contemporary culture? The third theme has concerned lay theories of technology in the archive. Current debates about how to reconcile digitized access requirements with conventional preservation strategies are twisted through models of potential memory based upon technological imaginings. How the digital archival thing can be enfolded into future technologies without being 'lost in translation' is at the core of attempts to maintain or abandon existing archival standards and conventions.

The tension between translation and transformation and even loss is worth elaborating further here. In each of the preservation strategies under consideration in LAC there are models of translation. There is the translation of content (information) into radically different vehicles or contexts as in migration. Secondly, there is the translation of existing content by updating its format. This is slightly different, in

that it is thought to be less likely to transform the content itself. Thirdly, there is the attempt to not translate – to *emulate* the vehicle or context of the object, to preserve the original language and the architecture of enactment so to speak. But this is complicated by particular digital objects which are *themselves* translation media or contexts for translation. In his generous critique of Latour, Scott Lash argues against the performativity of objects-as-instruments in a way that has clear resonance inside the archive: 'Objects are much more than instruments. They are repositories of memory, of traces, of tradition. And memory and the trace are a lot more than a resource' (2002: 55). For the archivist, digitization introduces a complexity to the object of memory making and storage that can only be described as debilitating. They are ethically committed to account for the 'memory of the nation', they are held accountable for the 'memory of government', and are at the same time attempting to come to terms with the novel memory practices occurring 'out there' in everyday life. In the archive, digitization does not mean the conversion, replacement or movement from analogue to digital. It involves the proliferation of incoming things and the multiplication of exciting things. It also means the future appears to be primarily about the accountability of these objects as traces when placed against an imaginary past of care for authentic things.

Chapter 7

Conclusion: Loss and Recovery in the Digital Era

One of the observations at the outset of this book was that digital technologies appear to be proliferating everywhere but that many of their analogue equivalents have not disappeared and have, in some cases, also been increasing in number. I suggested that this might invite us to reflect upon precisely what the relations are between analogue and digital culture and what could be meant by a transition from one state of affairs to another. At various points throughout the book I have suggested that Latour's notion of 'reshuffling' might be an apt metaphor for thinking about 'transitions' in terms of how materials of cultural environments become momentarily visible when reordered around digital ideals of *access*, *interactivity* and *authenticity*:

> [The social] doesn't designate a realm of reality or some particular item, but rather is the name of a movement, a displacement, as transformation, a translation, an enrollment. It is an association between entities which are in no way recognizable as being social in the ordinary manner, *except*, during the brief moment when they are reshuffled together (Latour 2005: 65).

I have conceptualized cultural environments as more or less effective configurations of narrative ideals or positioning, objects, and practices. These relational materials and the processes through which they come to resemble forms of order become more visible when *explicit* attempts to reorder them are made. The simple idea of the book has been to explore this idea in relation to both digital culture theorizing and to grounded engagements in specific environments. In this rather general sense, what is common to the three institutional environments explored is how the adoption of digital technologies have precipitated and engendered highly significant but different kinds of reshuffling.

The motifs of access, interactivity and authenticity manifest in each of the institutional environments I have explored, but I have sought to highlight that which has been most explicit in the given environment. An underlying thread has therefore been one of the degrees of elasticity between these motifs across these different environments, and how a simple transposition of technical capacity into cultural practice doesn't work. But we might ask, why call these institutional sites 'digital cultures' at all, given the emphasis upon the resilience of analogue and the materiality of normal practice. While it has hopefully been clear that the accent is on 'making', and that this may or may not be successful, it is also worth stressing how the analogue materials (the print, the graphic, the book, the photograph) are being recast and remediated in the terms of the digital – as its opposite. *These processes entail the*

mutual constitution of the properties of both. The co-determination of the technical and the cultural in the constitution of these motifs has been central. In exploring how forms of digital culture are configured and enacted in these environments I have aimed to illuminate continuities and discontinuities between analogue and digital 'in theory' at the level of grounded activities and engagements.

