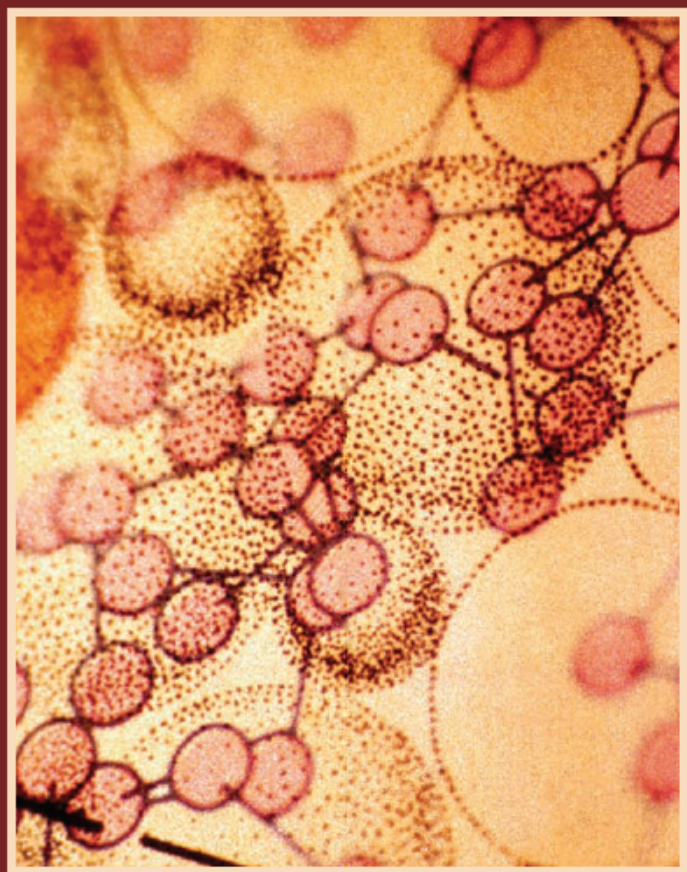


NORBERT M. SAMUELSON



JEWISH FAITH AND  
MODERN SCIENCE

ON THE DEATH AND REBIRTH  
OF JEWISH PHILOSOPHY

# Jewish Faith and Modern Science



# Jewish Faith and Modern Science

*On the Death and Rebirth of Jewish Philosophy*

Norbert M. Samuelson

ROWMAN & LITTLEFIELD PUBLISHERS, INC.  
Lanham • Boulder • New York • Toronto • Plymouth, UK

ROWMAN & LITTLEFIELD PUBLISHERS, INC.

Published in the United States of America  
by Rowman & Littlefield Publishers, Inc.

A wholly owned subsidiary of The Rowman & Littlefield Publishing Group, Inc.  
4501 Forbes Boulevard, Suite 200, Lanham, Maryland 20706  
www.rowmanlittlefield.com

Estover Road  
Plymouth PL6 7PY  
United Kingdom

Copyright © 2009 by Norbert M. Samuelson

*All rights reserved.* No part of this publication may be reproduced,  
stored in a retrieval system, or transmitted in any form or by any  
means, electronic, mechanical, photocopying, recording, or otherwise,  
without the prior permission of the publisher.

British Library Cataloguing in Publication Information Available

#### **Library of Congress Cataloging-in-Publication Data**

Samuelson, Norbert Max, 1936–

Jewish faith and modern science : on the death and rebirth of Jewish philosophy /  
Norbert M. Samuelson.

p. cm.

Includes bibliographical references.

ISBN-13: 978-0-7425-5892-2 (cloth : alk. paper)

ISBN-10: 0-7425-5892-4 (cloth : alk. paper)

eISBN-13: 978-0-7425-6555-5

eISBN-10: 0-7425-6555-6


1. Philosophy, Jewish. 2. Judaism and philosophy. 3. Judaism and science. I. Title.

B5800.S26 2009

296.3'75—dc22

2008021736

Printed in the United States of America

™ The paper used in this publication meets the minimum requirements of American  
National Standard for Information Sciences—Permanence of Paper for Printed Library  
Materials, ANSI/NISO Z39.48-1992.



# Contents

	Preface	vii
PART I	THE DEATH OF JEWISH PHILOSOPHY	
	Introduction I	3
Chapter 1	Misunderstanding Physics and Astronomy	15
Chapter 2	Misunderstanding Linguistics and Epistemology	29
Chapter 3	Misunderstanding Psychology	45
Chapter 4	Misunderstanding Medicine	71
Chapter 5	Misunderstanding History	85
PART II	THE REBIRTH OF JEWISH PHILOSOPHY	
	Introduction II	107
Chapter 6	Interpreting Creation: God, the World, and the Physical Sciences	113
Chapter 7	Interpreting Redemption: The World, Humanity, and the Human Sciences	159
Chapter 8	Interpreting Revelation: Humanity, God, and Jewish History	211

Conclusion	231
Bibliography	239
Index	277
About the Author	291



## Preface

In the fall of 2004, Hava Tirosh-Samuelson (history) organized an interdepartmental, intercollegiate, interschool faculty study seminar at Arizona State University (ASU) on shared issues over the interrelationship between religions and sciences. The seminar was sponsored and hosted by the Center for the Study of Conflict in Religion at ASU under the generous leadership of Linell Cady (religious studies) and the impressive administrative competence of her associate, Carolyn Forbes. The seminar meets monthly through the academic year with a focus at each session on a specific scholarly book or books or essays relevant to our joint study. A grant from the Metanexus Institute pays for books and dinner for the monthly seminar meetings, as well as a major three-day conference each year on a specific topic in science and religion related to questions about “transhumanism.”

This study would have been radically different than it is, were it not for all that I have learned from the seminars and my colleagues in the seminars. They include (in alphabetical order): Brad Allenby (School of Engineering), Brad Armendt (philosophy), Andrew Askland (law), Stephen Batalden (history), Guy Cardineau (life sciences), Eugene Clay (religious studies), Adam Cohen (psychology), Jerry Coursen (bioengineering), Brian Gratton (history), Ted Gulesarian (philosophy), Ed Hackett (anthropology), Steven Hoffman (life sciences), David Kader (law), Barry Leshowitz (psychology), Stuart Lindsay (physics), Gary Marchant (law), Joan McGregor (philosophy), Mike Mobley (AZ Biodesign), Kenneth Mossman (life sciences), Craig Nagoshi (psychology), Barry Ritchie (physics), Jason Robert (life sciences),



Cynthia Selin (science policy), Margaret Walker (philosophy), James Wetmore (human evolution and social change), and Michael White (philosophy). References to the books we studied together will appear throughout my study of the proposed eminent death of Jewish philosophy and its anticipated rebirth as seen in the study of Judaism and science from the perspective of intellectual history.

Some people in our seminar have, of course, had more influence in shaping my thought than others, but I am reluctant to single anyone out with two notable exceptions—Hava Tirosh-Samuelsan and Linell Cady. Both the creation and the perpetuation of this most unusual interdisciplinary postdoctorate study group is due almost entirely to the energy of Hava, and none of it would have been possible without the enthusiastic support and administrative skills of Linell.

Finally, I wish to express special thanks to Barry Ritchie (physics, Arizona State University) and Ephraim Meir (Jewish philosophy, Bar Ilan University) who provided me with the loving service of engaging in a close reading of the penultimate version of this manuscript and thereby saving me from many misstatements.

PART ONE

THE DEATH OF  
JEWISH PHILOSOPHY





## Introduction I

This is a book of problems without answers—at least not yet. The central thesis is that Jewish philosophy can no longer be done as it has been for the past two centuries.<sup>1</sup> I will begin by stating what modern Jewish philosophy is and then explain why it has failed. This argument will constitute the majority of the book. It is, in effect, an argument for the death of Jewish philosophy. However, I intend the final part of this book to be constructive. It will be a case for the rebirth of Jewish philosophy, or at least it will be a prolegomena to such a case. Based on the analysis of how Jewish philosophy died, I will lay out a program for its rebirth.

In logical form the constructive case is an argument by analogy. Jewish philosophy was forced to change in the past because of (a) the way learned people thought about *almost everything*, and (b) the social-economic-political conditions of Jewish life.<sup>2</sup> Based on an analysis of what classical Jewish philosophy was and why it changed in modernity, I will argue that Jewish philosophy must again change in comparable ways because of contemporary philosophy and history. Furthermore, to affect this change will require a significant (possibly radical) rethinking of almost everything we have taken for granted about the Jewish people.

*Almost everything* includes our conventional understanding of the history of Judaism and the Jewish people as well as our normative understanding of the sciences. Obviously, to reconstruct both the history and the philosophy cannot be done even in the most general terms in a single book. Hence, the constructive part of this book will offer no concrete answers. Rather, it will

suggest a set of scholarly programs for intellectual historians of both Judaism and the Jewish people to follow in order to establish a viable, constructive Jewish philosophy for our time. The term *constructive* has practical as well as theoretical implications. The goal is not just to construct a comprehensive world-life view that is coherent with current academic thinking about almost everything; it is no less committed to constructing a comprehensive program for Jewish life that will enable both Judaism and the Jewish people to flourish beyond the present moment in history. It is taken for granted that, for any organism whose existence depends on conscious thought, a viable view (which is to say a view that supports the organism's survival) must be true. Hence, the intellectual goal of Jewish philosophy is to form judgments about almost everything relevant to the survival and flourishing of the Jewish people that is likely to be true, with faith that if these judgments are true then they are most likely to be *practical* (which is to say, to promote the survival and flourishing of the organism).

## The Death of Jewish Philosophy

This book consists of two major parts. The first part is critical and the second part is constructive. The constructive part will propose a strategy for solving the problems described in the first part. In this first part, I will lay out the factors that have contributed to what I see to be the death of modern Jewish philosophy. I will begin with a description of what modern Jewish philosophy is.

### What is Modern Jewish Philosophy?

Philosophy is a critical organic part of the general cultural life of any people, so that any change in this part requires (and eventually causes) change in the whole and vice versa. What people think about reality is both caused and shaped by how they live in reality. Major changes in a people's life will require (and eventually cause) changes in how they think about life. Conversely changes in how they think about life will require (and eventually cause) changes in their lives. Here the term *philosophy* means what someone thinks about reality and life, both personally in the concrete and generally or universally in the abstract.

No people have total control over how they live in reality and the more dramatic (in terms of influence) the changes the less control. For example, people (at least in the modern world) have preferences about where they want to live. They might like to remain where they grew up or they might like to live anywhere but where they grew up. They might like to live in a neighborhood of

like-minded people or in a very diverse kind of community. They might like to live in the woods or on mountains or by a large body of water, or they might like to live in a large metropolitan area with access to quality entertainment, and so forth. However, in reality, they must live where they can find work, and that may dictate a choice that is very different from what they would prefer. Most of us have more control over the aesthetics of our environment than we as individuals have over the economics, and the impact of radical changes in our economic setting is more dramatic than changes in aesthetics.<sup>3</sup>

What is true of the individual is radically truer of the nation. While most nations have some control over their fate, no nation chooses to be conquered or subservient either militarily, economically, or culturally. Yet radical changes in a dominating power's welfare will change the welfare of the dominated people. Again *control* and *dominance* here refer to culture and to economics no less than to the military. Sometimes these powers are independent, but most often they are not. Still, the most dominant military nations tend to be the most dominant influences in economics, and economic control tends to be associated with cultural influence.

By *culture* I mean a great host of human activities as well as ways of thinking. Among the entries on this list are science and religion, where by *science* I mean the way we think about reality in its most universal terms and by *religion* I mean the concrete forms of action that follow from the science. Hence, there is an intimate connection between a people's science, religion, and culture, so that radical changes in the culture both cause and are caused by radical changes in the science or religion; radical changes in science both cause and are caused by radical changes in religion; and radical changes in the military/economic state of a nation both cause and are caused by radical changes in that nation's culture.

There is no sharp distinction made here between the terms *science* and *philosophy*. Before the modern period *science* was not a technical term. It simply meant what we know to be true and did not name any specific kind of knowledge. In contrast, the branches of research about which human beings claim knowledge were called *philosophy*. In general we will use the term *science* in two ways. One refers to those academic disciplines that in the modern period are called sciences, in contrast to the different subject areas of modern academic philosophy. Two refers to the writings of classical philosophers who did what they called *natural philosophy* as opposed to *revealed philosophy*. There will be more said about this distinction later on.

The history of the Jewish people exhibits these generalizations. It is true that Jews have had considerable control over the way they think and live, so that a major determiner of who and what they are at any moment in their history is

what they were before. Hence, Jews who want to understand who and what they are today need to study Jewish history. However, Jewish history is marked by notable discontinuities, where what Jews are, what Jews do, and what Jews think is radically different from how in their past they acted and thought. In each of these cases the critical factors in accounting for the discontinuities were changes in the people's external environment that were beyond their control. Usually the changes involved one civilization gaining military and economic hegemony over a very different civilization at a global level.

The immediate consequence of these generalizations is that as important as Jewish history is to the Jewish people, it is not more important than world history, for the most dramatic changes in the lives and thoughts of Jews have had more to do with what was happening in general within the world where Jews lived than it had to do with what was happening parochially to the Jews. From this perspective, the Jewish people have never been anything but a minor player on a far larger stage. The story of the Jews is a global story; it cannot be told merely as Jewish stories. To understand what Jews do we need to look to what their neighbors do; to understand how Jews think we need to look to how their neighbors think; and those neighborhoods frequently change.

Modern Jewish philosophy is philosophy and Jewish and modern. It is *philosophy* because it is speculation about what everything really is and how best to live in reality. It is *Jewish* because it is philosophy by Jews, about Jews, and influenced by Jews. More accurately it is philosophy, most often by Jews, who were significantly influenced by the distinctive ways that Jews experience and live in reality, informed by the teachings of previous generations of Jews. Finally, it is *modern* because the Jews composing the philosophy both live in the modern world and their thought is influenced by that world.

The modern world is the world we live in at the present moment. It has specific characteristics, both historical and intellectual, that distinguish it from earlier worlds out of which the modern can historically trace its origins. It is my judgment about what those distinguishing features are that will dictate my conclusions about the death and rebirth of Jewish philosophy. Hence, it is critical that I spell out in detail what are the distinctive features of modern Jewish intellectual history.

### The Distinctive History of Modern Jewish Philosophy

The Jewish nation has always been subservient—economically, politically, and culturally—to at least one dominant nation. From its origins through the first Jewish state, the dominant entities were the various nations that grew up in the Middle Eastern regions of Mesopotamia and Egypt. During the sec-

and Jewish state the dominant influences were the Hellenistic empires of Greece and Rome. In the subsequent two thousand years the dominant civilizations were Zoroastrian, Muslim, Roman Catholic, and Protestant. These changes in political and religious cultural hegemony mark the different periods of Jewish history. The dominant religion of the Middle Eastern period is the faith recorded in the Hebrew scriptures.<sup>4</sup> The dominant religion of the Hellenistic period is the faith recorded in the Mishnah, the two Talmuds, and the rabbinic collections of midrash.<sup>5</sup> The dominant religion of the subsequent periods is recorded in a variety of commentaries on the Hebrew scriptures as well as in topical writings about both science and law.<sup>6</sup> Again, each major change in the dominant culture that most influenced the world where the Jewish people lived is correlated with major changes in how the Jews lived and thought as Jews.

The changes in how Jews lived are recorded in writings about law by the Jewish officials who were responsible for legislating and enforcing that law. Similarly, the changes in what Jews thought about reality are recorded in writings about philosophy by the Jewish intellectual leaders who were most respected within the community for their wisdom. In the Middle Eastern period these leaders were primarily priests and prophets, and from the Hellenistic period on till the present these leaders were primarily rabbis. However, in the modern period there has again been a change. From the perspective of Jewish intellectual history, this change is as radical as the move from leadership by priests and prophets to rabbis. In the modern period, the leadership of Jewish life has increasingly moved from people whose primary source of authority is their training and skill as rabbis to people whose skill and training lies elsewhere. In areas of political leadership the Jewish people have been led by individuals whose accomplishments rest on their ability to raise and manage money and on their talent as politicians to represent those who control money. Some of these people—both in the modern political state of Israel and in what is called the *galut*<sup>7</sup>—are rabbis, but most are not.

Similarly, the people who today most influence how Jews think about reality include people of wealth, politicians, intellectuals, artists, and (sometimes) scholars, many of whom (but not all) are themselves Jews. With the possible exception of the scholars, few of these people are rabbis, and increasingly the scholars of Judaism also are not rabbis. This change in intellectual authority again marks the changes in the life of the Jewish people as more radical than anything that has happened in the past two thousand years.

The rabbis had political and intellectual authority for two related reasons. First, the older authorities (the priests) were no longer respected. They were



seen as a class, to be deficient both in moral character as well as in practical and theoretical wisdom. Second, the newer authorities (the rabbis) were respected by the majority of the people (at least within the land of Judea) as men who truly deserved respect—politically, intellectually, and morally. Similarly in this present period of modernity, rabbis (who are now “the older authorities”) have by and large ceased to command intellectual respect because what they know has minimal value as a source of intellectual and practical wisdom for a significant majority of the Jewish people. As businessmen have as a class replaced rabbis in Jewish politics, so scientists (especially social scientists) have replaced rabbis as sources for wisdom, both individual and collective.<sup>8</sup>

Why has the respect for the rabbinate declined so qualitatively in the modern world? The answer I would suggest is our first generalization about the nature of change in Jewish history. The rabbis’ claim for authority was based on the judgment that what they distinctly know was how to determine the true meaning of the Hebrew scriptures, and these scriptures serve as a foundational source for truth judgments about absolutely everything. The rabbis have lost their authority because few Jews in the modern world believe either of these claims. Rabbis as rabbis do not have the best training to understand what the scriptures mean, and even if it were the best, the scriptures can no longer be accepted as the final source for foundational claims about what is real and what is true. The rabbis have been dethroned by academic scientists in both cases.

Those who study nature (physicists, biologists, psychologists, etc.) are generally believed to know more about the external physical world and the internal mental world than did the authors of the Hebrew scriptures. Similarly, the academics who study the ancient Near East (archeologists, anthropologists, and historians) are judged to be better trained to interpret what the authors of the Hebrew scriptures meant than are contemporary rabbis who are trained to read the texts (from midrashim to medieval commentaries) of earlier rabbis. We study the research of academic scholars of the Bible to know what the authors of the scriptures believed. In contrast we study what rabbis say about the scriptures only to know what these rabbis believe. The source of the difference is that we believe that the scientific training of the biblical scholars gives them the authority to make truth judgments about the original intent of the words of the scriptures, whereas what the rabbis say about the scriptures is not so privileged. We do not believe that the rabbis of the past, in virtue of what they know, were in any better position to say what the scriptures mean than are we who are armed only with knowledge of the language of the Bible.

What separates the rabbis from the academics is *modern science*, and most of us today grant more authority in questions of truth (and possibly morality as well) to the methods of modern science than we do to the methods of textual interpretation adopted by the ancient rabbis. Similarly, quite independent of the determination of the original meaning of the scriptures, we give more credit to the published papers of modern scientists about the nature of physical and mental reality than we do the claims of the scriptures themselves. We do so because we believe that the modern disciplines of academic science are more successful in discovering truth than were the methods employed by the priestly authors of the scriptures to determine how God and human beings interact with each other on the historical stage of the physical world.<sup>9</sup>

The argument for moral authority is similar, but more complex. I think it is generally thought that scientists have no more personal talent for morality than other human beings. However, it is widely accepted that there are things that some scientists know that can give us the wisdom to make better moral judgments. Science is not necessarily relevant to every moral question, but we can rely on it to inform us about many morally relevant conditions of the world today (e.g., in medical science, correlations between cancer and smoking) that will enable us to better predict what the world may become tomorrow (e.g., in environmental sustainability, with respect to global warming) so that we may alter anticipated consequences (e.g., in health sciences, how to avoid obesity). In all of these cases we look to scientists for moral advice not because we consider them to be morally good, but because we think that they are wise, and we believe that the source of their wisdom is something that we call *the modern scientific method*. Conversely we tend to disregard what rabbis say not only because we no longer think that what they know is wise, but also because we increasingly think that there is nothing in their training to make them good people. Just as the Hebrew scriptures and their rabbinic interpretations do not consistently and reliably yield judgments that seem to be true, so they do not seem to yield imperatives that seem consistently and reliably to be good. Hence, it is by no means obvious that following the path of rabbinic law will make a traveler on the road of life a better person.

For example, there are many reasons for modern Jews to keep kosher, but rarely are those reasons moral. In contrast, most of us believe that psychological training will make an individual a more understanding person, and that is considered to be morally good. Similarly, strength training and exercise makes us physically stronger and healthier, and that at least has serviceable goodness. (Dieting makes us healthier and better looking and those also are serviceable goods). But we do not believe that keeping kosher

makes us morally better, and kosher food as such does not enhance physical well-being. It may make an individual a “better” Jew, but increasingly Jews believe that being a better Jew has minimal relevance to being a better person. Hence, what the rabbis learn and say increasingly has little authority over how Jews choose to live their lives, and that makes the modern Jewish world radically different from any previous Jewish world since the time of the canonization of the Hebrew scriptures.