In this final chapter I will briefly restate some of the arguments developed in the first part of the book. Secondly, I will suggest three connecting arguments in relation to the three explorations in the second part. I am not arguing that the three cases explored exemplify general trends in any straightforward sense, or that they can simply be generalized as a model of digital culture. The argument is that it is precisely in their specificity that they raise further questions about the entangled and ongoing interrelations between analogue and digital objects, processes and practices. I will discuss this in relation to three implicit dimensions of the book: information and materiality, subjectivity, and loss.

In some respects this book has been all about cultural continuity and change, the role of digital technology in those processes, and how we might explore such relationships. In Chapters 2 and 3 I discussed alternative intellectual debates which relate to and underpin conceptions of digital culture. In Chapter 2, I showed how new electronic and digital technologies have figured prominently in debates about stability and change in contemporary culture. Discussions of contemporary politics, social and cultural order, citizenship, and so on, routinely identify information technologies as equally central in solidifying existing tendencies or inaugurating radical changes. The ways in which digitization has become wrapped in broader debates about the constitution of democracy, the state, and citizenship has subtly unfolded in relation to the shift from IT through the Web now to Web 2.0. A central theme here was the movement between de-territorialization and re-territorialization, often expressed as how the rapid circulation of digital information becomes embedded in physical environments and partially constitutive of new spaces, zones and divides. As one might expect, there are radically different narratives of these processes. I drew particular attention to the relationships drawn between increasing deployment and accessibility, the possibilities of participation, and the nature of cultural meaning. While pointing to the polarization of narratives of promise and threat, I emphasize again that these narratives are mobile and are forms of interested narrative positioning in relation to shifts in the technological phenomena. Nonetheless, it is evident that what is continuous is the location of both metaphors and tropes of culture (as open and interactive, as closed and superficial) and mechanisms of cultural change (as causal, as uncertain) in the new technologies of computerization and digitization. These narratives are thus also generative of new ways of thinking about culture and technology and the relation between the two.

In Chapter 3, the focus turned more explicitly toward theories of technology in relation to culture. This is a vast field of inquiry, so I tried to give a sense of key debates and points of agreement and disagreement. A central point here was not, in some evolutionary or progressive paradigm, 'throw out the old' and 'embrace the new'. In discussing technological modernisms and postmodernisms in relation to digitization I have tried to give a sense of the contested terrain of the present, where there are very strong arguments for theorizing digital culture as an intensification of

modernity, of a break with modernity, and as not reducible to either pole. Indeed, dialogues of this kind structure thought in each of the institutional cultures explored; both implicitly in the business organization and explicitly in the library and the archive. In constructing a conversation between modern/postmodern theorizing, new media theory, and constructionist accounts of technology I have risked attempting to produce a dialogue between incommensurable paradigms. For some, there can be no real relationship between abstraction and empiricism:

> The matrix here refers to the way in which the material infrastructure of technological society is informed by the immaterial, but hugely powerful, aggregate forces that need to be recognized and properly understood. Failure to do so means that social constructivist theories of technology risk committing the same error they charge essentialism with: disconnecting the abstract qualities of the technical from the empirically elusive, but nevertheless very real experience of them (Taylor and Harris 2005: 16).

I have argued that, insightful though such arguments are, two issues are elided here. First, rather than exploring the rather more subtle reframing of technology studies, Latour's (and others) work on relational materialism is collapsed into a generic category of 'social constructivism', where it doesn't belong. If there is anything repeatedly stressed in Latour's recent work it is a critique of the whole notion of 'social explanation'. Society or culture is made, it is built, it is engineered, it is constructed, but these are not exclusively 'social' processes. Indeed, it is the primary aspect of modernity (or the 'modern constitution') to make this clear distinction between 'social' and 'technical' materials (Latour 1993) which disavows the hybrid character of 'the social'. Second, specificity and the 'empirically elusive' are often argued for but then pursued in terms of largely speculative and theoretical accounts of the 'affective consequences of media technologies'. By way of contrast to assumptions about the technical, processes of commodification, use and users, I have pursued some elements of constructionist analyses in relation to the supposed capacities of digital technologies drawn from new media theory. In this sense I have followed strong accounts of the object as it is twisted into cultural environments. In taking the cultural specificities of sites seriously, I have argued that there are some elements within constructionist approaches which require qualification.