### **The Distinctive Science of Modern Jewish Philosophy**

The science of classical rabbinic Judaism was a distinctive synthesis of the world and life views presented in the Hebrew scriptures as interpreted by early rabbis who were influenced by the physical and social sciences of Rome (especially Stoicism) and with the contemporary sciences of the ninth through the twelfth centuries in the western regions of the Muslim empire. The science consisted in a collective process of interpretation of ancient texts, notably by Aristotle but also by Plato, as those texts were first interpreted in the Hellenistic world by Roman pagans and Christians, and then subsequently further interpreted by Muslim and Jewish scholars of texts and observers of nature. This tradition continued to grow with new interpretations by Roman Catholic and Jewish text scholars in Europe in the thirteenth and fourteenth centuries.

During this five-hundred-year period the Jews lived in a continuous civilization in which the politics and culture of both the Jewish people and their non-Jewish hosts reinforced each other and were coherent with the science of the day.<sup>10</sup> The Jews lived in a world of fixed social hierarchies determined by birth where science taught that monarchy was the best form of government, agriculture was the best foundation for an economy, and uniformity of belief (both scientific and religious) was considered politically ideal. However, by the fifteenth century at the latest a process of decay on all of these fronts became apparent in at least Western Europe. The process produced increasing disillusionment with many of the cherished (and therefore stabilizing) institutions of the society (notably the monarchy) that paved the way for the development of a new kind of world where people were citizens of nation-states (rather than serfs in monarchies), shared in common a primary language and history (rather than a religion and philosophy), and increasingly prospered through global commerce (rather than through local agriculture). Furthermore, as the old political order crumbled (as monarchies gave way to semi-democratic republics), the old scientific and religious order crumbled as well. The Aristotelian synthesis of coherent sciences became less believable as

problems in the sciences proved unsolvable, and new problems were discovered that increasingly resisted any kind of broad synthesis into a common world and life view about reality. By at its latest the end of the nineteenth century Europe (and North America) had a new political order (called *democratic*), a new economic order (called *capitalist*), and a new intellectual order. It is this intellectual order that will now almost exclusively occupy our attention, because it, more than any other single set of factors, both produced the birth and provoked the death of modern Jewish philosophy.

### Why Modern Jewish Philosophy Has Failed as Philosophy

We will call the older, classical philosophies *scholastic* and the modern sciences *mechanistic*. However, these are only labels. The terms were introduced by Christian intellectuals in the early modern period<sup>11</sup> to distinguish the medieval Church-university tradition of *revealed philosophy*<sup>12</sup> from the modern academic-society studies of *natural philosophy*.<sup>13</sup> I will use these names solely for the sake of brevity. The phrase *scholastic philosophy* refers to a continuous tradition of scientific speculation on almost everything that traces at least its literary origin to manuscripts attributed to ancient Platonists, Aristotelians, and atomists. Conversely, the phrase *mechanistic philosophy* refers to a tradition of science that began in Western Europe in the early modern period with university academics that recognized the failures of scholasticism and developed a new way of thinking about science derived from their readings of the humanist, late medieval tradition of interpreting Hellenistic atomist philosophers (notably, Skeptics and Stoics).

It might be best to identify these early *mechanists* referentially rather than by definition. I have in mind people like Galileo, Gassendi, Descartes, Spinoza, and Newton. Their enemies called them *mechanists* and *materialists* because they rejected the Aristotelian causal principles of form (*morphe*) and end (*telos*). These naturalist philosophers did not accept these terms as applied to themselves, even though they used these terms to describe their enemies.<sup>14</sup> As I will use these terms, the meaning is intended to be entirely descriptive and in no sense evaluative. I will equate modern science with mechanistic philosophy, and I will describe that philosophy primarily (but not exclusively) to apply to a Newtonian conception of the physical world (notably in astronomy and physics). This will be applied in combination with a Cartesian conception of the mental world in general (notably in linguistics and epistemology) as applied to a Darwinian understanding of natural history (notably in geology and psychology) and a Marxist understanding of human history.

Newton and Descartes lived and wrote in the seventeenth century, and Darwin and Marx lived and wrote in the nineteenth century. Their science

has provided the dominant paradigm for a (more or less) coherent modernist view of the entire physical universe and every form of life within it (i.e., of *reality*). We will call this very general comprehensive philosophy *modern science*. It continues, more or less, into the twenty-first century to provide the dominant conceptual framework in which at least most university-educated people understand everything. However, science does not progress at this level of generalization. Rather, the sciences of the modern university proceed more or less independent of each other, and much of their progress involves some fundamental criticisms of the earlier modern science upon which the later scholarship is based. Each specific science in its own way raises significant reasons to have second thoughts about the very general claims of modern science itself.

This concludes my presentation of what modern Jewish philosophy is. It is philosophy<sup>15</sup> that is Jewish<sup>16</sup> out of the intellectual context of modern science. Without modern science there is no modern Jewish philosophy, and this critical link is the source of our intellectual problem. I will argue in Part I that in general terms modern Jewish philosophy does not understand modern science in every academic discipline of science relevant to what Jews believe as Jews.

## Notes

1. Let us call what it has been *modern Jewish philosophy*, and what it was before then *classical Jewish philosophy*. By the term *modern* I refer primarily to the world of Jews living in Protestant Christian, culturally European countries that understand themselves to be secular nations and that have extended citizenship to Jews and other non-Christians.

2. Let us call (a) *philosophy* and (b) *history*. Furthermore, let us call the study of both (a) and (b) together in interaction with each other *intellectual history*.

3. Losing a job is more likely to force someone to move than is an equally radical change in entertainment or other leisure opportunities (e.g., the Dodgers leaving Brooklyn for Los Angeles).

4. By *dominant* religion I mean that specific way of a group living that was most influential—politically and culturally—in the life of the collective in its own time and/or in its future.

5. We will call that religion *early rabbinic Judaism*.

6. We will call that religion *classical rabbinic Judaism*.

7. That is, everywhere Jews live outside of the land of Israel.

8. At least in some circles rabbis continue to command moral respect, but even this kind of authority is not true in every kind (even most kinds) of Jewish community.

9. We will say more about these claimed *methods* later.

10. Let us call this tradition of Platonic and Aristotelian philosophy *classical science*.
11. From the sixteenth to the seventeenth centuries.
12. That is, science in the broadest sense of the term, as stated previously, whose sources integrated a tradition of learning rooted in the human experience of the natural world with a tradition of learning based on the words of revealed scriptures.
13. That is, science whose sources relied exclusively on reports of human empirical experience and human rational thought about those reports.
14. It is clear that almost everyone at this stage of intellectual history considered the terms *mechanistic* and *materialist* to express negative value. However, it is also true that they all rejected the usefulness for science of formal and final causes.
15. That is, an attempt to understand everything about life and reality.
16. That is, primarily by Jews, influenced by earlier Jews, and seeking to influence future Jews.



## CHAPTER ONE



# Misunderstanding Physics and Astronomy

In the most general terms Jewish philosophy affirms three fundamental forms of divine action and discusses their interrelationship. God creates the world. God reveals himself to humanity. And God redeems both humanity and the world.

As the sciences change their general conception of the nature of the world, Jewish philosophy is obligated to revise how it interprets the doctrine of creation. The issue is not how to accommodate Judaism to be more acceptable to non-Jewish intellectuals. The issue is how to understand what a Jew is obligated by rabbinic tradition to believe about creation. Creation is a conception of the origin and general nature of the universe. As such what creation means depends on what that nature is and how the universe originates. A primary source for knowing both is science. Hence, since the content of our knowledge of the physical sciences regularly changes as we learn more about the universe, the meaning of this rabbinic dogma must regularly be reformulated.

What we today recognize as the traditional dogma of creation in rabbinic Judaism was formulated by the classical Jewish philosophers (notably, Saadia, Maimonides, and Gersonides). Their view is the product of a revision of the biblical and Hellenistic conception of creation in the light of the classical Aristotelian-Platonic-Atomist tradition in Muslim imperial science. As a new conception of the world replaced the older cosmology in seventeenth- and eighteenth-century science, Jewish philosophy was obligated again to re-define its doctrine. However, this time no change occurred. The major figures in modern Jewish philosophy either kept silent about creation (implying



that creation had at least for them ceased to be a fundamental article of faith) or they continued to affirm the traditional rabbinic philosophic concept despite the fact that it no longer made sense of what we now know about creation from modern science. Hence, rabbinic Judaism affirms that God created the universe as a belief commandment, but the universe that it says God created (the universe of classical science) is not the universe that exists (the universe of modern science). As such the belief is either false or it asserts mere words that are devoid of any intelligible content.

The doctrine of creation in Jewish philosophy describes God's relation to the kind of universe in which classical astronomers believed. This universe is a finite sphere that contains a series of smaller finite spheres, each of which has a different nature. Between the realm of divinity and the material realm of the earth resides the realm of the celestial beings.

Of the highest realm nothing can be known and nothing more than the following can be said: It is most perfect in every respect (moral as well and ontological); it exists (because to exist is generally better than not to exist); and it is the ultimate cause of everything else (because to cause is generally better than merely to be caused). However, we can have no positive knowledge of what these claims mean, because we are speaking about a world that transcends the limits of human knowledge.

The middle realm consists of spheres of space each of which contains other, smaller spheres of space together with objects that emit light (i.e., stars) that in connection with other stars compose constellations. The constellations are the parts of the bodies of the spheres. In addition, each sphere is governed by a nonspatial entity that determines the natural laws that are specific to the sphere. This nonspatial entity is called the sphere's *intellect*. These intellects are the entities that the Hebrew scriptures call MeLAKHIM (literally, [divine] messengers) but Jews call *angels*.

The lowest realm is our physical, spatial universe. Here material objects are extended in three-dimensional space. Its one globe is the planet earth. Its parts include all the material *substances* on, within, and above the globe from minerals to humans. These substances of the earth are classified most generally as things that are or are not alive. The nonliving substances are the minerals. The living substances include plants, fish, birds, animals, and humans. What makes them alive is the ability to initiate action. Minerals also do things but what they do is always caused by something other than themselves. Plants and animals also do things that are not self-caused, but some of the things they do are self-caused, and these are what define these substances as living.

The entity causally responsible for the life of the substance is called its *soul*. Souls do for material objects in this lowest sphere of earth what intel-

jects do for the celestial objects in the middle realm. In both cases the objects (be they animals or celestial spheres) are said to be *alive* because there is a nonspatially locatable substance that stands in this special kind of causal relationship to the spatially located entity such that the latter is able to move itself to act. Souls then, as Plato said, are *spiritual* substances that are associated with *material* bodies. And, as Aristotle said, these souls are what cause their bodies to be living things.

The science of the laws governing the highest realm is *theology*; the science of the intermediate realm is *astronomy*; and the science of the lowest region of reality is *physics*. Each realm is distinct. Hence, while at the most general level there is some scientific principles that apply to every realm, in every other case the laws of nature in each science are significantly different.

The general laws of deductive logic and of semantics are for the most part the same in all three sciences because the scientists are human beings and they need to speak to each other; all human speech is governed by the same general rules of semantics; and all human thought is governed by the same rules of logic. However, the logically determined and stated laws of nature differ in the different domains of reality precisely because of the inherent differences in the three domains.

While God seems to be subject to laws of morality that are at least similar to the moral standards that govern human life, the divine is not subject to any positive laws of motion. In contrast, the stars and the animals have clear positive laws of motion, but the laws in the two cases are radically different. For example, all material objects are subject to linear *natural motions* that have a finite origin and a finite end, whereas all celestial objects are subject to circular natural motions that endure forever. Furthermore, the nature of all material objects is determined by four kinds of causal principles—the material, the formal, the efficient, and the final. The *material principle* accounts for what they do because of their *matter*, and this principle is more or less coordinated with *efficient causes*. Conversely, the *formal principle* explains what they do because of their *form*, which determines just what kind of things they are, and this defining principle more or less coordinates with *final causes*. In contrast, to the extent that the stars are material they have a different kind of matter than the inhabitants of the earth possess. This different material is judged to be more ethereal or spiritual (i.e., less material) than earthly matter and this greater *spirituality* accounts for why the heavens are eternal. Because they are somewhat material, they exhibit change or motion. However, because their materiality is minimal, their motion is constant and eternal.

By the thirteenth century, scientists were isolating both conceptual and empirical problems with almost every aspect of this picture. By the seventeenth

century cutting edge astronomers and physicists replaced the classical understanding of both earth and heaven with the significantly different modern model or picture of reality. However, the classical conception of theology continued unchanged into the modern period, and that discontinuity between theology and *astrophysics* (which I here use as shorthand for a conjunction of both astronomy and physics) is one significant cause of the failure of modern Jewish philosophy.

What can be called a standard conception of the nature and shape of the universe first emerges in the eighteenth century, when Newton's laws for understanding all motion in the universe were expressed mathematically in the language or symbols of Leibniz.<sup>1</sup> This standard modern physics was then revised in the twentieth century by three revolutions in science—relativity theory, quantum mechanics, and chaos theory.

What follows integrates a standard model of astrophysics (from seventeenth- and eighteenth-century science) with the noted contemporary changes in the model (from the nineteenth and twentieth centuries) to form a very general picture of the universe. The picture will be used to contrast classical from modern astrophysics. The result is a very general description that is intended to be accessible to nonscientists as well as to scientists. Hence, what it says is not altogether accurate. However, no accurate statement can be made in ordinary language. That this state of affairs is the case is itself another cause for the failure of modern Jewish philosophy. Modern astrophysics is communicated in a mathematical language, not ordinary conventional language, and most humanists (and especially Jewish philosophers) are math illiterates. What is especially shocking about this state of affairs is that the level of mathematics required for this general level of understanding is only introductory calculus, a subject taught in most high schools.

In the most general terms, modern science posits a picture of the entire universe in which very small physical objects come together through forces in fields to interact with each other in producing less fundamental entities that move, interact, and form even more complex objects. While the universe is in principle ultimately composed of identical materials subject to identical laws, the different levels of complexity suggest different universes of interaction between particles. Again, the universe is divided into three realms, but the divisions of the modern cosmos do not correspond to the divisions of classical cosmology. Classical cosmology distinguished the universe that is below the stars (namely, the sphere of the earth) and the universe that is above the stars (namely, the Kingdom of God) from the domain of the stars.

As the center or middle level of existence in the classical map of the universe are the heavens, so the center or middle level of existence in the mod-

ern map are the empirically perceived substances that reside on, in, and outside of the planet earth. The realm above them is the cosmos, and the realm below them is the domain of the particles that compose the sensibly perceived world.

The differences in these two models are substantial. In fact they are so great that no one can intelligibly affirm a belief in *creation* (the relationship between God and the world) today who still means by *the world* what the classical philosophers meant.<sup>2</sup>

Modern astronomy conceives of two universes. One is the globe of our cosmos and two is the domain of elements that reside within each empirical object in the cosmos. Our cosmos is believed by many cosmologists<sup>3</sup> to be only one of a vast number of distinct universes, some of which exist simultaneously with our own, many of which existed prior to the origin of our own, and others of which will exist after our own. In contrast, the classical Jewish philosophers worked with two inherited conceptions of reality, radically different both from each other and from modern astronomy. One was dictated by a biblical text that speaks of only a single universe that has a finite origin and will have a finite end. The other was a collection of ancient scientific texts that posited a temporally infinite universe with neither beginning nor end. The difference in sources dictated differences in intellectual focus.

For the classical philosophers the central problem of cosmogony was how to reconcile the belief in a creator who never changes with a created world that has a beginning. In contrast, for modern Jewish philosophy the challenge to traditional belief from science is the reasoned conclusion that even if God created the one universe in which humanity resides, there may be a vast number of other universes and there is no reason to assume that they also are subject to divine governance. Even if God is the deity of our universe, he need not be the deity of all universes. Hence, the belief in God's oneness, even in its most simple sense, seems not to be reasonable.

It does not help to reply that these other worlds are governed by chance. If they can be governed by chance, without any kind of intelligent direction, then the same can be said for our world as well. Nor does it help to reply that the same deity governs all of the worlds. Either he does so by different natural laws or the same natural laws. If these laws are different, then why should they be different? Would not a deity who is perfectly good and wise and able, create a world then create each world as the best? (Is not this universe "the best of all possible worlds"? ) If these worlds are subject to the same laws, then why are these worlds totally independent of each other? Hence, it would seem that our modern conception of the universe is more compatible with either what we call *polytheism* (the belief that there is more than one deity) or

*atheism* (the belief that there is no deity) than it is with Judaism's central faith commitment to *monotheism* (the belief that there is one and only one deity).

The same theological problems arise when we move our reflective gaze from the worlds above to the worlds within each empirical thing. We would assume that a perfect deity would determine one set of laws and parameters, namely, the best set, for as many universes as he creates. However, once we move to the subatomic level, the rules are radically different. At this level of universes, the laws of nature are governed by quantum mechanics rather than Newtonian mechanics. In the Newtonian realm, objects occupy definite positions at definite times, and causes are naturally necessary, that is, if event A is the cause of event B then B cannot be other than it is. In contrast, in the realm of quantum mechanics the location of an object in space and time is always probable and not definite. Furthermore, while groups of events can cause or determine other groups of events, an individual event is always only probable and never definite. Hence, while in a Newtonian universe particular individuals definitely have specific space-time locations, in the universe of quantum mechanics what exists with definition and precision are groups of events and not single events.

The most obvious challenge that quantum mechanics raises against classical Jewish philosophy is to the foundational belief in divine providence. The claim that the creator is good entails that the world(s) he created is good; the claim that the world is good seems to entail that he governs his creation in such a way that every concrete action by a particular individual eventually receives its just reward and punishment; and this claim for individual divine justice seems to entail that individuals exist. However, quantum mechanics suggest that from a divine perspective only collections or groups exist. Hence, while a theologian might argue for collective justice, at the level of the individual, existence seems to be precarious and devoid of moral value.

These are only the first two of a long list of challenges that arise from modern astrophysics that have no simple resolution within the life and worldview of classical Jewish philosophy, and that modern Jewish philosophy has failed to address. There are many others as well.

Astronomy was important for classical Jewish philosophy because its account of the heavens provided a bridge through which theology could make sense of how a perfect, immaterial deity can be related to an inherently imperfect and material humanity. It developed an elaborate *angelology*<sup>4</sup> in which angels were identified with the cosmic intellects of ancient astronomy. Hence, the philosophic-theological doctrine of divine providence was re-

duced to a scientific account of the nature and spatial configuration of the stars (astronomy) in combination with an equally elaborate account of how the spatial-temporal location of stars affects human life on earth (astrology). However, astrology speaks more about certain collections of stars, called *constellations*, than it speaks about stars themselves, and constellations do not really exist.

We humans see constellations because we have good imaginations and fairly bad vision, especially of the sky.<sup>5</sup> Constellations are shapes formed by our minds based on the number of stars we see in a particular region of space. However, how we see what we see is dependent on what we do not see, and what we do not see are two features of outer space. First, there are vastly more stars in these regions than we can actually see with our eyes without the aid of mechanical enhancement (a telescope). Some of the stars cannot be seen because the reflection of light on earth off our atmosphere blocks out the light. (A background field devoid of light is necessary to see an enlightened object.) But even under the best of conditions, our eyes are not good enough to see any object whose light is faint. In general stars appear to us as points of light, but there are in fact so many stars that when the *dots* (for single stars or galaxies) are filled in, the imagined astrological shapes disappear.

Second, the stars only seem to occupy the same regions of space. In fact, constellations are made up of stars and star clusters that are enormously remote from each other, both in time and space, and they only appear to be together because of their variance in size and brightness.<sup>6</sup> Hence, because the classical philosophers identified the Bible's *angels* with science's celestial intellects, modern astronomy offers no help in reinterpreting what angels really are, and astrology plays no useful role in explaining divine providence.<sup>7</sup>

There are other important respects in which the classical conception of the cosmos cannot inform an intelligent modern understanding of creation and the creator. As the physical universe is larger than anything that the classical scientists could imagine, so is it deeper. The classical philosophers conceived of material objects occupying at most three dimensions—length, width, and depth. However, as relativity theory proclaims, there are at least four dimensions to physical reality, and string theory postulates the possibility of many more dimensions.

Based on modern mathematics there is in principle no limit to the number of dimensions into which the motion and extension of objects in space can be mapped. We can only visualize the traditional three dimensions. However, because we know (since the seventeenth century) that geometry and algebra are so coordinated that any algebraic equation can be represented as a geometric object, the number of dimensions an object occupies in

geometry is expressed by the number of variables in the related equation in algebra, and there are no limits on the number of variables that an equation can express.

String theory is still sufficiently controversial in physics that we can, for our purposes, ignore it. But we cannot ignore relativity theory and its affirmation of the centrality of time as a fourth dimension of physical reality. The classical philosophers thought that time had no independent objective reality, but was merely a way of measuring relative change of place between moving objects. Wherever there are two or more entities moving through space, time can be measured. But where this is not the case, there is nothing to measure, and time (which is only the measurement) does not exist. It was this characterization of the nature of motion that provided one primary motive for classical philosophers to assert that the universe as a whole cannot be created in time. In contrast, modern science has no problem affirming temporal creation for particular universes such as the one spoken of in the Hebrew scriptures, but (in common with classical science) relativity theory denies the possibility of considering time as something independent of space. In fact time is simply a distinctive dimension of space, as are the other three traditional dimensions.

What is of theological importance here is the question of whether or not God can act in time. If according to Aristotelian science time has no objective, independent reality, then it is no more intelligible to claim that divine action is subject to time than it is to claim that God has a physical body. However, in modern science (as in the worldview of Roman intellectuals such as the Stoics and other atomists) merely to claim that God's actions are temporal is not a conceptual problem.<sup>8</sup>

Space is no less problematic than time. Modern science posits that space, as well as time, has objective reality, but that space in itself is nothing at all. A *vacuum* is empty space, that is, space devoid of any positive occupant.<sup>9</sup> That the universe consists of positive, physical entities suspended in a real space that is nothing at all was the most difficult affirmation in the material atomism that modern scientists inherited from their ancient sources in Greco-Roman science. Leibniz persistently denied it altogether, and Newton affirmed it with great reluctance. Most modern scientists affirmed a mysterious substance called *ether* solely to avoid the seemingly logical conclusion that something-that-is-not could be real, and they did so despite their inability to find any empirical evidence to support this purely logical or theoretical conjecture.<sup>10</sup> In fact only in the twentieth century, with the advent of relativity theory, did physicists agree to abandon the positivist belief that even empty space must be occupied by something positive.<sup>11</sup> Of all the lega-

cies of classical science, this claim was the hardest for modern scientists to abandon.<sup>12</sup>

So far modern science agrees with classical science. Both would claim that the occupants of space in the physical universe consist primarily of objects extended in space. However, beyond the level of this generality, there is no agreement between classical and modern science. First and foremost, as we have already seen, in classical science the physical universe is not the entire universe, and much that happens in the physical universe is caused by things external to it. In contrast, modern science presupposes (at least as a working assumption for science) that there is no nonphysical universe, so that all causes are material causes initiated by other physical agents.

What is at stake for Jewish philosophy in the question of the nature of space is once again the determination of what it means to believe that God created the universe. Here, however, we need to add the modifying clause “out of nothing.”

The early rabbis determined not only that God created the universe but that he created it from nothing. Furthermore, this negative action is what the scriptures intend. But the question is, what does *nothing* mean? For the classical Jewish philosophers the question of created nothing turned on their Aristotelian analysis of space and matter. However, as we have seen, modern astrophysics has radically different conceptions of both. Hence, only if Jewish philosophers first understand the nature of both matter and space can they make intelligible what the central rabbinic doctrine of creation out of nothing means. Without the science, the professed belief is (to paraphrase the Rambam in the first book of his *Mishneh Torah*) mere verbiage devoid of meaning.<sup>13</sup>

There is no greater difference than this between classical and modern intellectual life: Almost all world religions, including most expressions of Judaism, claim that the so-called plastic world, which means the universe that we perceive by means of our *external senses* (touch, smell, taste, hearing, and sight), is not all of reality; there is also something called the *spiritual world*. Furthermore, most of these religions (including Judaism) are more committed to the value of the spiritual than they are to the plastic.<sup>14</sup> In contrast, it is almost universally agreed by most modern scientists that any claims about real spiritual entities are in principle excluded from the domain of science. This modern scientific dogma does not in and of itself entail that nothing real is spiritual. However, it does entail that any consideration of the spiritual is in principle not science unless it can be reduced to considerations of something materially positive. So, for example, modern science does not in principle discuss the existence of a soul, because it is a spiritual (i.e., non-physical) entity, but modern science can admit such an entity into its domain



of inquiry to the extent (and only to the extent) that it can be reduced to something physical. Hence, speculation about the nature and causal influence of minds becomes a subject of scientific inquiry when the mind is divorced from the action of a spiritual soul and is discussed as a kind of physical energy or as something else physical such as electrical-chemical impulses in the brain or in the nervous system.

Classical science posited the existence of substances as the occupants of space, and not all of them were *physical* (i.e., spatially extended entities). Most of these entities are what the classical scientists called *forms*. A form is something spiritual that accounts for what a substance is, and it functions in relationship to its associated substance as a defining and final cause. Hence, in an Aristotelian universe all things have a qualitative definition in relationship to which they have by nature ends or purposes. This kind of a universe is inherently a moral one, where good and evil can be judged scientifically by the determined ends or purposes that define all natural objects. In contrast, for modern science, there is matter but not form. Consequently, things have no natural qualitative ends or purposes. Things do have causes for what they do and what they are. But these causes are quantitative and mechanical. In no sense are they qualitative and purposeful. However, in principle creation came to be interpreted by the classical Jewish philosophers in terms of forms and final causes. In a world devoid of quality and purpose, this classical notion of creation is unintelligible.

With very few exceptions, modern Jewish philosophers have little to say about creation. Many affirm that creation is a central doctrine of Judaism, but they either do not discuss it at all or they discuss it in the same terms that the classical Jewish philosophers discussed it. However, by now it should be sufficiently clear how dependent that discussion is on a clearly obsolete (and untrue) understanding of reality. Hence, the doctrine of creation desperately needs reinterpretation. Here again the failure of modern Jewish philosophy to say anything intelligible about creation in light of modern science is a significant sign of the intellectual death of Jewish philosophy. To affirm creation or to explain it in terms of an understanding of the cosmos that is obsolete amounts to affirming and explaining nothing at all.

To summarize, the judgments in modern science about the nature of the entire universe are so radically different from the judgments in classical science about the cosmos that the traditional claims made by classical Jewish philosophy about God as the creator of the universe are not simply wrong; they are unintelligible. A major failing of those who call themselves modern Jewish philosophers is that they are so ignorant of modern science that they are not even conscious of how problematic is their professed theology.

In general, theology intends to clarify what religious people think about God the creator, but a theology that operates in ignorance of the nature of the created natural universe in principle clarifies nothing, and since it clarifies nothing, it has no positive value. Hence, ignorance of astronomy and physics is one significant reason why modern Jewish philosophy is dead. It is a field that thinks it can make claims about creation and the creator without any knowledge of what God created. These philosophers have no idea how large and varied the universe is, both in time and in space. They do not seem to know that the entire universe is governed by mathematical and material principles to the exclusion of final causes and so-called spiritual interventions. They also seem to take no cognizance of the fact that everything changes and ultimately dies, including the universe itself. Furthermore, we now (should) know that the universe existed for billions of years before there was a planet earth and a human race upon it. And it will continue to exist for many billions of years after both the planet and its last occupants are gone. Furthermore, the universe is so vast that even if life (let alone human life) can be found elsewhere, it is inconceivable that the existence of humanity played and plays any essential role in defining what God as the creator does.

Some of the other ways that classical Jewish philosophers explained who God is and how he relates depend directly on what is now clearly an obsolete understanding of the physical nature of the universe. The most rational of the medieval philosophers (notably Ralbag in his *Wars of the Lord*) used astrology to understand how and why the spiritually transcendent creator relates to his material creation, but it is now clear that astrology can explain nothing. There are galaxies, but there are no constellations, and the stars, while they are living entities, are mere gases devoid of intellect and consciousness. If there are angels, they are not the stars.

The most popular demonstrations of the existence of God proudly expressed by the classical Jewish philosophers (notably by the Rambam in his *Guide of the Perplexed*) turned on two physical principles, both of which are wrong. The first is the claim that a cause must have greater power than its effect, and second is the claim that a finite agent cannot cause an infinite effect. However, Newton's second law of motion refutes both.<sup>15</sup> Hence an object (even a physical one) that is set in motion (even by accident) will continue to move forever unless it encounters resistance from some other object. Consequently, the universe of physical objects set in the vast vacuum of space can move as they move forever without any nonphysical, infinitely powerful, morally and spiritually perfect, actor to set them in motion. Hence, there seems to be no reason suggested by the physical state of the universe

that compels belief in a creator. Furthermore, should we have reason to want to affirm the existence of a divine creator (which certainly we do on the precedence of the history of Jewish philosophy), neither logic nor science compels anyone rationally to insist that our God (contrary to the Rambam) either is one or is incorporeal. Yet, primarily because of their ignorance of modern astrophysics, most modern Jewish philosophers are not conscious of this theologically critical problem.

Ignorance of astrophysics is by no means the only scientific contributor to the death of modern Jewish philosophy. There are others as well, notably linguistics, psychology, and history. We turn now to linguistics because the problems raised by this science bare most directly both on the problem on which we have so far focused—the doctrine of creation—and on the problem on which we will focus next—the doctrine of revelation.

## Notes

1. Both Leibniz and Newton developed versions of what we today recognize as calculus. However, the modern language by which this system is expressed is closer to what Leibniz developed than it is to Newton's expression. Although Leibniz was by no means a follower of Descartes, his use and understanding of calculus is purely quantitative.

Both Pierre Maupertius and Leonhard Euler rewrote Newton's *Principia* using different versions of Leibniz's notation for calculus. (See Patricia Fara, *Newton: The Making of Genius* [London: Picador (Macmillan), 2002], p. 115.)

In contrast, Newton's technical terms for the laws of physics and astronomy are deeply (and intentionally) informed by his knowledge of alchemy. Consider Newton's concept of *force*. (See Karin Figala, "Newton's Alchemy," in *Cambridge Companion to Newton*, eds. I. Bernard Cohen and George E. Smith [Cambridge, UK: Cambridge University Press, 2002]. Also see Betty Jo Dobbs, *The Foundations of Newton's Alchemy or "The Hunting of the Greene Lyon"* [Cambridge, UK: Cambridge University Press, 1975].)

Our contemporary understanding of classical modern physics is attributed to Newton but it is written in the language developed by Leibniz to express a purely quantitative, mechanical view of astrophysics that is closer in spirit to the philosophy of Descartes than it is to the philosophies of either Leibniz or Newton. (See Fara, *Newton*, chpt. 5, "France," pp. 126–154.) Such is the irony of history, and if history is an expression of the will of God, then God certainly has a very subtle sense of humor.

2. There is a general rule involved in this judgment. If a relationship (R) relating two entities ( $a_1, b_1$ ) changes with respect to only one of the terms of the relationship (say  $b_1$  is replaced by  $b_2$ ), then the relationship itself is not the same. Hence  $R(a_1, b_1)$  is not the same as  $R(a_1, b_2)$ .

3. Notably those who advocate *bubble* or *inflationary* views of the origin of our cosmos.

4. That is, the theory of who and what angels are and what they do.
  5. In other words they are actually only a subset, and not a distinct category, of what astronomers call *asterisms*.
  6. A large (or bright), but remote, star will seem from a single position on earth to be the same size as a very small (or faint), but close, star.
  7. In general, astrology can explain nothing because what does not exist cannot explain what does exist.
  8. There are other compelling reasons for a classical Jewish philosopher to claim that divine temporal action is unintelligible, but they are independent of the nature of time.
  9. As we shall see, it is not *nothing* in the sense that it lacks properties. What follows presupposes this paradox of meaning.
  10. They did so despite their professed claim that unlike classical science, modern science is empirical and experimental.
  11. In this context the term *positivism* means the ancient claim, going back at least to Parmenides, that nothing cannot exist.
  12. Since the early decades of the twentieth century most modern scientists affirm that space is real and is negative, but it is the only negative entity that exists. In general they affirm that space is occupied by objects that are extended in space. In other words, they are *positivists*. However, while this is generally affirmed, it is not affirmed for everything in the universe. For example, the photon is a basic positive entity but it has no mass, which seems to mean that it is not extended in space, and if it is not extended I do not understand what it means to say that it is something positive. My physicist friends tell me that the presumed fact that the electron does not have extension does not entail a denial of the dogma of ontological positivism, but they have as yet not been able to explain to me why not.
  13. One way to explain creation out of nothing would be as follows: The vacuum is not the only nothing of which modern astrophysics speaks. There is also the photon. For our purposes two of its characteristics are important. First, it is the field particle with which the phenomenon of light is associated. Hence, if Genesis is to be read as literally as possible, what God creates on the first day are photons. Second, photons have no mass.
- Mass is the closest counterpart in the apparent ontology of modern physics to the matter of classical physics. Whereas classical physics deals with objects in motion, modern physics deals with motion. Matter is a state of moving objects, but mass is a measurement, namely, the measure of inertia, that is, to an object's resistance to change in motion (i.e., to acceleration). Object-focused classical physics spoke about what an object is (its form) and what is its spatial-temporal location (its matter). In contrast, modern physics speaks about the energy, the velocity, and the mass associated with an object's motion, but not about the objects themselves. If we treat these motions of moving objects as objects, then the mass of a particle would be comparable to the matter of a substance. However, in this case the mass of a photon is zero. In other words, from the perspective of modern physics, when the scriptures say that

God created light out of the darkness, it is saying that he created one kind of nothing (photons) out of another kind of nothing (empty space), but the initial work of creation created nothing positive. (If from nothing comes nothing, then the work itself is nothing.)

There are ways to explain the meaning of this interpretation of the biblical text, but they will all lead us even further from the classical understanding of the universe as a substance constituted by member substances.

14. Some modern religions may deny that the plastic is real at all. Other modern religions affirm that the plastic can be understood only within the framework of the spiritual. Most modern religions affirm that there is one deity worthy of worship and that this deity is a spiritual being.

15. Commonly called “the law of inertia,” it asserts that “the rate at which a body’s momentum changes is equal to the net force acting on that body,” where “the net force” is “the vector sum of all individual interaction forces” that may act on an object. In vector mathematics momentum is represented as the product of a mass moving with a numerically specific (i.e., scalar) velocity. See Richard Wolfson and Jay M. Pasachoff, *Physics: With Modern Physics for Scientists and Engineers* (Reading, MA: Addison-Wesley, 1999), pp. 95–96.

## CHAPTER TWO



# Misunderstanding Linguistics and Epistemology

Classical philosophy paid special attention to how a perfect deity could create an imperfect universe (*cosmogony*). In contrast, modern philosophy focused on how a human mind can know anything external to itself (*epistemology*). Classical philosophy observed the cosmos and birthed a variety of physical sciences such as physics and astronomy. In contrast, modern philosophy reflected on epistemology and generated a variety of human sciences such as psychology and linguistics.

What passed as psychology in classical Jewish philosophy consisted almost exclusively of catalogues of different kinds of mental acts associated with *knowing*. However these lists barely scratched the surface of the wide range of activities that today we would call *mental*. Most notably, they paid relatively little attention to the emotional life of the mind, primarily because they considered the emotions to be passive rather than active (which is why they were called *passions*), and therefore judged the study of them to have little practical value for improving human life. The classical Jewish philosophers assumed that the intellect, which they associated with the brain, was the only active part of the mind. Therefore they believed that the only way for human beings to become happier was to develop their intellects. They had faith that with sufficient training the intellect could govern the emotions, and that rational control over them would maximize human opportunity to achieve personal and collective fulfillment in this imperfect world. Thus, happiness was believed to depend on the improvement of a rational intellect.

The development of the intellect was judged to depend on understanding, controlling, and perfecting two related and distinctly human potentials—one, the ability to think logically, and two, the ability to express thinking rhetorically. Mastery of logic was essential to deducing the eternal truths buried beneath the surface of mere empirical experience, and mastery of language was essential to exhibiting these discoveries in public.

Inheriting the ancient traditions of the Stoics in rhetoric and the Aristotelians in logic, most of the classical Jewish philosophers gave the following integrated general account of language and logic: Languages that express truth are special scientific languages in which each word states something that exists in the mind (an *idea*), and the idea refers to something other than itself. The referent is what the word means, and if the referent exists, then the word is true. Otherwise it is false. Only clear words have clear meanings, which is to say, clear referents. Unclear words also refer but they refer without clarity. As words can be more or less clear, ideas can more or less refer, which entails that they are more or less true.

Some kinds of sentences, namely, declarative sentences, sometimes express ideas that are true or false. These ideas are of two kinds. One, they express relations between ideas which purport to refer to causal connections between the referents of the ideas. Two, they characterize subjects by affirming or denying predicates of them. The subject words refer to substances and the predicate words refer to universals. A *substance* is something that exists in itself, and a *universal* is the something that can exist simultaneously in many things. When a universal is affirmed of a substance it says that the universal exists within the substance, and that these universals either merely happen to be true of the subject (in which case they are called *accidents*) or they define the subject (in which case they are called *essences*). The definition of a subject consists in an exclusive list of every property that is an essence of the subject.

Classical science was understood to consist in forming these kinds of sentences. True definitions list the universals that cause a thing to be what it is, and they determine the way in which one kind of thing causes another kind of thing to be whatever it is. Furthermore, it was understood that causes cause necessarily. They do so precisely because causes are determined solely by what the agents and recipients in the relationship are by definition. Hence, for claims to be considered *scientific* they had to not only be true; they had to be necessarily true.

Modern philosophy makes very different claims about the nature of language and the epistemic quality of scientific judgments. Words are understood to have a sense and/or a referent. Sense is associated with the meaning

of a word, and words can have meaning independent of any referent. These meanings are called *ideas*.<sup>1</sup> Hence, while words can be clear or unclear, or can be appropriate or inappropriate, they cannot be true or false. Only declarative sentences can have a *truth-value*.

In general, declarative sentences affirm or deny relations or connections between ideas. The sentences are true or false to the extent that the relationships they affirm between ideas exist in reality between real referents of the ideas. Unclear ideas refer unclearly to relations involving them. As the ideas can be more or less clear, so the relations between ideas can be more or less clear. Clear sentences are clearly true or false if the relations to which they refer are clearly true or clearly false. Unclear relations between things have associated sentences that express the true ambiguity of the relations. Sentences that are either less clear or more clear than the relations they express are false. Hence, sentences are about relations between things, and these sentences are more or less true insofar as the relations that they affirm or deny are more or less true.

An ideal logical language would be an ideal scientific language. However, there is a major difference between classical and modern philosophy about the nature of this language. For both, the language would consist of simple declarative sentences that assert relations between substances. It would have one and only one term for everything (substance) in reality and assert as many, but no more sentences about relations between terms as there are in fact such relations. However, for modern philosophers every simple sentence in the language would assert something clear and precise. This is because the language must reflect reality and reality is composed of events that are clear and precise. In contrast, for classical philosophers some scientific sentences are precisely unclear. This is because the reality that the language precisely expresses is not clear.<sup>2</sup>

Beyond the ideal logical expression of science, both the classical and the modern philosophers recognized that language also has rhetorical functions, but only the classical philosophers judged rhetoric to have comparable value to logic. According to the classical philosophers an ideal rhetorical language would be an ideal political language. It would consist solely of politically useful sentences that say what is true only in such a way that would be morally best for the welfare of each community of individuals who hear the words.

In general scientific sentences and political sentences are not the same kind of sentences. However, the classical Jewish philosophers understood the Torah to be sufficiently perfect to do both in a single language. This is how they interpreted the ancient rabbinic dictum that "The Torah speaks in the language of human beings."<sup>3</sup>



Modern philosophy, at least as it is practiced in the English-speaking world, has a very different understanding of the proper function of language. A radical distinction is made between the way language is used by different classes of people, and philosophers avoid with fervor any attempt to integrate them. Rhetoric is a tool of relatively base people who use language not to discover and teach truth, but to persuade people to believe whatever it is that the speaker wants people to believe. Sometimes these purposes are for the general good, usually they are not, but even when they are, there is something base about the linguistic use, because it always involves people making claims that they know are not literally true. Into this morally ambiguous category fall all politicians and clergymen. In marked opposition are the scientists and proper philosophers who attempt to speak, with as much clarity as possible, what is true.

At the beginning of the twentieth century, these English-speaking modern philosophers attempted to develop an actual ideal language in which there would be no ambiguity whatsoever. The basic unit of truth was expressed in a sentence form that affirmed relations between words. Each word expressed one and only one meaning, and the relations were equally clear or (which amounts to the same thing) univocal. Furthermore, whereas only a single form of sentence was admitted into the language, words would have different kinds of forms, and each form would express a clear word type that in turn referred to a distinct class within reality. So, for example, if reality consists of universals and particulars, then one kind of word form (e.g., an upper case letter) would name a universal and another kind of word form (e.g., a lowercase letter) would name a particular. There would be as many, but only as many, forms of words as there are kinds of things in reality, and for each thing in reality there would be one and only one word. Again, every word would mean only the single thing to which it refers, and every sentence would refer to one and only one relationship between the things named in the sentence. In such a language every sentence has one meaning and every sentence is either true or false. Any other kind of sentence could not be spoken.

The relations affirmed in the ideal language between things could be contingently or necessarily true. Universals used to define particulars could affirm a necessary connection between them, but such definitions made no claims about the nature of the world. Rather, they were simply rules for the use of language. In contrast, statements that gave information about the world were contingently (not necessarily) true. They affirmed the way the world is, but it is possible that the world could have been different than it is.

For good or for bad there are no such languages. The language of physics is close, but even it cannot say everything clearly. In fact, given the uncertainty principle in quantum mechanics, it is not even clear that a completely clear language could describe reality, since reality itself does not seem to be totally clear. Rather, language should express reality as reality is, which means the words of a language and the sentences in the language should state precisely whatever it is that they want to communicate.