First, the details of cultural dynamics are underplayed, particularly in relation to cultural conventions and practices such as trust, respectability, care, and so on. These are not necessarily simple or reducible to instruments. It is often the routine yet highly ethical cultural conventions within these sites that are especially significant and it is problematic to assume that these are only concerned with network construction or alliance formation. Second, the *ongoing* nature of configuration, inscription and uses need to be brought more firmly into view. I have argued elsewhere that technologies have deeply contingent historical trajectories in the way that constructionist analyses suggest, but that the movement 'into the fabric', the 'closure', does not necessarily occur. Rather, if attention is paid to the detail of practices, we often find that embedded technologies exist within very different forms of order simultaneously. Moreover, each of these is routinely opened for adjustment as cultural conventions change (Hand and Shove 2007).

Third, in stressing the focus upon arrangements of the materials of digital culture, I have argued that we need to explore relations between technologies or objects alongside technology-user processes. The cultural environments explored in the book have been implicitly theorized as evolving 'arrangements', in the sense offered here by Barry (2001):

> …arrangements: of artefacts, practices and techniques, instruments, language and bodies. These arrangements make up what we tend to think of as persons and institutions: states, families and so on. They are collectivities which include technological components. In principle, the complexity of such arrangements is irreducible to their distinct 'social, 'technical, 'natural and 'cultural' elements (11).

The dynamism of configuration, inscription and use is partly an outcome of how digital technologies relate to analogue technologies, and how they redefine each other. Bringing this into focus, for example the relations between books and PCs, paper forms and HTML, photographs and mp3s, reveals varied trajectories of replacement, supplement, recombination and enhancement. In reality, the processes of remediation are entangled with institutional narratives and practices, and the unpredictable configurations they produce. This is not exclusively about rhetorics of technology, how institutional actors *position* the technologies in these relations for their own ends, but also about their materiality. Books are quite literally moved to other spaces by PCs, digital objects demand more storage space in the archive, and so on. All of these have implications for the reshuffling, the reordering of institutional environments around the digital. These are at once rhetorical, material, ethical, and very practical processes.

I have argued that both modern and postmodern theorizing fail to treat technology as *cultural* in two fundamental senses: firstly as the material embodiments of cultural processes located *within* operative sociocultural domains; and secondly, as the contingent articulations of elements that make possible distinctive sociocultural operations (actions, meanings, metaphors, tropes, and so on) which extend the possible contexts of cultural activity. Digital culture does indeed begin with the proliferation of interactivity; everyday life does appear to be increasingly saturated with technical objects. However, from a reflexive perspective the materiality and 'reality' of specific technologies resides in the kinds of 'work' they facilitate and their strategic and unconscious uses in diverse sociocultural practices. Instead of thinking of culture as a fixed code, *system* of meaning or received tradition which constructs technology, culture needs to be conceptualized as a heterogeneous field of technical sense-making practices, which in turn create diverse sociocultural domains. Once liberated from the hold of technological reductionism – seeing technology as essentially *antithetical* to culture in either its technologically or culturally determinist variants – we see that cultural technologies not only condition and regulate human action but also shape and reconfigure the forms of subjectivity recognized and operative in and by society, processes which in turn exert a dialectical influence upon the uses and appropriations of existing machineries. If we are to understand how and in what ways everyday life is saturated by the technical, we require a practice-

oriented conception of technology which includes ethical and political values and practices as central to the cultural life of machines.

In this final part, I want to situate some of the details of Chapters 4, 5 and 6 in relation to three connecting themes which are largely speculative and forward looking. One has to do with the relations between information and materiality. The second concerns figures of the subject constituted across these sites, which have at times been concrete but at other times have acted as 'ghost writers'. Thirdly, I will return to the issue of memory but expand this to a consideration of the dynamics of loss and recovery in digital culture.