The truth judgments of classical scientists claimed to be necessarily true because the predicates affirmed of the subjects defined the subjects in reality. They made claims about real universals that cause real particulars to be what they are. In general, real things were understood to be what they are and do what they do not primarily because other things act on them but because the subject things simply are by nature or by definition what they are.

Linguistics was the source for this peculiar claim about the nature of reality. Definitions consist of general terms that refer to things that function as both the formal and the efficient cause of particular things being what they are. As such, these defining or essential characteristics exist in the things they define, either as actual constituents of the things or as ideals toward which the subject entity directs all that it does by nature.

In contrast, the truth judgments of modern scientists claim to be contingent truths because the predicates affirmed of the subjects do not define them. They are true because something other than the subject caused them to be true. Furthermore, the causing agents were caused by yet other agents whose action also is contingent. A real cause need not have caused what it caused, and if conditions were slightly different than they were, they would not have acted to bring about our present reality. Hence, how things behave in reality is not determined by the internal properties that define them. Rather, they are determined by external agents that move them to become what they become. Whereas in classical science the necessity affirmed of scientific claims lay in the nature of the things moved, in modern science the necessity lies in laws of relations between things (such as laws of motion in physics and laws of chemical interaction in biology) and not in the things themselves.

These decisions about logic are not arbitrary. How philosophers have understood the nature of language has always had serious consequences for what they believed about reality. Here I will discuss two examples of this judgment. Both play critical roles in how modern Jewish philosophy developed out of classical Jewish philosophy. One example has to do with the critical role that linguistics played in determining how Jewish philosophers judged ontology. The second has to do with how they judged theology.

## Monist Ontology

Almost all Jewish mystics and many Jewish philosophers affirm some form of *monism*, that is, they believe that on final analysis there is one and only one entity in the universe and that entity is God. They argue that although the universe appears to contain a plurality of subjects doing radically different things, the world of appearance is not ultimate reality.

There are many ways to analyze the relationship between this affirmed, divine, and ultimate reality and the other, less real domains that human beings experience. However, that need not concern us here. All that matters is the claim that on final analysis, there is one and only one reality that is God. I want to argue that this religious judgment has its source not in the Torah but in classical logic and linguistics, and these sources are no longer defensible—neither on the grounds of authentic Jewish religious tradition, nor on the grounds of good science.

That the Torah makes no claims about ontological monism is self-evident on any literal reading of the text. The universe of the Hebrew scriptures is populated by God, divine messengers, stars, the earth, the seas, humans, birds, fish, animals, and insects, all of which occupy one of three regions of space.<sup>4</sup> It is possible to interpret these sacred texts to support a monistic interpretation of ontology, and both Jewish philosophers and mystics have done precisely that for centuries. Yet the monism is not evident in the texts themselves. Clearly a pluralistic interpretation of reality is most compatible with a simple or literal reading. At best it can only be claimed that if monism is true then the scriptures can be interpreted to conform to reality. But why would anyone, contrary to both their sensual experience and the words of the Hebrew scriptures, want to so interpret them? I would suggest that the answer is the influence of classical logic and linguistics on all of Jewish philosophy.

The classical model of semantics works best if we restrict our gaze to single term predicates (of the logical form “Ra”). According to classical linguistics, what it means to say (for example) “John is fat” is that the term “fat” refers to the universal “fat,” the term “John” names the particular “John,” and the sentence asserts that the fat resides within John. However, the analysis seems far less intuitive when we look at multiterm predicates (of the logical form “Ra,b”). For example, when we say that “John is to the left of Mary,” it is not clear what is the subject term and what constitutes the predicate expression. One possibility is that “John” is the subject particular and “to the left of Mary” is the predicate universal. But in this case “Mary” is part of a complex universal. Similarly, another possibility is that “Mary” is the subject

particular and “to the right of John” is the predicate universal, and in this case “John” is part of a complex universal. Spatial location alone is enough to generate a great number of sentences (possibly an endless number) in which every subject particular is part of a complex predicate whose particular subject is any other subject predicate.<sup>5</sup> Trying to make this understanding of language coherent leads inevitably to an ontology such as Spinoza’s in which there is one and only one subject, namely, God or the universe as a whole, and everything else exists as a predicate (modification) within this single substance. In other words, Aristotelian linguistics entails a monistic conception of the universe.

However, this analysis does not entail that monism is true or that God is the sole absolute reality. Monism follows only if Aristotelian semantics dictate the only possible model for thinking logically, and clearly it does not. In the end, the only reason to accept monism is an understanding of language that no modern linguist or logician shares.

No philosopher is forced to adopt monism solely on account of the study of modern logic and semantics. In fact the opposite is the case. For example, in modern symbolic logic “John is fat” asserts that an external relationship of exemplification holds between some single individual named “John” and a universal called “fat.” The universal is an idea that may or may not exist in the minds of the speakers and the individual, in some way, is an example of it. Similarly “the earth is the third planet from the sun” asserts a definite spatial location of an individual in relation to a number of other planets with respect to a single star. Neither John nor the earth is defined by these relations, which happen to be true of the grammatical subjects, but the subjects are in no essential way defined or determined by these relations. (Thin John would still be John, and the earth would still be the earth if its location in the solar system changed.) Being fat does affect John; for example, if he dies of a heart attack his fat is one cause of his death. Similarly, the earth’s specific distance from the sun is one reason why no other planet in our solar system supports life, but this aspect does not define the earth. Furthermore, this unique feature of the earth is not necessarily true. (For example, if the sun were different—in size and/or age—then the earth would not support life.)

Briefly, whereas in classical logic and linguistics all affirmations of predicates of subjects are assertions of what is called *internal predication*, in modern logic these affirmations are treated as assertions of *external predication*, and external predication is predisposed to a pluralistic ontology. There may still be good reasons to affirm ontological monism.<sup>6</sup> However, these reasons do not depend on a particular theory of logic and language, especially an obsolete theory, which modern Jewish philosophers, no less than medieval Jewish

philosophers, assume uncritically. In the case of classical philosophy, this assumption has justification, because it reflects thinking about logic and language at its most sophisticated level at that time and place. However, no modern Jewish philosopher is entitled as an informed philosopher to make such an uncritical assumption. Yet, most do, precisely because they tend to be theological monists and they seem unaware of the logical source of this claim.

## Negative Theology

### Maimonides' Argument for Negative Theology

The theory of internal predication in classical logic and linguistics also is a primary source for the distinctive way that modern Jewish philosophers speak about the nature of God. Most classical Jewish philosophers maintained that the words in, and the linguistic rules of, statements about God (*God talk*) differ significantly from how those same word tokens and semantic rules function in all other kinds of sentences. The reason why is the perceived radical difference between how God exists and how anything other than God exists. This ontological judgment, in turn, follows from the foundational faith claim that God is the sole creator of the universe and of everything in it.

The logical supposition behind these judgments is that terms as they apply to subjects may have the same (i.e., a univocal) meaning only to the extent that the subjects described are the same. If they are not, then the use of a single term can apply to the two subjects at best by way of analogy. However, to claim that two sentences—for example, “a is F” and “b is F” where “F” is a single word that means/refers to a universal—are analogous means that “a” and “b” have referents that are similar but not identical. They are identical if whatever is true of one is true of the other, and they are analogous if some but not everything that can be said about the one can be said about the other. However, if nothing that is literally true of the one is literally true of the other, then there are no grounds for asserting an analogy between the two subjects.

No Jewish philosophers of note have ever maintained that any statements about God and any of his/her creatures could have the same meaning, because there is a fundamental difference between them. God is the creator who as such is not created. Hence, he does not exist in the way that a creature exists. Philosophers called this kind of existence *necessary existence*. It is necessary because God exists in virtue of who he is and not in virtue of a cause other than who he is. In contrast, nothing else can be said to exist necessarily because it is created by God. Philosophers called this kind of exist-

tence *contingent existence* because the created things need not have existed, or they do not exist in virtue of what they are in themselves. Hence, to exist contingently is to exist in a radically different way than to exist by necessity, and no difference can be more general and more fundamental than how two entities exist.

Still, most classical Jewish philosophers maintained that there was some analogy between statements about God and other things, because in both cases the subjects are said to exist, and insofar as the verb can be used of both (to exist) God and his creatures have something in common (existence). Only Maimonides argued against this conclusion. He adopted a more radical interpretation of God talk than any other classical Jewish philosopher advocated. He argued that the difference between a creator and his creatures is so fundamental that there can be no valid analogy whatsoever between them. It was Maimonides' position that determined the direction that theology took in, at least, modern Jewish philosophy, and Maimonides' argument for his position rests solidly on the acceptance of Aristotelian logic and semantics.

Maimonides' explanation and justification for his *negative theology* is presented in chapters 52 through 60 of *The Guide of the Perplexed*. His argument can be summarized in the following four distinct parts (A–D) and in ten distinct logical steps (1–10):

- (A) (1) What it means to say that God is the creator of the universe is that everything else exists in virtue of a cause and the first cause in the causal chain is God. However, there is no cause for God's existence, which means that God exists solely because he is God.
- (2) What God is must be radically simple, which means that his essence is simple, which means that it in no sense contains complexity, which entails that it in no sense is divisible into parts. This claim of radical simplicity is what the Torah means when it asserts, "the Lord is one."
- (B) (3) Everything that is created exists because of four causes. First, it exists because it is composed of certain material located in time at a specific place, which is to say that it has a *material cause*. Second, it exists because it has a certain form that causes it to be what it is, which is to say that it has a *formal cause*. Third, it exists because something other than itself moved it to become what it is, which is to say that it has an *efficient cause*. Finally, it exists because it is by nature moved to strive to become some

ideal thing, which is to say that it has a *final cause*. All four causes are not identical with the entity that they cause.

- (4) Because God is one he cannot be subject to any material or formal cause. If he were then what he is would contain a distinct form with distinct matter, and neither the form nor the matter would be identical with what God is. However, then God would be complex, which entails that he would not be the creator.
  - (5) Similarly, because God is one he cannot be subject to any efficient or final cause. If something other than God could move God—either by causing him to do something different than he does (as an efficient cause) or by serving as a model for him to approximate (as a final cause)—then God could become something other than what he already is. If God could become something other than himself and still be God, then God would not be simple, because then there would be something that defines him (namely, an essence that persists unchanged through the change) and there would be something else that does not define him (what he is that ceases to be and what he is that comes to be when he changes). Hence, God would be complex, which again entails that he is not the creator.
- (C) (6) In general, a definition has the grammatical form “S is P,” where “S” is the subject being defined, and “P” is the set of predicates that define the subject. Because of the radical oneness entailed by God being the creator of everything, “S is P” must be an identity claim when “S” names God the creator. Hence, “S is P” simply says “S is S” which is trivially true because the “P” provides no information about the “S.” Whatever is true of God is God. Hence, for example, to say that God creates the world means that God is the creator of the world (an identity claim), but this affirmation does not in any meaningful way say what God does or how God does it. Hence, it is more accurate to say that “God is the creator of the universe” than to say that “God created the universe.” The former claim is a definition of God, while the latter claim purports to provide information about God. Furthermore, the latter statement is misleading in a way that the former is not, because the statement of information wrongly suggests that human beings can know something about God. The same rule applies for any other statement about God, namely, it is less misleading to say that “God is the P” than to say that “God is P.”

- (7) In fact simple affirmative statements about God are more than misleading. They border on being idolatrous. If you say that “God is P,” and you think that “God” and “P” are not just two different words for the same thing, and you understand the full meaning of what you are saying, then you are an idolater. You are in effect claiming that there are at least two deities—the one who is called “God,” and another, “P,” who causes God to be who or what he is.
- (D) (8) The only way to avoid these disastrous logical consequences in speaking about God is to say nothing whatsoever about God. Hence, Maimonides’ argument seems to recommend that worshippers should adopt a stance of total theological agnosticism. However, this option is not acceptable for two primary reasons. First, the Torah itself makes affirmative claims about God, and the Torah in principle cannot be wrong. Two, Jews are commanded to pray to God; Torah legislates what to say in prayer; the legislated prayers contain many affirmative attributions to God, and (again) in principle the Torah cannot be wrong.
- (9) Maimonides proposed semantics for understanding all positive assertions in God talk. It is this proposal that constitutes the critical and the distinctive part of Maimonides’ negative theology. Consider any positive statement “God is F.” “F” cannot express part of a definition of God, because that would deny his simplicity. Nor can “F” assert something that merely happens to be true of God. If that were possible, then God would be subject to causal influences other than his own nature, in which case he would not be the creator. Hence, “F” must assert what God is and all that God is, namely, “the F,” in which case the statement would say nothing informative at all. However, it is a given in classical Jewish philosophy that no statement in the Torah can be so frivolous as to be devoid of content. Hence, “God is F” must say something true and informative. The question is what. Maimonides proposed the following interpretation:
- (10) “F” expresses what for a human being is a moral virtue and its opposite<sup>7</sup>, “H” expresses what for a human being is a vice. The statement “God is F” appears to be a simple proposition, but it is actually a complex conjunction of simple statements. What the conjunction asserts is the following: (a) God is not “H.” (b) “H” is a vice that people ought to avoid. (c) “F” is a virtue that people ought to emulate. Hence, on final analysis, positive statements



about God turn out not to be statements about theology at all; rather they are statements about human ethics.

### **Objections to Maimonides' Argument in Classical Jewish Philosophy**

The objections to Maimonides' theory are obvious and they were raised as soon as the *Guide* was written. First, if Maimonides' understanding of God talk in the Hebrew scriptures is correct, then the Bible tells us nothing about God. What is even worse, the Torah cannot claim to bring anyone closer to knowledge of God than any other book or set of books.

Second, given that the statements about God in the Torah are merely moral affirmations of no theological significance, these statements fail to provide a moral foundation for the professed ethics of the scriptures. On any other, less radical philosophical reading of the Torah the asserted theological claims provide both a moral and a political foundation for the commanded laws. The Torah consists primarily of commands to guide the collective behavior of the nation of Israel and the individual behavior of the citizens of this state. These imperatives are presented as expressions of God's will. They are politically authoritative for two reasons. First, as human beings in particular and as creatures in general, the children of Israel are citizens of a universe whose structure in the opening chapters of Genesis is presented on the model of a polity. The universe is a political state. Furthermore, God not only created it; he is its absolute monarch. Second, Jews are citizens of a nation that God created in the wilderness of Sinai. The words of the Torah constitute the nation's constitution, which, as such, is politically binding on all Israelites, that is, on all Jews.

The authority of the Torah is not only political. It is also ethical. God is understood to be in every respect a perfect being. Hence, what he wills is in principle the best, and if it does not seem so to us, that is because of our intellectual and/or moral imperfection. To be sure, we should not obey a law in the Torah solely because that is what the Torah says. To believe is not a simple act of the will. You cannot believe what you do not believe. However, you should know that if you do not believe what the Torah says, then the problem is yours. Given a choice between human and divine judgment, who could argue that divine wisdom is not greater than human wisdom. Hence, the task of any theologically informed moral individuals is to reexamine their own moral thinking until they come to understand the wisdom of what the Torah commands. Then they may obey the Torah not as slaves who do what they are told to do irrespective of what they believe, but who do what the Torah instructs as free people with wisdom, that is, with reasonable knowledge that what the Torah commands is good because God commands it.

Hence, the moral authority in scripture for the system of commandments is “Thus says the Lord” and “You shall be holy because I the Lord am holy.” Logically, these texts mean that the will of God is the ultimate source of morality, so that any command of that will is necessarily good.

However, if statements about God are, as Maimonides proposes, not really theological but are instead disguised moral imperatives, then the theological claims are reduced to the level of the moral and political claims, and as such they provide no reasonable ground for the authority (moral or political) of the biblically based imperatives that constitute rabbinic law. Furthermore, given Maimonides’ negative theology, where the statements about God tell us nothing positive about him, we cannot even claim that God commands what he commands. To make this assertion implies falsely that we know something about God and we know what it means for God to be a commander. Otherwise, at a pure semantic and logical level, the Torah’s *prima facie* theological claims provide no grounds for the Torah’s political and moral claims.

A good deal of modern Jewish philosophy is an attempt to respond to these objections. We will not here look at any of them in detail. (This after all is a book about problems and not about solutions.) However, the fundamental assumption that underlies all of these discussions of ethics in modern Jewish philosophy is that the problem raised by Maimonides is a real problem. And to be sure it is a real problem given the assumptions about logic and language that the classical Jewish philosophers had. However, if these assumptions are wrong, then there is no real problem to solve, and the assumptions clearly are wrong given any informed knowledge of logic and semantics in modern linguistics.

### **Use of Negative Theology in Modern Jewish Philosophy**

Maimonides’s negative theology determined the future course of Western theology for both Jews and (through its introduction by Thomas Aquinas) Christians. In brief, all of them agreed (for the reasons mentioned previously) that Maimonides’ semantics of God talk must be wrong because it entails both ethical relativity and theological agnosticism. It must be wrong because we clearly know from the Torah reveals belief about God, and belief in God is a fundamental Jewish belief. The problem is how to offer in response an acceptable semantics of God talk, but no one seemed to offer a solution that was acceptable at least to the functioning community of faithful rabbinic Jews.

As this tradition of Jewish theology came down to modern philosophers from at least Kant through Hermann Cohen and his German Jewish disciples, Jewish theology became committed to the thesis that it is reducible to

Jewish ethics, so that claims about God are really claims about the moral value of the rabbinic tradition of Torah interpretation. Hence, for example, Martin Buber, in *I and Thou*, affirms that God is “the eternal Thou” and in no sense an “It” which, in his distinct form of phenomenology, means that nothing informative can be said about God because any informative statement objectifies its subject, and God, on the implicit authority of Maimonides, cannot in principle be objectified. Similarly, Franz Rosenzweig, in *The Star of Redemption*, defines God as that distinctive element of reality who is perpetually coming to be as what he is by not being anything that comes to be. Rosenzweig sees the element world as composed of an infinite number of particular entities that through the infinity of time come to be something from being nothing, and each thing that becomes defines God by not being God. Whatever is, is not God, and God is the only being of whom this can be said. In this case the source of the definition is explicitly credited to Maimonides. More specifically, Rosenzweig’s understanding of God was determined largely by Maimonides’ theory of negative attributes.

Rosenzweig treated Maimonides negative theology as the highest achievement in the history of the Western philosophy of theology. Yet, the theory is, as we have seen, totally dependent on a classical understanding of logic and language, and, as such, it may no longer be treated, in any sense, philosophically compelling after the radical changes that have taken place in modern logic and modern linguistics.

## Conclusion

In summary, modern Jewish philosophers tend to accept uncritically a tradition of theology that claims that statements about God belong properly to ethics rather than to physics and ontology. This tradition goes back more than a century ago in the neo-Kantian writings of Hermann Cohen. Furthermore, Cohen’s ethical interpretation of Jewish theology is a distinctive interpretation of Maimonides’ theory of negative theology. Maimonides’ negative theology is a set of radical disclaimers about the ability of human beings to understand statements about God in consequence of his rigorous application of classical logic and linguistics. What is important for our purposes is that despite significant developments in both of these academic disciplines, especially in the twentieth century, modern Jewish philosophers still invoke the authority of Maimonides and Cohen for pronouncements about God talk without any reference to the modern history of both fields. Now to their credit as philosophers, Maimonides’ use of logic and rhetoric reflect the state of knowledge of these sciences at the time that he wrote, and Cohen was a cut-

ting edge logician of his time. However, the field of logic did not follow the path that Cohen proposed. Perhaps that is a mistake in the history of philosophy. But this is not what contemporary Jewish philosophers argue. Instead, they simply ignore the history altogether. They follow Cohen not because they have a rigorously reasoned defense of Cohen's logic over the now normative approaches in logic and language. Rather, they follow Cohen primarily (or so it would seem) because they do not know the relevant disciplines, and this ignorance (if ignorance is what it is) is itself a significant contributor to the irrelevance (and therefore death) of modern Jewish philosophy.

## Notes

1. The relationship between what the classical philosophers called *ideas* (things that exist in the mind) and what the moderns call *ideas* (meanings of terms) is an open subject of dispute in the history of modern epistemology. There is no need here to say anything more definitive.

2. An alternative interpretation of classical linguistics would be that it is not that the reality in question is unclear but that the ability of a human mind to understand that reality is too limited to understand it clearly. If human intellect could attain the level of divine intellect, then such a perfected human being would be able to express with clarity what lesser people can express only without clarity.

3. BT Yebamot 71a and Baba Metsia' 31b. See Moses Maimonides, *The Guide for the Perplexed*, 1:26.

4. The earth, the heavens above or encircling the earth, and the realms within or below the earth.

5. For example, "the earth is the third planet from the sun" and "the sun is an undistinguished star in the Milky Way" turn out, in Aristotelian linguistics, to entail that our entire solar system is a predicate of the earth, and the earth is a predicate of our galaxy.

6. We will discuss some of them at the end of this book when we consider how constructively to rethink Jewish philosophy.

7. That H and F are "opposite" means that H is true if and only if F is false.



## CHAPTER THREE



# Misunderstanding Psychology

### Introduction

The philosophical implications of the transition from classical to modern psychology<sup>1</sup> have been less dire for Jewish philosophy than were the changes from physics, linguistics, and epistemology. There is a primary reason for this difference: Unlike the case with the other modern sciences, Jewish philosophers paid attention to psychology. These philosophers knew early twentieth-century psychology and assimilated its main theses into their speculation about human nature. This is especially true of the work of Freud and his followers. However, the case of the Freudians was easy to assimilate for two primary reasons. First, the Freudians wrote in the vernacular rather than in a mathematical language. As such, an intelligent amateur could read and comprehend what psychologists had to say. Second, while the Freudians offered naturalist rather than *supernaturalist* accounts of the life of the mind, they were not ontologically *materialist*. They assumed that reality is both mental and physical, and their studies of human nature focused on the mind as a mental rather than as a physical entity. As such, the Freudian conception of the mind was closer to the accepted psychology of the classical Jewish philosophers than was the materialist accounts that superseded Freud's so-called talking cure for mental illness in the Anglo-American tradition of material science.

By *material science*, I mean any science whose operative causal models are exclusively quantitative and reductionist. For these scientists, qualities are

reducible to quantitative measurements. On their assumed ontology, the mind is the brain and mental life consists of neural-chemical responses on a complex path of nerves whose center of control is the brain. Into this category fall a number of approaches to understanding human nature, including several varieties of the behaviorist school of B. F. Skinner. However, this chapter will not focus on Skinner and his followers.

Behaviorist psychology is certainly closer to modern science and more remote from classical Jewish philosophy than is Freudian psychology. However, from an early twenty-first-century perspective, both kinds of psychology seem too faulty to be treated as a primary authority for what we think we know about human nature. Rather, this chapter will concentrate on the neo-Darwinian normative tradition of evolutionary psychology. It is this approach to the nature of the human and the mind that seems most remote from classical Jewish philosophy. More than physics and linguistics, it raises challenges to accepted understandings in Jewish philosophy of what it means to be human. Yet, recent publications by Jewish philosophers exhibit no familiarity with evolutionary psychology. These philosophers write as if the challenges to our understanding of being human come almost exclusively from Germany more than a century ago.

### Example of Vision

Let me begin my discussion of the problems introduced by modern psychology for understanding human nature with the example of vision. Vision is important for our purposes for two reasons. First, it was a paradigm of physical sensation and was generally regarded as the primary source for all human understanding. Second, the analysis of vision provided the primary religious metaphor for understanding prophetic wisdom. The highest levels of human comprehension from divine inspiration, over and beyond natural human experience, were imaged as enlightenment. While the term *enlightenment* was a metaphor for a wisdom that transcended human comprehension, it was intelligible as a metaphor only on the model of mundane vision. Hence, how Jewish philosophers conceived of ordinary, human, and this-worldly light and enlightenment structured the way they imagined divine light and revelation. In general, how Jewish philosophers understood revelation was intimately connected with how scientists explained light and vision. Hence, changes in the scientific understanding of physical light and human vision should have changed the way Jewish philosophers understood revelation and redemption, and so it did until the modern period. However, current conceptions of revelation, redemption, and the end of days are not significantly different from classical conceptions. That

is because these eschatological themes in modern Jewish philosophy are not informed by modern scientific physical accounts of sensation and cognition.

### History of Vision

It has always been known that sight involves the transmission of light between a perceived object and a perceiving mind by means of eyes. Just how this process works and what organs are involved in it have been topics of philosophical speculation since ancient times. Today we understand perception sufficiently well to look back on this intellectual history and distinguish what our ancestors got wrong and what they got right. In fact much of it was wrong until the seventeenth-century natural philosopher and mathematician Johannes Kepler formulated a systematic, coherent, and mostly correct interpretation of how human beings see what they see. Today we know more about the nature of light than Kepler did, but our understanding of the physical mechanisms by which visual images are transmitted from outside of the mind to consciousness remains what Kepler taught.<sup>2</sup>

An adequate account of vision integrates (a) what physics teaches about light with how light moves through different media, (b) what mathematics teaches about the geometry of bending vectors through lenses, and (c) what psychology teaches about the anatomy of the brain. In classical science more attention was paid to physics and geometry than to psychology, and there was relatively little sharing of information between the physicists,<sup>3</sup> the anatomists,<sup>4</sup> and the mathematicians.<sup>5</sup> In terms of the physics of vision, three general approaches emerged.

The first and least influential theory was that of the atomists Democritus,<sup>6</sup> Epicurus,<sup>7</sup> and Lucretius.<sup>8</sup> The view they advocated, called *intromission*, asserts that visual images have their origin in the physical objects they represent. By their account the objects seen give off light: this light passes from the objects through the air through the eye into the perception of the viewer.

The second and most influential theory was the so-called extramission account advocated by Plato.<sup>9</sup> In direct contradiction of the atomist view, Plato claimed that light, which he judged to be an elemental form of fire, passes from the soul of the perceiver through the eye into the air to enlighten the object seen. This Platonic account is the conceptual source of much classical Jewish philosophy. It was adopted by both Hellenistic Christians and early Muslims.<sup>10</sup> It also plays a critical role in the classical religious descriptions of redemption as analogous to the conquest of a cosmic primordial light over a universal cosmic darkness.<sup>11</sup>

The third theory was that of Aristotle,<sup>12</sup> the Stoics,<sup>13</sup> and Galen.<sup>14</sup> Their view was an attempt to synthesize what seemed convincing in the first two



views. However, of all the classical theories of optics, despite the reputation of its advocates, this view was the furthest from a correct physical account of vision. Here sight results from the interaction of both the object seen and the seeing object (the eye) in the physical medium (the air) that connects them. Again, almost everything about this view was wrong, and in at least this case it is fortunate that religious thinkers paid more attention to Plato than they did to Aristotle. However, they would have achieved a better understanding of the true nature of light and vision if they had more respect for the atomists.

One Muslim thinker who did follow the atomists was Alhazen.<sup>15</sup> It was through the influence of the Latin translation of his *Kitab al-Manadhir* (*Book of Optics*) that Kepler was directed away from the accepted authority of the Platonists to formulate a new (materialist) account of vision. Perhaps even more than Isaac Newton's *Principia Mathematica*, it was Kepler's account of vision that marks the beginning of modern science.

### Physics of Vision

Let me summarize the modern understanding of vision. However, I will not present it as Kepler introduced it. Rather, I will state it as a narrative that integrates the Kepler account of how human beings see with what we now know about the universe in modern physics and what we know from psychology about the brain.

Classical science assumed that the universe originates (whether or not it is created in time) from a primal matter connected with a primal thought (either what the Platonists called an *idea* or what the Aristotelians called a *form*). Modern science assumes that the universe originates in something called *energy* ( $e$ ) which is best defined ontologically neither as a thing (such as matter) nor a concept (such as a form) but mathematically as a specific ratio between a mass ( $m$ ) and its velocity ( $v$ ) such that the energy is directly proportional to the mass and to the square of its velocity.<sup>16</sup> Do not think, because of this definition, that mass and velocity are more basic than energy. Mass is defined not as an ontological thing but as a mathematical ratio between energy and velocity,<sup>17</sup> and velocity is a mathematical ratio between energy and mass.<sup>18</sup>

It is already obvious that modern science's account of the universe is anything but commonsensical. Classical science's *matter* is something like what the vague term *stuff* means in the vernacular. But modern science's mass is not stuff. For example, a photon ( $\gamma$ ) is an individual quantum of electromagnetic radiation that, unlike other kinds of fundamental energy, has no electrical charge and (more important for our purposes) has no mass. In classical science what it meant to say that something is physical is that it has

matter, and in virtue of having matter it has weight and has positive extension in space. In contrast, in modern science a photon is understood to be something physical that has no mass. Similarly its location in space is only as a point, but a point has no dimensionality because it has no extension. Hence, rather than imagining mass as a thing it is better to imagine it like velocity, which is a measure of motion. But common sense suggests that measures are not things that exist. Yet velocity defines energy and energy seems to be something that does exist.

The nonintuitive nature of energy is critical for us, since light is a form of pure energy. Visible light is a small subset of the electromagnetic energy that fills the universe. More precisely it is energy that radiates in the form of a wave (or particle stream) that is itself an effect of the motion of electric charges that the energy exhibits in an electric field.<sup>19</sup> These waves come in a seemingly endless variety of lengths. The interaction of the functioning of our eyes, our optic nerves, and our brains limits human beings to seeing light whose wavelengths are between 350 nm and 800 nm. However, this is not the only light that exists, and it is by far not the only light that does work in the universe. We observe the effects of some light whose wavelength is below our visual threshold (ultraviolet light) and some light whose wavelength is above our visual threshold (infrared light), and we speak of the totality of this light as *radiation*. It is as radiation that modern scientists know the universe, and all of it is thought to be physical. However, once again, here the term *physical* is not commonsensical. It means that it is not, in religious terms, something *spiritual* or *supernatural*. However, most of it is not sensual. No human naturally can see it, hear it, smell it, taste it, or touch it without the aid of artificial instruments. Therefore, it is not, strictly speaking, *empirical*. Yet, its effects are empirical, and that is how modern scientists know that it exists.

It is in this way that we know that photons exist. They have no charge and they have no mass, yet they have a measurable frequency. That frequency is the frequency of light ( $\nu$ ). The relation between a photon's energy and its frequency is a constant, called the Planck constant,  $6.626 \times 10^{-34}$  joules/second, and, like the God of classical science, it is proclaimed by (modern) scientists to be the one known constant in the physical universe.<sup>20</sup>

Since everything in the universe is composed from elementary particles, and since the motion of all electrically charged particles emits photons, all of these kinds of objects in motion emit light energy into space in the form of waves. These waves extend in all directions through all kinds of media, including the waters below and the air above the surface of the planet earth. These waves are bent and focused through the lens of the eye, and then they

are transformed on the retina into electrical-chemical nerve impulses. Then the vision impulses continue their journey along a network of neurons that run from the optic nerve to the brain. It is in the brain that the impulses are interpreted by the mind as images that purport to reflect objects as they exist external to the mind.<sup>21</sup>

For now our attention is focused only on the act of human sight itself. Seeing turns out to be a fairly complex procedure of transmission of light waves outside of the seeing subject through the eye to the brain where the data transformed by the brain is interpreted to reflect external-to-the-mind reality. Critical in the telling of this story is the complex composition of the eye. We have two eyeballs that are each divided into three distinct regions. One is the white of the eye (the sclera) that contains the cornea, which is a transparent membrane in front of the eye. It is through the cornea that light enters the body. Two is the choroid in which an iris is connected to the pupil that contains the lens. The iris controls the amount of light that is admitted through the pupil and bent by the lens. Three is the retina on which the bent light reaches a set of rods and cones that are visual receptors that transform the rays into nerve impulses that are transmitted on neurons along the optic nerve to the brain.<sup>22</sup>

The length of the wave of light is critical for human vision, because human eyes only admit light within a narrow range. As noted previously, if the wavelength is less than 350 nm then the light is ultraviolet; if it is more than 800 nm, then it is infrared; and the range of visible light falls only between the ultraviolet and the infrared. Hence, human beings can only see a limited range of the external reality of light and what the eyes see is significantly different from what the human mind judges to exist in physical reality.

How we humans came to have the kind of very complex eyes we have and why they provide the kind of peculiar vision of reality we see is one of many questions that evolutionary psychology<sup>23</sup> attempts to answer. The answer is a story about gradual accumulative action guided by the principle of *natural selection* on small genetic *variations* of whole populations.

### Evolution of Vision

The theory of natural selection was first proposed by Charles Darwin and Alfred Russel Wallace in 1858 in significantly different papers presented to the British Royal Society. Both natural philosophers offered natural selection as the primary mechanism to account for evolution, but they had different understandings of just what natural selection is. While Wallace's variation is interesting, today no less than 150 years ago, our focus will be limited solely to the Darwinian interpretation.

Darwin published his theory in 1859 in *The Origin of Species by Means of Natural Selection*. In the form in which it first appeared, evolution seems by modern standards to be more of a philosophy than a science. By *philosophy* I mean a theory intended to make intelligible, some observed phenomena whose explanation lacks a clearly defined mathematical method of testing. Darwin presented a historical theory (*natural selection*) to explain observed natural variations in existing species of organic entities (plants and animals) and the fossil record of the history of their ancestors. However, the account lacked any mathematical way to explain observed *variations*. Only once a mathematical explanation could be given of generations would the evolution of living things be considered scientific and that account did not appear until 1937.<sup>24</sup>

In the mid-nineteenth century an obscure Augustian monk named Gregor Mendel (1822–1884) conducted carefully controlled studies in botany on the heredity of edible peas. At this time Mendel published his conclusions and the academic world of botany ignored them. Those studies were rediscovered in the early twentieth century and over the course of another quarter of a century they were generalized and harmonized with Darwin's philosophical account of variation to formulate a modern synthesis of botany and evolutionary biology, what we recognize today as the modern theory of *genetics*. It is this genetics that is the heart of evolutionary psychology.

Darwin's contribution to modern evolutionary theory is the judgment that individual members of a species undergo slight changes in their genetic makeup that are passed on to their offspring in mechanical, mathematical ways, and the contribution of Mendel is his explanation of these ways. In time, after a great many generations, these accumulated changes will be sufficiently great that the remote descendants of the original parents will no longer belong to the same species, which minimally means that they will be sufficiently different that there cannot be successful reproduction of offspring between members of the two groups with each other.

It is this gradual, continuous process of variation in species that is the central claim of Darwin's principle of natural selection. It is a theory of selection, because not all variants within a species survive. The fossil record of the history of the planet earth shows that there are many species existing today that did not exist in the remote past, and many species that did exist in that past no longer exist. Natural selection is an explanation of where the new species came from, namely, they evolved through gradual change in biological nature accumulated over a great many generations.

Darwin's second principle, *survival of the fittest*, explains what happened to the now extinct ancestral species. Darwin imaged a war in which different

species fought each other to survive. All species eat some other species as food and are sought themselves as food by yet other species. The struggle is by the living food to escape consumption and the eaters to catch their food. Those who succeed in this game survive. Those who don't succeed will die. For example, an eater species may undergo a change that increases its success in catching food. More of its offspring will survive to continue to hunt. And when food becomes scarce, the less *fit* competitors will die and/or fail to reproduce successfully.

Of course hunting skill is not the only way to win the war for species survival. Competition, in many indirect ways, has potential payoffs for producing healthy offspring. All of these natural, biological enhancements play a role in this game of survival where one species' success is always paid for by other species. It is in this way that the more fit variants survive and eventually become the dominant populace within their species. However, the question remains, which Darwin himself could not answer, how do the variants themselves develop? It is Mendel's mechanism for explaining genetic change that was eventually adopted by Darwin's intellectual descendants to explain the observed changes in inheritance.

Basically, Mendel presented a calculation by which in time, dominant traits ( $d$ ) would dominate offspring over recessive traits ( $r$ ). The offspring inherit from their parents matching sets of traits, such that for every single trait that one parent has the other parent has the same kind of trait. More precisely, the offspring has the same kind, but not necessarily the same trait. One trait could be recessive and the other trait could be dominant. It is at this level of understanding that the very simple mathematical rules apply. Considering a single trait, there is strictly by chance a 50–50 probability that each parent will have a  $d$  or an  $r$  related trait. Hence, again strictly by chance, there are four equally likely possibilities for the gene set in the offspring:  $dd$ ,  $dr$ ,  $rd$ , and  $rr$ . Offspring with  $rr$  will exhibit the recessive trait, but all other children will exhibit the dominant trait. So, purely by chance, the ratio of those with the dominant trait over the recessive trait will be 3 to 1. If  $r$  is a trait that increases an individual's chance to survive, then, in the course of time, the 3 to 1 ratio will change, in  $r$ 's favor. Similarly if  $d$  is the superior trait, then in the course of a significantly shorter time the ratio will also change in  $d$ 's favor.

There have been some biologists who have argued that Mendel's thesis is the only thesis relevant to evolution. They maintain that genetic change occurs strictly by chance in this way, and Darwin's principles add nothing scientific to the explanation. Biologists who argue in this way are called *mutationists*. *Mutationism* is a dignified scientific position that has been held by

many distinguished scientists, including the leading exponents of Mendel's view in the 1890s—Thomas Hunt Morgan, Hugo de Vries, and William Bateson among others. However, today it is widely accepted by almost all geneticists that at least Darwin's natural selection principle is essential to any adequate account of heredity.<sup>25</sup>

Let us now return to our example of vision. It provided one reason why Alfred Russel Wallace was reluctant to follow in Darwin's steps and publish his observations about evolution. The nature of the eye suggested that neither pure chance nor chance enhanced by natural selection were sufficient to account for a natural phenomena like human vision. In fact it seemed to suggest that something that might be called intentional *intelligent design* was a necessary condition to account for the phenomena. In general, vision just seemed to be too complex to have developed in small gradual steps in the way that Darwin suggested. Each part of the eye plays its own distinct role in making vision possible. If any of these parts were missing or in the slightest way different than they are, then (or so it would seem) vision would not be less excellent; it simply would not exist at all.<sup>26</sup>

Again, it seems unlikely that the eye developed in the way that Darwinian evolution suggested. According to Darwinism the development would have had to take place in distinct stages and at each stage the eye would have had to be sufficiently useful that nature would continue to select it over other alternatives. However, it would seem that only a perfected eye can see,<sup>27</sup> and it is hard to see what other functions beside vision that genetically earlier imperfect eyes could have served to have warranted selection by nature. Given the entire development, it is clear how each part contributes to vision, but it seemed inexplicable how the complex whole could have been achieved through gradual steps without some kind of intelligence guiding the progress. However, that is precisely what Darwinian evolution claims, namely, that natural selection can explain how something as complex as vision can develop continuously and gradually by purely mechanical means.

The issue is still not resolved to everyone's satisfaction. Although most biologists and psychologists believe, with little doubt, that some version of Darwin's explanation is necessary to supplement genetics,<sup>28</sup> there are large segments of the population of the world who know at least something about Darwinism and reject it. Of course there are many religious people who know nothing about modern science and reject Darwinism. However, this is not everyone, and a not-insignificant minority of modern scientists themselves also have some doubts at least about the contemporary orthodoxy of so-called modern synthesis of genetics and evolution that constitutes normative Darwinism.<sup>29</sup>

In general, the metaphysical problem that phenomena like the biological evolution of eyes raises is not in itself new. Similar issues arose in classical Jewish philosophy as well. However, in the classical case the focus was on cosmology and cosmogony. Then the question was, is the universe as a whole contingent or necessary. The dominant form of classical physics (that of Aristotle in his *Physics* and *Metaphysics*) claimed that the existence of the universe as a whole is necessary and the chain of efficient and final causation points to the necessary existence of a first cause with whom God can be identified. Conversely, the dominant form of classical astronomy and cosmology (that of Plato in his *Timaeus*) claimed that the existence of the universe as a whole is by chance and design. In terms of efficient cause it exists by chance and everything in it is contingent. However, in terms of final cause, it exists by the design and intelligent intent of a single creator deity. The difference between the two accounts was important for classical Jewish philosophy in understanding the nature of the dogma of creation and understanding God's critical role as the creator. However, both forms of classical science agreed that the creator God described in the Hebrew scriptures exists.<sup>30</sup>

With respect to modern science, the primary challenge to understanding what the scriptures could intend by affirming a world-creating single deity arises from biology even more than from physics. What is given by all participants in the discussion is that much in the universe, including the existence of human beings and especially the seemingly unique functions of human intellect, are sufficiently complex and well coordinated to suggest creation by a cosmic designer. However, this same universe also exhibits considerable lack of intelligence. The humanity that creates beauty and good and discovers truth also creates what is ugly and evil and believes endless things that are false. If the former data suggests the existence of a divine designer, the latter data minimally falsifies this assumption.

For the classical Jewish philosophers, Aristotelianism suggested a necessary universe that admitted no room for a creating deity, while Stoicism suggested a chance universe that admitted no possibility of purpose or meaning. Most classical Jewish philosophers opted for a form of Platonism that reconciled differences between the Aristotelian and the Stoic and introduced a new and unique way of understanding the nature of both the creator and his creation. However, no modern Jewish philosopher can simply accept the traditional interpretation of creation on purely textual grounds. That interpretation of the classical Jewish texts depends entirely on a science that no longer has any authority as truth. What is required of Jewish philosophy is that it reexamines its dearest conclusions in the light of a radically different modern science. In the modern context, the relevant sciences for this set of

questions are biology and psychology rather than physics and astronomy. As Aristotelian physics challenged classical Jewish philosophy, so Darwinian evolution should challenge modern Jewish philosophy. Orthodox Darwinism posits a materialist universe devoid of purpose in which natural selection provides the primary causal principle for the evolution of all organic life on earth. Darwinism's primary competitor for a scientific account of evolution has been mutationism, and mutationism (like Epicureanism) suggests a purposeless universe of pure chance in which there is no intelligible role for a divine creator. What is needed is a third option—one that synthesizes what is discerned to be valid in shared religious textual authorities with what is judged to be true in modern evolutionary psychology—that can be called, as some have suggested, *theistic evolution*.<sup>31</sup> So far the modern philosophers who have looked for this synthesis have been Christian. That a significant Jewish voice is not present in these discussions is one more sign of the death of Jewish philosophy.