Information and Materiality

Throughout the book I have argued that there is nothing immaterial about digital culture. This is not especially novel or pertinent after the third wave of Web studies, but in line with the kinds of work pursued in STS the question is then one of how and in what circumstances digital information is subject to materialization. The argument that digital information flows are the outcome of both material form and embedded uses has been central. In the library for example, it is the ongoing and shifting use patterns of library members which reconfigures the materiality of digital culture. Specific ideas about information are inscribed into the library site – as a resource, as an organized repository, as the great equalizer, as undermining cultural legitimacy, but also as the new means of communication. The point is that the digital information that is 'drawn down' into the library and that which is 'sent out' is conditioned by the materiality of cultural practices within that site. While this often appears intuitive for librarians, the cultural perception that information is disembodied and flows around is pervasive elsewhere. If digital information is lifted out or 'indifferent' to its vehicle, this is temporary or is abstractionist at best.

Indeed, when a much stronger account of immaterial flows and networks are utilized in the business organization, the material architecture required to engender such flows becomes the primary focus of enactment. The interoperability of technologies and of systems can be inscribed at the level of design but interactive flows have to be *enacted* in contexts other than that of the laboratory and the technical manual. It is here that the argument about digital and non-digital elements being mutually constitutive becomes most apparent. Moreover, I have suggested that in relation to ecommerce and the archive information is not mobile, not literally. This may seem a rather pedantic point, but there is some significance to the ways in which particular hopes and fears about informational mobility and immateriality are adhered to in different environments and how they frame, if not direct, courses of action. The desire for informational mobility and immateriality in financial services was undercut by the simultaneous desire for immutability, which could only be produced and indeed verified by paper and print. In the archive, the desire to avoid immateriality by attempting to reenact the entire range of materials was an outcome of the very recognition that both mobility and immutability are imaginary. In pointing to the material substrate of digitality I am not arguing that digital information is easily 'captured' for capital accumulation, but that it is necessarily a matter of materiality

and that materiality can take quite different forms in relation to cultural conventions and practices (see Sassen 2006).

There is a broader theme here which concerns the transformation of what was once known as 'cyberspace'. Over the course of the later chapters, which are in a sense historical, while each case has a high degree of specificity we can see shifts from the cyberspace 'out there' as a 'repository of knowledge' to be accessed, to the digitization of the very architecture of 'everyday' practices. This is about dynamic movements between 'mobilities' and 'moorings' and raises quite a challenge to the theories of technology we have had to play with in this book. Firstly, something significant is happening to the relations between digital technology and the ways academics think about space and location. What was once conceived as cyberspace has turned itself inside out, where digital technologies are increasingly *inside* the material objects of cultural environments, altering what counts as culture and technology. For many, as we have seen, this is conceptualized as either a simulation of the real, where digital culture becomes the over-production and excessive circulation of information in a world of infinite copies, or as constitutive of reality where there is no longer anything outside the data. I do not think that either of these pictures is terribly convincing when the messiness of the empirical is brought into view. What we see are intricate weavings of the non-digital and the digital in new materialities. But these are not without memory or tradition, and are not necessarily lifted out from modern institutional locations. There is much that is radically novel in digital culture, especially in relation to the potential interconnectivity, dynamism and narrative possibilities in current *uses* of Web 2.0, but much of these are anchored around enduring relations and sites.[1] As such, digitization produces uneven textures rather than the disappearance of texture or grain, but I would argue that if a general tendency can be identified here at the level of practice it is a shift 'from archive to transmission fever'.

Digital Culture and Subjectivities

In the dominant narratives of digital culture discussed in Chapter 2 the subject is an automatic outcome of, or stands in simple opposition to, digitization. For Castells (2001), identity is key to this, especially in terms of how historically rooted ways of being are challenged by the abstract flows of contemporary network capitalism. In Poster's (2006) account, there are new subject formations encouraged by digital media. In STS related work, the subject is often a 'user', and but one kind of actor made through association of actants. Andrew Barry (2001) makes a convincing case for drawing upon Foucauldian and STS positions here by looking at the emerging 'political anatomy' of subjects in technological culture – how subjects are 'made up' or composed. He shows how the science museum visitor is now expected to interact with exhibits, and is increasingly 'allowed' rather than 'told' how to learn and what to expect. I want to suggest here that the encouragement of specific 'political anatomies' of the subject, actor or user in digital culture is a particularly pertinent theme and one which, again, raises important issues for accounts of digital

1 Facebook for example which utilizes existing geographies of place.

subjectivity. What emerge from the three sites explored here are quite distinctive subject positions that are interrelated if we consider them from the point of view of cultural governmentalization. Governmentality is now fused with cultural forms, particularly in the arenas of citizenship and consumption, where as Lash (2002) suggests, all culture has become resources (or 'standing reserve' in the Heideggerian sense). I will briefly elaborate on this below.