### Issues for Jewish Philosophy

There are a number of issues that evolutionary psychology introduces that should challenge the way that Jews think about their religious commitment. To be sure, there are many Jews who study evolutionary psychology and a few of them pay close attention to its cultural and moral implications. But almost none of them know or even care about the implications of this new science for Jewish philosophy. In contrast, the Jewish philosophers who do understand the need to think about the nature of the human, no less than about the nature of the divine, still think about psychology in scientifically obsolete ways. Let me now list in a somewhat more systematic form five of these challenges.

#### Beyond Empiricism

Contrary to popular opinion seeing is not believing. As the analysis of vision makes clear, what we see is not what exists external to the mind. Yet, this ontological claim is the most common shared insight in all major world religions. While the Abrahamic religions<sup>32</sup> all are committed to a similar range of ontological views in which reality is understood as an interaction between the divine and the human within the world, these are not all of the religions of the world. Obvious examples of variants are Native American religions on the two American continents and the many different religions of Asia. Their differences are so sufficiently profound that it is problematic to apply a single term of religion to all of them. They do share in common a commitment



to public and private liturgy, but what that liturgy means to the worshippers is so profoundly different, that it seems entirely superficial, if not misleading, to use the same terms *ritual* and *liturgy* for what traditional Ashkenazi Jews do and what Buddhists do. However, there is at least one view that all of the religions of the world share in common. It is that this so-called plastic world, which means the world our human minds construct out of the reports of our five external senses, is not reality. Perhaps then, if we insist on using the singular term *religion* to apply to all of these religions, the only shared meaning the term can have is this—*reality* is more than what we sense it to be.

Yet, if a rejection of *naïve empiricism* is what defines religions as religion, then the modern sciences also are religion. Physics is because it affirms that reality consists of small units of energy that move as waves in fields of space. And so is psychology, because it affirms that the world we observe is constructed out of waves of light that are filtered through the lens of our eyes into neural responses that are carried on our optic nerves to our brains which interpret these signals for our mind's eye.<sup>33</sup>

The closest a modern scientist can come to affirming empiricism is by affirming an ontology known as *critical realism*.<sup>34</sup> Critical realism claims that while external-to-the-mind reality is not what our seeing minds perceive those perceived constructions sufficiently represent what is reality to enable us to survive in the world. On the interpretation of most Darwinians, our senses and brains have evolved in precisely the way that they have to enable us to survive in nature. What we see may not be “there” literally as we see it, but what we see is a very practical way to survive in the presence of whatever it is that is out there, for if it were not we would as a species be extinct.<sup>35</sup>

However, are not our ways of thinking about God also an instance of critical realism's claim that our minds work in a most pragmatic way to promote our survival and even our prosperity as a species? If that were not the case, why has belief in some kind of deity been so wide spread in the history of human civilizations? These are vital questions that ought to be at the top of the agenda for reflection by modern Jewish philosophers. Yet, they are not and they are not so primarily because most modern Jewish philosophers have not paid sufficient attention to the sciences, especially in this case, to evolutionary biology and psychology. It is this void that is symptomatic of the death of Jewish philosophy. It is dead not because it cannot ask good questions; it is dead because it does not ask them.

### **Beyond Mind-Body Dualism**

Most classical Jewish philosophers affirmed the existence of at least two distinct but possibly related universes—a material world and a spiritual world.

The *material world* consists of entities that are material, which means that they are physically extended in space as well as in time. In contrast, the *spiritual world* consists of nonmaterial entities who, while not physical, nonetheless profoundly affect the material world. These spiritual entities include objects such as numbers and other kinds of thoughts that exist in other spiritual entities called *minds* and/or *souls* that are closely connected to certain kinds of material living things such as humans, animals, and even plants. But there are other *minds* or *souls* that are free of bodies who, as pure spiritual beings, function as major causal determiners of what happens in the physical world, namely, God, angels, and even demons.

We began this chapter with Newton's judgment that everything is energy. This affirmation suggests that reality cannot be divided in the classical way. Energy in itself is neither mental nor material. It is something distinct. Yet, no modern Jewish philosophers have reached this conclusion. Some general philosophers said that everything is mental or spiritual and the material is reducible to mental analysis. Conversely other general philosophers have said the opposite, namely, that everything is material and the mental and the spiritual are reducible to physical analysis. But modern physics suggests the rejection of both philosophical positions as incomplete. Beyond mind and matter is a common reality that can be interpreted, depending on the issue, as mental or spiritual or material or physical. These different categories are only partial perspectives on the single, ultimate reality.

This *monistic* conception of reality has guided the ontology of the few Jewish philosophers who have, at least in this respect, exhibited some sophisticated knowledge of modern science. In the case of seventeenth-century physics the most notable example was Spinoza, and in the case of twentieth-century biology the most notable example was Hans Jonas.<sup>36</sup> However, Jonas has been ignored almost totally by contemporary Jewish philosophers, and in the case of Spinoza, attention has focused on his ethical and political writings far more than on his physics and metaphysics.

### **Beyond Mechanistic Science**

For all of its claims to philosophical neutrality it should be clear to all who read about the field that the practitioners of modern science have a strong methodological and ontological commitment to what is called "bottom up causation" as well as to "physical reductionism." Bottom up causation simply means that the way to explain what something is is to break it down into its component parts and discern how the parts can be reconstructed into their original complex whole. Physical reductionism means that the investigator will attempt to establish a constant conjunction between nonphysical phenomena

(that the scientist is not equipped to analyze) and physical phenomena (that the scientist is equipped to analyze), and judge the physical explanation to say everything that can and/or need be said about the phenomena. Hence, for example, since thoughts and emotions can be analyzed in terms of chemical reactions in brain cells and on neuron networks, there is no reason not to make a slight logical jump and simply say that the brain is the mind and the electrical-chemical responses are the mental life. Mind and thought is just the way that our brains bring the perceived reality to consciousness.

What is challenging about this view of psychic reality is that it seems to entail the falsification of any number of precious judgments in the history of classical Jewish philosophy. Most importantly this way of viewing mental reality throws into doubt the existence of a soul, and doubts about the reality of the soul undercuts any number of religious beliefs that, at least in theory, rest on the assumption of the soul's reality. Among them are notions of objective moral valuation and inherent human dignity. Similarly this view of the human mind raises doubts about a great deal of Jewish belief about redemption, salvation, and the end of days. Almost without exception classical Jewish philosophy presupposed that there is a nonphysical, essential component of each human being (the soul) that at least has the potential to survive the decay of the body, and that the post-physical state of the person depends on his moral and intellectual behavior in this material world.

To be sure, modern scientists do have their own distinctive visions of an end of days.<sup>37</sup> But this vision has nothing to do with morality. Rather it is all about practical know-how. How, for example, can we change genes to extend life and health almost endlessly? The issue is not morality. It is not even the existence of the body.<sup>38</sup> The issue is purely mechanical, namely, how practically can we make the changes. The question, should we do it if we can do it, is dismissed by most of these scientists as irrelevant. After all, when in history has a new technology not been used when it can be used for what human beings perceive to be in their best interests?

At the heart of this issue is the question of human nature. The danger in altering genes is that it may introduce changes into human nature that cannot be reversed. Such changes must be made with extreme care. However, it may be reasonably objected, who knows what human nature is.

The classical Jewish philosophers felt fairly competent that they knew. What distinguishes the human from among all other species is intellect, and the development of intellect beyond any imagined limitations is an inherent good. They maintained this position because they felt confident that such superhuman development would lead not only to intellectual perfection, but to spiritual and moral perfection as well. Freed from the restraints of the physi-

cal, human souls could soar to unity with God in perfect wisdom. This understanding of human nature and its potential for change is critical to most of the analysis of the dogma of redemption in Jewish philosophy. However, what we know about human nature from genetic psychology through modern chemistry throws much of this belief into doubt. Consider for example what DNA is and how it works.

DNA (*deoxyribonucleic acid*) is simply a chemical compound, or, to be more precise, it is a nucleic acid molecule. The information it carries functions much the same way that software in a computer enables the hardware to compute. Genes are the segments of genetic information that specify specific sequences of amino acids within proteins that instruct cells how to grow and reproduce.

From a material reductionist perspective, these chains of chemicals (called *polymers*) instruct cells how to grow from mere cells into the complex organisms that they become. They themselves are not living things. But they are all that is needed to construct living things.<sup>39</sup> There is no need for a divine spark to ensoul some matter into a living person as the authors of the Hebrew scriptures thought. Nor is there a need for the emanation of a spiritual intellect from a divine active intellect to inform matter with an inherent purpose for being. All that is needed are the right chemicals within cells, namely, the right sequences of the chemical bases adenine, cytosine, guanine, and thymine attached to a string of sugars or phosphates.

The only issue is how is the information chain of DNA formed in new cells to produce a double helix ladder of RNA (*ribonucleic acid*) to construct the right kinds of complexes of cells to build the right kinds of bodies to form the right kinds of complex living beings who have at least a chance to survive in nature. Mutationists will say that this happens by chance. In sexual reproduction one single chain of molecules combines with a very similar single chain of molecules to form the double helix from which living things are constructed. These complex chains are very long.<sup>40</sup> This creates an enormous number of opportunities for mistakes in copying. Many of these mistakes seem to make little difference, but some mistakes can either enhance or diminish the ability of a member of a species to survive in its environment. It is in this way, argue the mutationists, that the process of evolution occurs over millions of years. There is no controlling causal principle. Evolution simply describes a long complex process of mindless chance selection.

As discussed previously, in opposition to mutationism there is a broad spectrum of views ranging from orthodox Darwinians who defend natural selection as a nonpurposeful determiner of evolution to traditional Christians who defend divine providence as the principle that guides evolutionary history. It

is not our purpose here to offer a solution. It is only to note the irrelevance of Jewish philosophy to the entire discussion, much to the detriment of Jewish philosophy.<sup>41</sup>

### **Beyond Life and Death**

These final two challenges highlight issues we have already introduced: the potential implications of modern science for Jewish philosophers to rethink what they mean by life and humanity, and the failure of, now more than a century of, modern Jewish philosophy to respond to the challenge.

There was no affirmation of classical Jewish philosophy more absolute in terms of both clarity and value than the affirmation of human life. *Life* is a spiritual quality that comes directly from God who alone has the power in nature to cause both life and death. This doctrine contains three separable affirmations, all of which modern evolutionary psychology places in doubt. First, it is not clear what life is and whatever it is it seems to be as much a physical property of an entity as are any other properties reducible to chemical reactions. Second, whatever is the role of God in life it is no more causally direct than it is in any other natural phenomena in the physical universe. Modern evolutionary psychologists can trace all physical life back to a chemical program designed by a code of chemical information, and in this respect human life is no different than any other form of organic life that has ever existed in the past or exists in the present. Third, humanity seems to be coming ever closer to matching divine behavior in having the power to determine both the origin of life and its conclusion in death.

If the evolutionary psychologists are right, all living things are genetically programmed to have a certain natural life span. The length of that span is determined by the principle of the survival of the fittest. As that program expresses itself, all things are to live long enough to maximize their reproduction by procreating and raising their offspring to maturity, and then, once that maximum is reached, to die so as not to deny food and nourishment to their mature children who continue the work of being fruitful and multiplying. In this respect the purpose of life and death is the same in both Darwinian evolution and according to the literal meaning of the Hebrew scriptures. The one commandment given to all of life is to “be fruitful and multiply.” However, both the Hebrew scriptures and classical Jewish philosophy affirm that there is more to life than just advancing the existence of the biological species.

According to the Torah, life exists in order to obey the will of God, and Jewish philosophy explains that there is purpose to the commandments, namely, to maximize potential to become ever more like God. No one ever

has and no one ever can reach this perfection. We lack the inherent talents to become perfectly God-like, and, even if we had them, we simply lack the time to realize them. In this respect mortality is the ultimate reason why we can never succeed at what we are created to become—God-like beings—at least not until the anticipated end of days. However, this ultimate limitation on human difference from the divine no longer is (at least in principle) an absolute separation. Or at least so argues the scientists, philosophers, and engineers who today call themselves *transhumanists*.

The modern interplay of nanotechnology, computer technology, computational logic, and genetics removes all ceilings that classical philosophers and scientists saw on human nature. If there are genes that program us to live for a certain amount of time naturally, then at least in principle those genes can be altered to prolong life almost indefinitely. If there are genes that determine our talent for patience and our skill at logic and abstraction, and these talents are the key to excellence in rational thinking, and excellence in rational thinking is the path to achieving unity with God (as most classical Jewish philosophers argued), then again these genes can in principle be modified to enhance our ability for rational thinking without limitation.

Classical Jewish philosophy asked God if it was possible for us to become like God, and he answered yes for the remote future in the “World-to-Come,” but he gave an absolute no for this present, as yet unredeemed, world. Modern Jewish philosophy should ask this question about this “World-to-Come”: Can human beings become deities, being able to determine for themselves, without appeal to an external agent of redemption, whatever perfections they choose to achieve? The answers fall into two groups—there are those like the transhumanists who believe that genetics is the key to an unlimited future of human enhancement, and there are those who set their memories on past social-political thinkers who used the potentiality of genetics to advocate a radical political program of state enforced eugenics.

Personally, I have not been able to keep clear the distinction between the eugenics of the 1920s and 1930s in Western civilization, especially in the United States and in Germany, and what we, since the second half of the twentieth century, call *genetic engineering*. I have been given two answers to my question. One, social Darwinians such as those who guided the eugenics program in Nazi Germany made genetic enhancement and genetically motivated population control a legal requirement. Modern advocates of genetic engineering believe that enhancement should be voluntary and never a legal requirement. Two, our understanding of biology is better than theirs.

Consider the first answer: Modern genetic engineering differs from past eugenics because people may choose without governmental coercion whether

or not they want to contribute, so to speak, to the enhancement of the species. However, the difference is not as obvious as it seems. There are more ways to force change than by legal fiat enforced by legal penalties. Consider, for example, the social pressure that all parents operate under (at least in the middle class) to do everything possible to enhance their children's academic talents so that they may qualify to enter the so-called elite North American universities. Certainly the social pressure to practice engineered genetic selection toward the kind of intelligence that universities value is as great and as coercive as any government program of enforcement.

Consider, for example, the use of eyeglasses. It is almost inconceivable to think that parents whose children have faulty vision will not fit their children for glasses. In fact it could be reasoned that the stubborn parents who do refuse may not deserve to be parents. Still, it may be argued, glasses are not genetic engineering. Glasses enable you to see better but they do not change your nature. However, suppose instead of adding glasses to correct whatever defect there is in the eyes that causes imperfect focus, we do surgery to correct the defect, especially when the surgery is perfected to a point that such an operation would be virtually risk free. What responsible parent could refuse the therapy? Furthermore, what responsible aging adult could refuse the therapy that would so reduce one of the most natural effects of aging? Still this is not genetic engineering. By these techniques we correct a defect in our nature, but we do not change our nature. Yet, we may well ask further, what if through gene therapy we can change our biological natures so that our descendants will never again have to worry about imperfect vision? Who could argue that we should not do it if doing it is obviously beneficial to the individuals, their society, their nation, and possibly to humanity as well?

On final analysis it does not seem to me that there is a significant moral difference between what the eugenicists wanted to do in the first half of the twentieth century and what many advocates of genetic engineering want to do in the twenty-first century. It is true that our understanding of genetics is better than theirs. However, the genetics used by Nazi politicians in the 1930s was state of the art genetics for that time.

Consider now the second answer to my question: Is the problem only that their science was wrong? Is that a sound basis for enthusiastically accepting modern genetic engineering despite past national political programs of eugenics? Will not our science be shown in time also to be wrong in ways that we will not know until the future? Isn't it an operative principle of all modern science that no knowledge claim is absolute? What we call true is not what is absolutely true, but what can most reasonably be affirmed as true

given the state of our present knowledge. As long as scientists avoid the temptation of dogmatism, all scientific claims to knowledge should change as those claims are continuously challenged by new scientists. So, is it not likely that future scientists will find the genetics of the early twenty-first century as problematic as we find the science used by the National Socialist Party?

These questions are not intended to solve any of these problems connected to genetics, whether they have to do with changing human nature or with changing the kind of society in which human beings live. The point is solely to highlight, as we have done with other issues, that these are critical questions that Jewish philosophers ought to be discussing but are not discussing because they do not know enough modern science to discuss them, and this is one critical reason why Jewish philosophy is dead.<sup>42</sup>

### **Beyond Humanity**

Let us turn now to the question of the humanity of nature. We have already said some things about how modern science forces Jewish philosophers to re-think what classical Jewish philosophers said about human nature.

Classical Jewish philosophers generally believed that there is a clear distinction between the human species and other species, that the human capacity for practical and moral thinking is what distinguishes it from so-called lower kinds of physical entities, and the inability for human beings to achieve excellence in theoretical and theological thinking distinguishes them from so-called higher kinds of spiritual entities. In this respect humanity as a species occupies a unique place in the created universe between the sublunar plants and animals on one hand and the superlunar celestial demons and angels on the other hand. Built into this description are three claims, all of which are doubtful in the light of modern science. First, the lines between all species, including human, are not clear. Everything ultimately is made out of the same stuff (i.e., chemicals) and constructed in the same way (as strings of chemicals that inform different strings of chemicals on how to construct living things). If we do a comparison between the different genetic codes of different species, it is astounding to observe how similar everything is.

Second, practical thinking is not a distinct capacity of human beings. In this respect at least, apes and dolphins are very close to human beings. But even more extreme arguments can be made about how nondistinct the human ability to solve problems is. Practical thinking is something that all kinds of beings do, which means all species struggle to figure out how to survive and prosper in the face of a hostile environment. Practical thinking is an evolutionary survival technique and it is far from obvious that rational



thought is the best technique. First, for the reasoning brain to work it must be very large and it must consume lots of food, and neither need is ideal for species survival. Because of the great demand for food, humans had to hunt dangerous animals to live, and many died trying. Would it not have been better to keep smaller brains and continue to eat fruit instead of meat? Similarly, because of these large brains, humans must be born before maturity. Otherwise their birth endangers the life of their mothers, and for a mother to die every time she gives birth is itself a problematic survival strategy. Would it not have been better to have smaller brains with more mobile families without the danger to all of the species of having to care for almost two years for their mostly helpless offspring? Furthermore, there are two other kinds of entities that are in no sense human, both of whom are far more skilled in survival techniques than any humans. They exist at different extremities of the so-called fictional chain of being. At one end there are viruses that show an astounding ability to adjust and change to fit a hostile external environment far beyond anything within human capacity. And at the other end, there are computers who even now can solve all kinds of rational thought problems beyond human capability. What is especially interesting about both is that neither is properly a living thing. Viruses are only chemical chains until they inhabit a living body, and computers as hardware are just machinery and as software are simply information. *Information* is a very interesting ontological entity,<sup>43</sup> but it is not alive, which is one of the reasons it is interesting. It is this kind of thinking that led philosophers such as Peter Singer to question the traditional judgments in moral thinking that distinguish between forms of moral objections between humans and humans from humans and animals.<sup>44</sup>

Third, it is not at all clear that human beings cannot achieve the degree of excellence in life and thinking that classical philosophers claimed as a distinctive talent of God and his/her angels. This is the challenge of transhumanism. However, at least this claim should not raise any important doubts about the view of humans shared by the classical Jewish philosophers.

At the beginning of our discussion of rethinking Jewish philosophy beyond humanity, I said that the views I state for the classical Jewish philosophers were affirmed generally, but not in the particular. Kabbalists in particular believe that through meditation on the appropriate religious texts, Jews, at least, have a natural capacity to become angelic, that is, to become transhuman, and that they have this capacity because they are created not merely with a *human soul* (NEFESH ENOSHIT) but with a *divine soul* (NEFESH ELOKIT). Furthermore, as we have already noted, Jewish philosophers like Maimonides understood the entire rabbinic legal system to be a *way* (HA-

LACHAH), where the term *way* functions very much in rabbinic philosophy as it does in Asian religious philosophy, as a discipline which can lead human beings to transcend their humanity and achieve at least the level of excellence of the celestial spirits.

The question of the transcendence of humanity through the discipline of the Torah is something that at least scholars of Jewish mysticism discuss. But not all of these scholars have any capacity for philosophic reflection. On the contrary, most do not.<sup>45</sup> And this lack of reflection is yet another reason for the death of modern Jewish philosophy.

## Notes

1. *Evolutionary Psychology*, as I use the term here, includes a number of distinct disciplines in the life sciences, including biology, anthropology, archeology, paleoanthropology, and, of course, psychology. All of them deal with living things from an evolutionary perspective.