In the materials presented within Chapters 4, 5, and 6 there are distinct figures of the citizen-consumer, but with different orientations. They do not fit easily into the models of digital empowerment or disempowerment offered up by much social theory. One of the commonalities is the ascription of *activity* to these subjects, mostly a kind of 'entrepreneurialism'. This is entirely in line with the shifts proposed by Nikolas Rose:

> ... citizenship is primarily realized through acts of free but responsibilized choice in a variety of private, corporate, and quasi-public practices from working to shopping. The citizen as consumer is to become an active agent in the regulation of professional expertise. The citizen as prudent is to become an active agent in the provision of security. The citizen as employee is to become an active agent in the regeneration of industry and as consumer is to be an agent for innovation, quality and competitiveness (Rose [1989] 1999: xxiii).

Within public library culture, the self as a citizen, is promoted as part of the official conception of agency as a sphere of personal responsibility: responsibility for their own self-transformation, in this case, through the development of learning techniques and indefinite learning. In some ways, this is flexible accumulation on the ground. The model of the indefinite learner also ties to the Deleuzean move from discipline to modulation, a kind of never ending process of retraining rather than instruction across all areas of everyday life:

> One is always in continuous training, lifelong learning, perpetual assessment, continual incitement to buy, to improve oneself, constant monitoring of health and never-ending risk management. Control is not centralized but dispersed; it flows through a network of open circuits that are rhizomatic and not hierarchical (Rose 1999: 234).

Such modulation is thought to be intimately related to digitization (Manovich 2001). In this way, while notions of access to resources for self-improvement have a long history within public libraries, the figure of the 'indefinite learner' needs to be seen in the contemporary context of individual life chances being redefined in informational terms (Barry 2001; Dean 1999; Lash 2002; Rose 1999). I have argued that library users bring their own antinomies of digital culture along with them, negotiating paths between enthusiasm and skepticism, opportunity and necessity, learning and leisure. In negotiating these dimensions of contemporary citizenship what becomes most apparent is the tension between citizenship and consumerism especially where informed citizen-consumers have become central to the function of the marketplace. The generalized figure of the 'entrepreneurial citizen' is predominant in public library and governmental discourse. This might take the form of the life-long-learner, the active, participatory or self-educating citizen, but all are variants of the cultural entrepreneur. A similarly demanding figure has a spectral presence in the

archive throughout Chapter 6. This is the genealogical client, a citizen-consumer which is also information seeking, but in relation to the establishment of traces. The supposed fragmentation of cultural history after postmodernity encourages both a remaking of the subject but also a responsibilization of memory making. The imaginary demands of the genealogical client, like the demanding consumer, inform management decisions about opening the archive.

These models interface with the 'demanding consumer' in a number of ways. There are some broad connections between public library financial services, and national archive narratives and practices here. Firstly, the model(s) of the citizen in the public library and the archive are increasingly fused with a model of 'the customer'. Hence, the responses of libraries and archives to this imaginary figure are often conceived in terms of customer satisfaction, choice, preferences, and so on. Secondly, within financial services, the activities of the demanding consumer now extend to the consumption of products and services previously associated with welfarist modes of citizenship (Taylor-Gooby 2000). The model of the citizen-consumer, then, is expected to become self-informing about educational and cultural-historical resources, and the techniques of risk-aversion and securitization. Where the citizen is expected to maintain life-chances and employability through specific forms of cultural consumption, they are also expected to secure their financial, health, and wealth futures through assurance consumption. The 'information competence' discussed in Chapter 4 and the interpretive skills of Chapter 6 extend to financial competence. All of these sets of practices appear to be concerned with off-setting the proliferating risks and fragmentation of identity and security within postmodern culture. In essence, they are concerned with the development of 'technologies of empowerment' (Barry 2001; Dean 1999; Rose 1999).