2. See David C. Lindberg, *Theories of Vision: From Al-Kindi to Kepler* (Chicago: University of Chicago Press, 1976).

3. Notably students of the atomists Plato, Aristotle, and Stoics.

4. Notably students of Galen.

5. Notably students of Euclid (fl 300 BCE), Hero of Alexandria (1 CE), and Claudius Ptolemy (2 CE).

6. Born ca. 460 BCE.

7. Lived ca. 341–270 BCE.

8. Died ca. 55 BCE.

9. Lived ca. 427–347 BCE. See Plato's *Meno*, *Theatetus*, and *Timaeus*.

10. The Christians took it directly from the writings of Plato. In the case of Muslims such as Al-Kindi the influence is indirect. These Muslims adopted *extramission* on the authority of the Hellenistic mathematicians Euclid and Ptolemy who were influenced by the writings of Plato.

11. The Platonists thought that the light that emanates from the soul through the body moves in particles through the perceiver's eyes. These particles vary in size, and it is this variance that determines color. Hints of this Platonic account of color may be part of the *Zohar's* description of the role of color in the creation of the cosmos. "May be' but not necessarily 'is.'" To my knowledge no modern scholar of the *Zohar* has explored this possible link between kabalistic conceptions of light and enlightenment in their psychology with the scientific account of physical light and perception in the natural philosophies of the classical Muslims, Christians, and (most importantly for our purposes) Jews.

12. 384–322 BCE.

13. 1 CE.

14. 2 CE.

15. Abu Ali Hasan Ibn al-Haitham, 965–1040 CE.

16. Namely,  $e = mv^2$ .

17. Namely,  $m = e/v^2$ .

18. Namely,  $v^2 = e/m$ .

19. What a *field* is is no more intuitive than is velocity. Basically a field can be imagined as a region of empty space. What defines the region is the way it defines the objects within it. For example, a chess board is a field of space that defines the way objects move on it. Hence, a rook is an object that moves horizontally in columns and rows of the space; a bishop moves vertically through columns and rows of the space, a pawn generally moves one space in any direction, and so forth. Similarly, an electric field is a region of space in which the way that objects attract and repel each other defines the objects. For example, objects of like electric charge (plus or minus) repel each other, those of opposite charge attract each other, and objects with no electric charge do not affect and are not affected by other objects in the field.

20. Thinking about physical light in a modern way raises possibilities for reconceiving the language about God, possibilities that (to my knowledge) no modern Jewish philosophers consider, primarily because they do not know the modern science.

21. For some time scientists felt that, because of geometry, their mapping of light transmission in the brain's formation of visual images must be incomplete. Based on accurate classical models of how vectors are bent through curved lenses, scientists understood how light waves refracted through a convex lens come to focus on a single area of the optical nerve to form clear images. However, the math alone suggested that the images should be upside down. Hence, scientists searched to find some missing brain mechanism in the account of vision that would reverse the received emissions. However, they looked in vain, because there is no such mechanism. In time scientists realized and accepted the fact that the reversal did not take place in the formation of the eye's image (which in fact is upside down). Rather, the mind itself judged the image to be upside down and presented the image to consciousness right side up. This suggests that seeing is ultimately a mental rather than a physical activity.

22. These first two regions of the eye are filled with special kinds of liquid that preserve the cavities' shape for proper electrical impulse transmission. In the case of the choroid, the space between the cornea and the iris is filled with a fluid called aqueous humor. In the case of the retina, the fluid is a thick jelly that is set behind the lens. With aging these fluids, like all other bodily fluids, dry up, which is a major reason for the gradual deterioration of vision in seniors. It is of interest to note that religions such as Judaism correlate vision and age with wisdom despite the physical fact that aging and seeing are negatively correlated.

23. *Evolutionary psychology* designates a set of approaches to understanding the nature of the human on Darwinian principles. What it means for an explanation to be *Darwinian* is discussed later.

24. Primary credit goes to Theodosius Dobzhansky. See Theodosius Dobzhansky, *Genetics and the Origin of Species*. NY: Columbia University Press, 1937.

25. Survival of the fittest also is supported by most contemporary geneticists, but it is considered more controversial. Contrary to this second central Darwinian thesis there are many examples in nature of cooperation between different members of a species and between different species. However, such evidence *prima facie* falsifies the claim that survival of the fittest is a universal principle comparable in epistemic status to natural selection.

26. Several contemporary philosophers of science and religion have introduced a principle of *emergence* to account for this problem without an appeal to divine intervention. The challenge to Darwinian evolution from essentially complex phenomena such as the eye is this: Certain complex organisms have seemingly essential functions which they could not have had before they evolved into their present state. This claimed fact suggests that some intelligent force guided the evolution. In response these philosophers argue as follows: Functions such as sight are emergent properties from complexity. At an earlier stage of evolution the sightless organisms used what were to become eyes for different purposes. Sight emerges only once a certain level of complexity was reached by the organisms, and then and only then could seeing function as a selection principle. (See Philip Clayton, *Mind and Emergence: from Quantum to Consciousness* [Oxford: Oxford University Press, 2004].) The religious interest of some of these thinkers is to propose that God's role in biological evolution is not as a first cause in a process of what is called bottom-up causation (which is the kind of causation with which modern scientists are concerned) but as a final cause in a process of what can be called top-down causation (which is the kind of causation with which theologians have traditionally been concerned). Many of these thinkers are deeply influenced by the philosophy of Alfred North Whitehead.

27. Despite the fact that, as Darwin himself noted, even photosensitive spots might have some selective advantages.

28. No modern scientist to my knowledge doubts the truth of genetics.

29. Among them are the *mutationism* discussed previously, the *punctuated equilibrium* theory of evolution as presented by Stephen Jay Gould in *The Structure of Evolutionary Theory* (Cambridge, MA: Harvard University Press, 2002), and (last but by no means least) the notorious position of intelligent design as presented by the biologist Michael Behe in *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: Simon and Schuster, 1996). Also see Holmes Rolston III, *Genes, Genesis, and God: Beyond Selfishness to Shares Values* (New York: Columbia University Press, 1997).

30. See Norbert M. Samuelson, *Judaism and the Doctrine of Creation* (Cambridge, UK: Cambridge University Press, 1994).

31. See Ron Numbers, *Darwinism Comes to America* (Cambridge, MA: Harvard University Press, 1998), especially p. 12.

32. Judaism, Christianity, and Islam.

33. When I say "lens," "eyes," and "optic nerve" I mean whatever are in reality the instruments through which we have contact with something external to ourselves. The lens, eyes, and optic nerve that we see visually are themselves perceptual constructs of what our minds perceive. The same is true of the "brain" as well.

34. See Hilary Putnam, *The Many Faces of Realism* (La Salle, IL: Open Court, 1987).

35. See Steven Pinker, *How the Mind Works* (New York: Norton, 1997).

36. See Hava Tirosh-Samuels and Christian Wiese, eds. *Judaism and the Phenomena of Life: The Legacy of Hans Jonas* (Boston: Brill Academic Publishers, scheduled for release in 2008).

37. Especially the group of scientists who describe themselves as promoters of what they call the transhuman. See James Hughes, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human Future* (Cambridge, MA: Westview Press, 2004), Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Intelligence* (New York: Viking, 1999), Marvin Lee Minsky, *The Emotional Machine: Commonsense Thinking, Artificial Intelligence, and the Future of the Human Mind* (New York: Simon and Schuster, 2006).

38. Some transhumanists speak of downloading people's distinctive personalities and collected memories onto computer software that can be preserved, at least in principle, indefinitely.

39. There is no clear line to be drawn between when a collection of cells is simply a set of chemical reactions and when the collection becomes a living thing. The judgment of life and non-life seems to be entirely arbitrary. We will have more to say about this point later.

40. For example, the largest human chromosome, chromosome 1, consists of 223,875,858 base pairs of genes. (See S. G. Gregory, K. F. Barlow, et al., "The DNA sequence and biological annotation of human chromosome," *Nature* 441 [May 18, 2006], 315–21.) That means that in sexual reproduction, limiting ourselves solely to this one chromosome, there are more than 223 million opportunities for a copying error to occur. Think of a monk in a monastery copying a text written in a language that he does not understand and the manuscript contains more than 223 million words. Then calculate solely in terms of mechanical probability what the odds are that the copy will not contain mistakes or that the mistakes made (on this analogy, genetic change in the offspring) will not significantly affect the meaning of the text (the introduction of variation into the species). Now calculate a chain of manuscript copies being written (say, one every fifteen years) for centuries (say, for a million years). How many copies of copies of copies will it take before the most recent copy will not be simply different but will be an entirely different text (a new species) from the original manuscript? As I understand it, this is the logic underlying the position of the mutationists.

41. Against mutationism, Michael Behe's claim for intelligent design is a strong argument. We experience in this world very complex phenomena whose seemingly essential functions exhibit a purpose that cannot be found in any of their constituents. (These functions are, so to speak, emergent properties.) If the mutationists are right, then despite appearances, the phenomena came about by chance. However, a strong case (but not a logical, demonstrative proof) can be made for claiming design over chance as the most reasonable explanation. Still, Behe's argument does not

touch the claims of the traditional neo-Darwinians who reject these two options. They claim that evolution functions neither by chance nor by design, but by mechanical causal necessity, and the principle underlying that necessity is natural selection.

As such the argument is similar to the way that Maimonides in the eleventh century discussed the thesis that the universe was created, where the options were a (seemingly) literalist interpretation of the Hebrew scriptures that says that the universe exists solely as an (apparently arbitrary) act of divine will, an Aristotelian account of the existence of the universe solely through causal necessity, and the account of the readers of Plato's *Timaeus* who affirm creation as a non-temporal act of divine will that is intelligible only as an interplay between elements of chance, of intelligent design, and of mechanical necessity. (See Norbert Samuelson, *Judaism and the Doctrine of Creation* [Cambridge, UK: Cambridge University Press, 1994].)

42. In this case there are some thinkers who as Jews discuss at least these medically related moral questions. However, they discuss these topics primarily from the perspective of Jewish law as legal ethicists and their discussion exhibits relatively little input from modern Jewish philosophy. Actually, to the extent that these discussions are informed by philosophy at all, the contributions are from classical and not from modern philosophy.

43. See Brian Cantwell Smith, *On the Origin of Objects* (Cambridge, MA: MIT Press, 1996).

44. See Peter Singer, *Rethinking Life and Death: The Collapse of Our Traditional Ethics* (New York: St. Martin's Press, 1995).

45. A notable exception to this rule is Elliot Wolfson. See his *Language, Eros, Being: Kabbalistic Hermeneutics and Poetic Imagination* (New York: Fordham University Press, 2005).



## CHAPTER FOUR



# Misunderstanding Medicine

Readers may be surprised to see knowledge of modern medicine included among the areas in which modern Jewish philosophy has been deficient.<sup>1</sup> If there is any field of study of the interaction of science and Judaism in which there is a large body of learned literature it is this one. The richness of Jewish studies in this area is especially true when we look at publications about jurisprudence by modern Orthodox rabbis. The names of modern giants like David Feldman, Emanuel Jacobovitz, Fred Rosner, and others come immediately to mind. However, this literature has been more about law than about medicine. Certainly rabbinic jurisprudence has obvious immediate consequences for Jewish ethics. However, the implications of modern medicine reach beyond the legal questions that have been almost the exclusive concern of rabbis. The field has deep implications for rethinking what it means to be human, and these concerns are yet to be given the in-depth consideration that they deserve. The issues deal primarily with the nature of life and death, and illness and wellness. Many modern philosophers have dealt with these topics, and some rabbis have as well. Yet, with all too few exceptions, these kinds of questions have been beyond the scope of vision of most modern Jewish philosophers to their philosophical detriment.

In this chapter, I want to raise two pairs of complementary questions. All four questions pose philosophical problems that arise directly from developments in modern medicine. All of them should have special importance for Jewish philosophy, but most Jewish philosophers have ignored them.<sup>2</sup> The first two questions are: why should there be suffering and are the Jewish people a



race? Both questions are introduced in light of modern medical practice but have important philosophical implications beyond medicine. The last two questions were introduced in the previous chapter on psychology. Now I want to develop them further from the perspective of modern medical practice. They are: what precisely is life and what precisely is death?

### Why Suffer?

Until the twentieth century, pain was taken for granted to be a normal part of the conditions of life. The introduction of anesthesia in the mid-nineteenth century<sup>3</sup> has ended that acceptance.<sup>4</sup> Today, not only is pain not part of normal life, but freedom from pain is commonly considered to be a necessary condition for being healthy. Pain itself has come to be seen as an illness to be cured.

There is one approach to ethics—hedonism—that defines individual good and evil quantitatively in terms of the amount of pleasure and of pain a person experiences. Certainly this kind of moral calculus has held a dominant position in the kinds of modern ethical theories most associated in the English-speaking world with materialism. However no historical position in ethics is more remote from traditional Jewish values than this one. To be sure, a significant theme that runs through all rabbinic ethics, traditional and modern, is the close association of the *good life* with the pursuit of *happiness*, but the happiness of which traditional Jewish texts speak has nothing to do with maximizing pleasure and avoiding pain.

For traditional Jewish philosophy the purpose of all life is to serve God in every way that God wills, and such service often (possibly always) involves accepting personal suffering. All traditions of Jewish ethics have analyzed the association between suffering and the good life. All of them have accepted that while, all factors being equal, it is better not to experience pain than to experience it, in this empirical world this experience is a natural condition of material well-being. As such, the value of pain cannot be judged morally in isolation from context.

In the Hebrew scriptures certain prophets both affirmed the life of prophecy as the highest level of human excellence and they often judged suffering to be a necessary consequence of achieving that exalted state. Similarly, classical rabbinic Judaism noted such a close conjunction (if not a necessary connection) between the ultimate good of divine service and the suffering of personal pain that it introduced the category of *suffering of love* (YeSURIM SHEL AHAVAH). The term names a form of affliction that occurs in this world to a class of people, whom God especially loves, who through suffering guarantee their achievement of the ultimate good of the ce-

*lestial kingdom* (MALKHUT SHAMAYIM). Certainly from the perspective of modern hedonism it is unintelligible that a deity who is supposed to be good would intentionally inflict pain on those who love him and whom he especially loves precisely because they love each other. Yet the study of the history of the Jewish people suggests that those whom God most loves not only suffer, but also suffer more than those who serve God with less devotion.

Certainly the philosophers of any people who perceive collective oppression as a continuous theme in their history and continue to affirm a doctrine of divine *chosenness* by a benevolent deity will have great difficulty, at the very least, in entertaining a kind of ethics that considers personal joy and pain to be the ultimate standard for moral judgments. Yet this is precisely the kind of ethics that dominates almost all philosophical discussions in modern Jewish medical ethics.

This modern inability to accept a positive link between suffering and the good life is a constant, if not always an overt theme, of modern theology. More specifically, the essential but usually implicit rejection of this link is especially notable in two themes. First, in modern demonstrations of atheism,<sup>5</sup> the charge is that a perfectly good God could not in principle inflict pain on innocent people. In the second case the charge is that the holocaust in itself falsifies the Jewish claim of collective chosenness. Yet traditional Jewish theology makes an exact opposite assumption about good and evil. To be chosen is a virtue even if by being chosen the virtuous suffer more than other people. Similarly, the suffering involved in the pursuit of the good life is an irrelevance for judging a life good or bad.

The discontinuity is most apparent when we consider the value of martyrdom, which traditional Judaism calls *divine sanctification* (KIDDUSH HASHEM). Certainly it makes no sense to say that God, on the one hand, is good in everything that he does and that he intentionally inflicts suffering on his/her chosen people. But this is precisely what Jewish philosophy claims, and the claim is more prominent in modern than in classical Jewish philosophy. This strong move to find a positive moral value in extreme pain, even a pain that results, not in a higher state of being, but the lowest state of being (i.e., in death), is forced upon all modern Jewish thinkers by the empirical reality of the holocaust.

The problem of hoping for good in redemption from experienced suffering is not confined to the events of the holocaust. The holocaust is just an extreme and dramatic example of what is a moral form of human experience—pain and suffering that is almost universally experienced by all people at some points in their lives independent of their state of human knowledge or virtue.

In at least this one respect it is a distortion to focus attention on the holocaust in reflection on the problem of human suffering, since it reinforces the widespread error (especially, but by no means exclusively, in Jewish philosophy) of seeing suffering as an abnormal state of being. In fact, it is a normal condition of physical being. It is normal not only for Jews, but for all human beings. And it is not only normal for human beings; it is normal for all sentient creatures. It is so common that it may well be considered a normal condition of sentient life, which, precisely because of its universality, can be theologically judged not as an exception to divine governance, but as an explicit expression of divine will in creating this sentient world.

When we move from Jewish philosophy in general and focus precisely on classical Jewish philosophy the problem becomes even more acute. Classical Jewish philosophy affirms rational thought as the morally highest form of human activity. Yet, if there is any rule by which to distinguish degrees and qualities of pain in God's creatures, it is that the higher the level of intellect of the creature, the greater its capacity for pain. For example, it might be the case that even plants can feel pain, for when they are subject to activities that normally cause pain in human beings (e.g., being burned by fire), they react in the same way that so-called higher beings react (e.g., moving themselves physically from the source of the burning). Yet, if suffering is a punishment for imperfection and consciousness is a reward, or at least a sign, for greater virtue, why, all other factors being equal, are levels of suffering and levels of consciousness inversely proportional?

There is at least one clear example of the value of pain as pain and that is the lack of physical pain that many diabetics experience. There are many forms of the disease, but what all of them have in common is that the beta cells in the pancreas cease to produce insulin and lack of insulin in the body leads to many possible health complications. Prominent among them is nerve damage, and damaged nerves no longer can arouse sensations of pain. Without pain, a patient cannot be aware of any form of injury. If the patients are not conscious that they have wounded themselves, they cannot treat the wounds and untreated wounds (no matter how small) can lead to an infection, which in turn can lead to gangrene and death. More generally, diabetes damages the circulation of the patient's blood, which also reduces the patient's sensitivity to pain, which again may lead to infections, to gangrene, and ultimately to death. In brief, what the disease of diabetes shows is the great value that normal sensations of pain play in everyday life. Pain is anything but, as some ethicists assume an inherent evil. On the contrary, the ability to experience pain is itself a vital survival mechanism in all sentient forms of life.

## Are the Jewish People a Race?

Until the second half of the twentieth century it was common for all people, including Jews, to speak of the Jewish people as the “Jewish race.” Today no one with any political sensitivity to anti-Semitism would use this expression. However, it is not obviously, from a scientific perspective, a misstatement. As in the case of rethinking the moral value of suffering, the primary challenge to the early twenty-first-century disclaimer of a Jewish race comes from what we now know about disease.

There are a large number of relatively rare genetic disorders that occur with relatively high frequency to the children of European descent, so-called Ashkenazi Jews. Most prominent among them are Tay-Sachs disease and cystic fibrosis.<sup>6</sup> Frequency of occurrence is not a clear mathematical concept. For example, roughly speaking only one in every twenty-two Jews in America of Ashkenazi descent carry a gene that could cause a child to be born with cystic fibrosis, but that means that far fewer children sired by such Jews will actually have the disease. However, again roughly speaking, only one out of every four thousand children born in the United States has this genetic disorder. Hence, while relatively few children inherit the actual disease, the frequency of its occurrence is comparatively very high among this specific group of Jews. However, there is no doubt that every occurrence of this disease is genetic, which provides some scientific validation for the seemingly unsubstantiated claim that at least one segment of the Jewish people (Jews of Ashkenazi descent) do constitute a race.<sup>7</sup>

In point of history, the Nazis and other anti-Semites were not the only people to use modern theories of biological evolution to support an intuited claim that Jews and non-Jews belong to different races of *Homo sapiens*.<sup>8</sup> There were Jews of prominence in Jewish communal life in the 1920s and 1930s, in Europe and America, who basically accepted the same political interpretation of genetics to argue for the biological superiority of the Jewish people over other peoples of the planet in much the same way that Nazis argued for the biological superiority of the German people. Furthermore, as the Hebrew University historian of biology, Raphael Falk has shown, this shared biologically based theory of the Jewish race played an important role in the education theory that dominated the pre-state years of the Jewish people in Palestine and the first generations of the education system of the young modern state of Israel.

Yet, while it is not obvious that the Jewish people do not constitute a race, it is equally not obvious that they do. The problem is not any dispute over facts. The problem is the inherent fuzziness of the term *race*.<sup>9</sup>

It is clear, in contrast, what constitutes belonging to a different species. If two heterosexual groups of creatures are unable to reproduce with each other for biological reasons, then they belong to different species. Consequently, it is clear that Jews and non-Jewish *Homo sapiens* belong to the same species. However, there are no such clear and definitive ways to compare members of a common species with regard to race. Race is, after all, one kind of *variation* within a species, but not all variants constitute race. The problem is that most of the kinds of features that we associate with race (such as skin color, hair color, and facial features) are not primary biological characteristics but only accidental consequences of other differences that are biologically more interesting. Furthermore, almost all of the characteristics, beyond these mere physical externals, that are of interest to people who think race is important (such as intelligence, personality, and character) cannot be scientifically demonstrated to be genetically determined. Yet geneticists in particular express in their popular writings at least a strong tendency toward biological determinism over environmental adaptation as the primary determiner of all group and individual human characteristics, including the critical development of character, personality, and intelligence.