Whilst, superficially, the citizen-consumer appears to have unlimited choice in terms of products, services and knowledge, these 'choices' are carefully calibrated modules of lifestyle consumption (Bauman 2000). Most would agree that the perception of 'the consumer' has changed radically over the last 40 years (largely from passive to active). As I have suggested throughout, this kind of 'activity' is intimately tied to understandings of the relation between digital technologies, users, and forms of cultural and social order. This is particularly important when we consider culture in terms of the dynamics of access and exclusion, increasingly understood as access and exclusion from digital information technologies (see Rose 1999).

Loss and Recovery in the Digital Era

In his book called *Lost Worlds*, Michael Bywater conceptualizes 'worlds' as encompassing valued artefacts, skills and knowledge surrounding them, and the kinds of persons and environments associated with them. He suggests that when specific artefacts disappear, whole ways of doing things get lost, and people and environments change as a result. A central theme in critical theory is also loss. This might be the loss of autonomy, of authenticity and aura, and of enlightenment based critique. While this may be negative for some (Taylor and Harris 2005) it can be potentially democratizing and liberating for others (Poster 2006). As I stated in the introduction, the many articulations of digital culture among academics, politicians,

cultural practitioners and so on discussed in this book implicitly construct a prior cultural formation. The shift from one to the other necessarily involves moments of loss – of grounding, of community, of memory, of knowledge, of welfare, of skills, of Culture no less. Throughout the book I have suggested that we also see the resurgence and resilience of older ideals, objects, practices. Things are not so easily displaced but are mutually redefined. It is precisely the interplay and mutual adaptation of both that is often missed in theories of digital culture as either revolutionary change or illusive fantasy. We have seen a whole range of accounts which exaggerate one or other tendency. This is not to suggest that nothing has been lost in the digital era:

> Machines do it now. Everything is computer controlled, and industrial craftsmanship has become reduced to tapping on a computer keyboard. Everything is viewed through the screen, so that texture has become so homogenized that we sometimes cannot tell the difference between television and anything else. Our world is a world of glowing pixels. In the post-industrial world, a man must type or die (Bywater 2005: 55).

While it is clear that specific crafts, skills and forms of life associated with modern institutions and large scale industrial labour may be disappearing, or have been outsourced, it would be another step altogether to imply that a transition from analogue to digital in terms of technical devices and cultural ideals has occurred evenly, predictably, inevitably, or perhaps even at all in some cases. For the notion of transition tends to imply the loss or replacement of analogue by digital. Indeed, there are emerging accounts of the dynamic revitalization of analogue objects and practices, for example the explosion of interest in photography (Acland 2007). What is important here is to question the extent to which we are seeing the residuality or revitalization of an older technology and practice, or whether these are the same objects enfolded into new cultural forms with altered conventions and the redistribution of competence and skill between humans and non-humans (Lister 2007; Shove et al 2007). As Straw (2007) has recently argued, it is not only that new media refashion old media, but that in many cases digital technologies revitalize and reanimate the past, pulling long lost artefacts into the present. As we have seen in relation to the resilience of books, of signatures and of the archival document, some of these materials become even more 'special' or treasured and as such it is hard to imagine their disappearance. But it is not altogether clear what exactly it is about such forms that remain resilient. Is it the materiality, the texture of the thing? Is it the congealed form of knowledge encased within it? Is it the form of representation presented through it? Or, is it the skill and competence required in putting it to use?

This has not been an argument about the same old promises applied to the latest technological devices. While there are indeed many similarities between promises associated with the advent of photography, radio, television, personal computers, and the Web, this does not make them the same. Promises and threats are necessarily wrapped up in the rather more specific concerns of the present, where articulations of technology and culture are subject to diverse interests and activities across many levels of cultural life. It is only through empirical detail that we can appreciate the uneven grain and contingency of the digitization of culture.

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