Many Jewish philosophers and other Jewish intellectuals have maintained, both in the past and in the present, that there is something inherently special about the Jewish people that separates them from all other peoples. Classical Jewish philosophers like Judah Halevi and his followers have stated explicitly that at least one characteristic by nature separates Jews from other types of human beings—Jews by birth and these Jews alone have the inherent capacity to attain prophetic knowledge. Similarly, Jews who follow the teachings of the *Zohar* believe that Jews from birth receive a “divine soul” whereas all other human beings have only an “animal soul.”<sup>10</sup> Similarly, at least, utopian Zionists argued that the anticipated creation of a modern Jewish political nation-state would become a model, a morally ideal state, for all of the nations of the earth because the Jewish people possess some special *inherent* capacity for morality. They believe that the Jewish people will create a morally superior nation-state by comparison with all other nation-states, even though ideally there is nothing unique about the political or cultural structure of the Jewish state as compared with other liberal Western European democracies, because of the *special* talent for morality that the Jewish people as a people possess. On the surface, this sounds like the utopian Zionists are claiming that the Jewish people can create a superior nation state because the Jewish people are an innately better people than other peoples, and this claim in itself sounds like racism.

The purported racism of these claims is far from simple. For example, the innate Jewish capacity for prophecy can only manifest itself as more than a

potentiality when a Jew speaks the perfect language (Hebrew) at the perfect place (the land of Israel) at the perfect time (the age of the messiah), but before that time there is nothing extraordinary about Jewish character and intelligence except what the Jews have gained through the good fortune of having the Torah with its rabbinic interpretation as their communal education program. Similarly, according to at least some of the disciples of the *Zohar*, namely, the various communities of followers of Israel Baal Shem Tov, converts to Judaism cannot transcend their biological natures. Hence, converts can only have an animal soul. However, for some inexplicable reason, the children of converts receive, at birth, a divine soul like all other born Jews. Furthermore, at least in some interpretations of Hasidism, souls can be misplaced at birth, so that some non-Jews may have a divine soul while some Jews may have an animal soul.<sup>11</sup>

The case for racism in response to Zionist ideology is stronger than in either the case of classical Jewish philosophy or mysticism precisely because the secular Zionist argument is both secular and modern. The charges that this kind of Zionism is racist are based on certain apparent similarities between some social programs introduced in the name of applied evolutionary theory by members of the Nationalist Socialist party in Germany in the 1930s and 1940s and by some Zionists in the Jewish national polity in the 1940s and 1950s. Both sets of programs, despite the intervening two decades, seem in at least principle to be the same. Both are attempts to make eugenics a national policy.<sup>12</sup>

The political policies of evolutionary psychologists such as Steven Pinker<sup>13</sup> and sociobiologists such as E. O. Wilson<sup>14</sup> would seem to encourage the same kind of charges of racism that we have suggested in the case of Zionism. In their defense, late twentieth-century Darwinians claim that unlike the Nazis, they use sound science and they avoid political coercion. Yet, as we discussed in the last chapter, the acceptance of modern programs of human genetic enhancement undoubtedly will be shown in time (as always happens as a result of scientific advancement) to rest on mistaken science and will be reinforced by social forms of communal pressure not different in principle from the political methods of the Third Reich.<sup>15</sup>

Clearly, neither the philosophical position of the followers of Judah Halevi, nor the utopian visionaries of the Zionist movement, nor the kabbalistic followers of the Baal Shem Tov have a position on biological descent that is simplistically racist. Still, it is significantly and implicitly racist, and that degree of racism, deeply imbedded in both classical and modern Jewish thought, is (and should be) deeply troubling for any modern Jewish philosopher.

## What is Life?

As we have seen, modern advances in relieving the suffering of the sick and enhancing the talents of planned-to-be-born children raise critical issues for Jewish philosophy that were largely ignored by Jewish philosophers in the twentieth century. Similarly, improved medical procedures that both ease birth and deter death raise other moral and metaphysical issues about life and death that should but have not, at least yet, transformed the nature and terms of our discussion in Jewish philosophy. Basically, the big question is, or should be, how are we to understand and to direct the course and development of the “brave new world” in which we live where human beings have the collective ability to act like God, that is, to create life and to cause death?<sup>16</sup>

The narrative of birth begins with a male releasing sperm from his penis into the vagina of a female. The sperms travel through the upper vagina on through the cervix to the uterus to the fallopian tube. In the meantime, a female egg (oocyte) is produced by the female’s ovaries and attaches itself to the ampulla of the female’s fallopian tube. Fertilization occurs when the two gametes—the male sperm (spermatozoon) and the female ovum—fuse to form the embryo. The fertilized egg (zygote) is transferred into the uterus where it resides throughout the forty weeks, more or less, of normal pregnancy. Basically a pregnancy is a long chain of chemical reactions. The zygote begins as a diploid cell that divides into other cells which further divide into other cells until eventually, under the direction of RNA that was informed by the helix of paired DNA of the fused gametes; these compounds of cells constitute organs, which in turn, constitute a living organism.

At some point in this process, between the initial release of sperm by the male and the final delivery into an external environment by the female, the product of this chemical activity can be called a living human being. However, the more we know about the process itself, the more control the medical profession has over it, and the more the medical profession controls it, the harder it becomes to draw an informed (rather than an arbitrary) line between when the product is organic (i.e., a living thing) as well as when this life form becomes human.

As we discussed in the previous chapter, the term *human* is just too fuzzy to be considered scientific, despite the fact that scientists continue to talk as scientists about human beings. It is hard to see, on purely scientific terms, why they do. The obvious answer to the question is they do so for humanistic and not scientific reasons.<sup>17</sup> Humans are entities that can both judge and be judged in moral terms, and these terms affect both how important the sci-

entist's activity is in both bringing about and ending any life form. However, if the previous description is accurate, science itself can contribute nothing to the distinction. If there are any questions about morality and the meaning of life that are purely philosophical or religious, independent of what science can or cannot learn, they are these two questions: (1) when do chemical reactions become living things, and (2) when do living things become human beings?

There is a wide range of answers to these questions, both philosophic and religious, and Jews have been active participants in these discussions. Generally Jews and Catholics represent the radical poles in the discussion, Roman Catholicism defines human life as the moment of fertilization of the human zygote, and at least, traditional Judaism defines life as a process that extends well beyond the moment of birth. In rabbinic legal thinking the line between life and death cannot be drawn in the way that lawyers prefer, as sharp walls between clear alternatives. In this case the fuzziness of Judaism and Jewish ethicists seems more in keeping with reality than the clear thinking of the Roman Catholic Church and its ethicists who impose drawn lines on real processes, whose stages are not discreet.

Certainly all of these legal nuances have consequences for Jewish philosophy. Certainly they say something, not just about Jewish ethics, but about the way that Jewish philosophy should understand the nature of reality. However, while Jewish philosophers have concerned themselves with the ethics of the issues, they have been silent about any implicit ontological entailments from this kind of discussion of life. The same situation is true when we talk about death, life's polar opposite.

### What is Death?

We would do better to think of being living and being dead not as states that happen to people, but as defining endpoints of a single process whose origin marks the beginning in life and whose conclusion marks the end in death.<sup>18</sup> As for the process in between the ends, the living actions of all life forms, including human beings, can be seen (depending on whether we are seeing what happens either facing backward to the origin or looking forward to the end) as living or dying.

Since dying is no less a process than living, there is no point in time in which a clear distinction can be made between being alive and being dead. What is especially disturbing morally about this situation is the unstated suggestion of the role that capitalism plays in medical professionals drawing this



line. Again, the line is a fiction that we as involved humans are forced to make out of all kinds of needs to rule whether someone is alive or is dead, when in reality they are almost always just at a certain point in the process of ceasing to live and beginning to die. Before the second half of the twentieth century most people, including the rabbis, determined that the cessation of respiration and blood circulation are sufficient criteria to declare someone dead. However, there are countless people who have experienced both conditions, have received adequate medical treatment to correct these physical deficiencies, and continue to live meaningful and even long lives. At the present moment most people believe that you may declare people dead if (1) they have lost all neurological signs of consciousness of worlds external or internal to the mind, and (2) we determine that this radical loss of consciousness is not reversible. However both criteria are inherently fuzzy.

Concerning the second question about the judged irreversibility of the lost consciousness, not too long ago serious heart defects were not, but now are, curable. Similarly, in all likelihood, the same thing will be said in the future about dysfunction in the frontal lobes of the brain,<sup>19</sup> namely, that it will be curable. Of course the question is, how long in the future, and no one yet can provide an answer to this question. If a cure were imminent then it would seem reasonable to keep a patient alive until the cure is found. But where do we draw a line between what is imminent and what is remote? The answer to the question may be, the drawing of the line is based on the best financial interests of those most responsible for the welfare of the individual—friends, family, and/or the state.

The first question concerning loss of consciousness is more deeply philosophical and the answer is more ethically disturbing. The philosophical issue has to do with a judgment about human nature. We have seen before that the pre-modern definition of the human being as a reasoning animal is problematic. Clearly humans are animals, but they are not the only reasoning entities on our planet. Hence it is no longer obvious, as it was to the ancient European and classical Jewish philosophers that the prime (or possibly sole) value of human existence lies in the pursuit of excellence in the act of thinking. Yet in effect we rule in the medical field that a human being who no longer has the ability to do conscious reasoning may be declared dead. The position is inconsistent, because no one is prepared to claim that an infant too young to have developed a capacity to reason consciously has not yet earned the right to live. Ultimately the decision becomes more economic than philosophical. If we declare someone dead only after all brain functions have ceased, then the organs of the body would have sufficiently deteriorated to be useless for organ transplant. So people are declared dead who have per-

manently lost consciousness at a deep level<sup>20</sup> but whose physical parts continue to function organically as living things, even though no one can justify, with philosophic (let alone scientific) rigor, the claim that rationality is the unique defining characteristic of being human. This decision is made not because it is logically determined, but rather because it is pragmatically determined for a capitalist society. In other words, modern medicine functions as part of a modern society that is deeply committed to capitalism, not merely as a social necessity but also as a philosophical determinant. Hence, the moral commitment to the value of money is sufficiently strong that even the values of life and death may be seen to rest ultimately on questions of the financial cost to society.

## Notes

1. The discussion of Jewish philosophy and medicine is substantially shorter than the discussion of Judaism and any other science precisely because it is the one and most notable example of a case where contemporary Jewish thinkers have paid considerable attention to science. Contrary to the case with the other sciences, there is a significant body of contemporary literature on Judaism and medicine. My focus in this chapter is limited primarily to topics of interest for Jewish philosophy that the literature has largely ignored, notably topics in medicine that raise for Jewish reflection conceptually more than pragmatic issues.

2. Among the few modern Jewish philosophers whom I would exclude from this generalization are David Bleich, Elliot Dorff, and Laurie Zoloth.

3. Dentists played a primary role in developing anesthesia, especially William E. Clarke (in 1842) and Thomas Green Morton (in 1846). Cocaine was first used as a local anesthetic by Karl Koller in ophthalmic surgery at the suggestion of Sigmund Freud.

4. The analysis that follows is based in large part on the work found in Stanley Hauerwas, *God, Medicine, and Suffering* (Grand Rapids, MI: William B. Eerdmans Publishing Co., 1990).

5. See Michael S. Valle, "Divine Abandonment and the Evidential Argument from Evil" (unpublished dissertation, philosophy department at Arizona State, 2004).

6. Other so-called Jewish genetic disorders include hemophilia C, Gaucher's disease, torsion dystonia, Sandhoff disease, and Niemann-Pick disease.

7. See Miryam Wahrman, *Brave New Judaism: When Science and Scriptures Collide* (London: Brandeis University Press, 2002).

8. For what follows, see Raphael Falk, "Zionism, Race, and Eugenics," in *Jewish Tradition and the Challenge of Darwinism*, eds. Geoffrey Cantor and Marc Swetlitz (Chicago: University of Chicago Press, 2006), pp. 1137–162.

9. For what follows, see Michael Bamshad and Steve E. Olson, "Does Race Exist?" *Scientific American Magazine* (November, 10 2003).

10. See *The Zohar*. Pritzker edition. Translated by, with a commentary by, Daniel C. Matt. (Stanford, CA: Stanford University Press, 2004). (a) Volume I, pg.156, note 380 with reference to Ez 34:31, and (b) Volume I, pg. 356, note 111 with reference to the Babylonian Talmud Berakhot 60a and Niddah 31a. The first source states that only Jews are human. The second source says that both males and females generate fluids, and conception occurs when these fluids mingle. Matt states that the source of this double fluid account of conception is Galen. However, he also makes the seemingly contradictory claim, in Vol. I, pg.110, note 17, that the fluid that programs the appearance and character of the child originates solely in the brain of the male and that the source for this position, as well, is Galen.

11. Hasidic rabbis whom I know often will admit the case of Jewish souls in non-Jewish bodies, but none that I know admit the converse, that some Jews have non-Jewish souls. However, one logically entails the other. Furthermore, it could even be argued that the kind of soul you have determines the kind of person you are in physical reality, so it would be incoherent for Hasidim to advocate a conversion mission not only to so-called lapse Jews, but to all peoples irrespective of the accident of their physical birth. Hence, I would not be surprised to learn that eventually some groups of Hasidim will adopt a universalist commitment to spreading “the message of the rabbi.”

12. Unquestionably many people, and especially many Jews, closely associate eugenics with the Nazis. For this reason evolutionary psychologists and sociologists speak today of genetic engineering rather than of eugenics. However, as far as I can tell, what these words designate is the same thing: a strong positive commitment to a political program of using biology and heredity to produce, in the future, citizens of the nation superior qualities where *superior* is defined morally in terms of what best serves the needs and interests of the state.

13. See Steven Pinker, *The Blank Slate: The Modern Denial of Human Nature* (New York: Penguin Books, 2002).

14. See Edward O. Wilson, *Consilience: The Unity of Knowledge* (New York: Vintage Books, 1999).

15. The case of parallelism between Zionism and the German eugenics movement of the 1930s is even stronger than it is in the cases of the transhumanism of the sociobiologists and evolutionary psychologists. For example, both the Nazis and the early Zionists were more Lamarckian than Darwinian; that is, they believed that controlled education can bring about biological transformation. However, traditional Jewish philosophers believed the same thing. To paraphrase Maimonides in his *Mishneh Torah*, God gave Israel the Torah in order to create a political system of education through which, in the course of time leading to the messianic age, the Jewish people will collectively transcend their limitations as humans and achieve the level of perfection of the angels. Prima facie Maimonides' rationale for the Torah makes it sound like a political tool employed by the Jewish state to promote the biological enhancement of the citizens of the state. What would be a more dramatic example of racial change than a people who begin as humans being transformed over the centuries into angels?

16. For what follows see Miryam Wahrman, *Brave New Judaism: When Science and Scriptures Collide* (London: Brandeis University Press, 2002). Also see Elliot N. Dorff, *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics* (Philadelphia: Jewish Publication Society, 1998). Dorff's book in particular is a good example in this one area of how Jewish philosophy can be revived as the study of Judaism and modern science.

17. Economics of course provides another possible reason for scientists using the term "human being." Obviously there would be more money available for research directed at human beings than there would be for the same research into the genetic origins of a wide variety of hominids and other kinds of primates not so clearly defined as the direct ancestors of human beings.

18. The composition of this section of this chapter is deeply informed by Peter Singer's *Rethinking Life & Death: The Collapse of Our Traditional Ethics* (New York: St. Martin's Press, 1995).

19. Meaning here the region of the brain primarily associated with acts of consciousness.

20. That is, it is not just that they are in what is called a persistent vegetative state.



## CHAPTER FIVE



# Misunderstanding History

The periods of major change in the content and formulation of Jewish philosophy have occurred in periods of major change in both the events in Jewish history and the understanding of those events by Jewish historians. Ever since the Jews as a people began to gain acceptance as more or less equal members of the political and cultural entities of Western Europe and North America, Jewish life has changed radically, and that change has produced radically new political and social institutions in Jewish life. The most notable changes have been the rise of a third distinctively Jewish polity in the land of Israel and the hegemony of non-traditional rabbinic institutions of Jewish communities throughout the world.

Behind the growth of these new Jewish institutions have been changes in popular Jewish philosophy. Of these the most obvious and notable have been the theological ideologies of liberal Judaism and the social political ideologies of Zionism.<sup>1</sup> Neither Zionism nor liberal Judaism is a single movement supported by a single ideology. However, at the foundation of each are a set of beliefs and those beliefs in turn rest on general philosophical claims that were popular among well-educated but nonprofessional philosophers in the nineteenth century.

Basically as classical rabbinic Judaism emerged as something radically new out of the encounter between Greco-Roman civilization and the faith of the Hebrew Bible reflecting the philosophy of the Hebrew people in the civilization of the ancient Near East, so modern Judaism also emerges out a similar meeting of contraries, namely, the philosophy of enlightenment Christians

and post-Christians and the faith of classical rabbinic Judaism. However, there is a difference. Whereas the influence of the best of Greco-Roman philosophy—especially the Platonists, the Aristotelians, and the Stoics—is evident in the creative writings of the classical rabbis,<sup>2</sup> there is little exhibition of any deep knowledge of or influence by the best scientific thinking of the seventeenth through the twentieth century on modern Jewish communal leadership, especially in the theological writings of the intellectual elite of both Zionism and liberal Judaism.<sup>3</sup>

Within the overall structure of the canonically edited Hebrew scriptures, the philosophy of ancient Israel<sup>4</sup> follows a description of the history of the Hebrew people.<sup>5</sup> Similarly, the reconstruction of classical Jewish philosophy in rabbinic philosophy presupposes a reconstructed conception of Jewish history in the early rabbinic collections of midrash. Furthermore, the reformulation of modern Jewish philosophy presupposes the reconstruction of Jewish history in the late nineteenth and early twentieth century with the composition of new purportedly *scientific* (wissenschaftlich) Jewish histories, notably beginning with Heinrich Graetz's monumental *History of the Jews*.

Yet historical studies of Judaism and the Jewish people have made impressive progress in the past century of academic research beyond Graetz's conceptualization of Jewish history. In fact the changes have been so substantial that the time has come to rethink our overall picture of the course of Jewish history, and that rethinking may undercut many of the assumptions upon which modern Jewish philosophy are grounded. Consider, for example, what I said in the opening paragraph of this chapter in light of more current historical research. Let me focus just on the terms "the ancient Near East," "Greco-Roman civilization," "the Hebrew Bible," "Europe," and "North America" and make some preliminary comments on how reconceptualizing these terms requires (at least logically) a reconception of much that is affirmed in modern Jewish thought and philosophy.<sup>6</sup>

### **Ancient—Medieval—Modern: Seeing History through a Christian Lens**

In the first paragraph of this chapter, I presupposed a standard division of historical periods and places that has been taken for granted in, at least, Jewish history for the past century. In this periodization, the history of civilization is divided into three major eras—ancient, medieval, and modern. Ancient is defined as the history of the Greek and Roman empires, modern begins with the schism in Western Christianity between the Roman Catholics and the Protestants, and the medieval or Middle Ages is what falls between these two

limits, consisting primarily of the age of the Christianization of the European peninsula projecting out to the northwest from the much larger land mass of Asia through the hegemony in the western regions of this peninsula by the Roman Catholic Church.

Note that the picture, to the extent that it makes sense at all, is Christian. In the adaptation of the model to Jewish history, the periods of purported history in the Hebrew scriptures, known to Christians as the Old Testament, are assimilated into the same time period with Greco-Roman civilization, the time following the destruction of the second Jewish temple and the writing or editing of the New Testament. Also included in this middle period is almost everything that defines classical rabbinic Judaism—including Jewish life under the Sassanid empire when the Talmuds are compiled, as well as Jewish life in the Muslim empires when the bulk of classical Jewish rabbinic literature is fixed. Included in this middle historical period are the fixed formalization of the prayer-book (SIDDUR), the determination of the major positions in Jewish law in the responsa literature (TESHUVOT), the editing and normalizing of the major texts of earlier (tannaitic) rabbinic literature, especially in the form of codes, and (last but not least) the composition of all of the major commentaries on the Hebrew scriptures and the systematization of Jewish beliefs into a dogmatic structure in separate philosophic books. In this respect classical rabbinic Judaism occupies the same place in Jewish history that the Roman Catholic Church has in Western Christian history, and as modern Christian history is defined first by the Protestant Reformation and then by the rise of the secular nation state, so modern Jewish history is defined first by the rise of liberal Judaism (by the nineteenth-century German-in-origin Jewish historians) and then by Zionism and other forms of secular Jewish commitment (primarily by twentieth-century Eastern European-in-origin historians).

This general model of history is intelligible when the focus for giving meaning to the past is the experience of Western European liberal Protestants, notably post-French Revolution. However, even from a Christian perspective, prices are paid in making the data of the past intelligible in this way. Notably the very notion of Europe itself is unintelligible, and especially a Europe divided by a line running through Vienna into Western and Eastern Europe. “Western and Eastern Europe” make sense if our principle of division is religious, and we mean by this geographic divide the territory governed (at least in part) by the Roman Catholic Church as opposed to the territory governed by the different so-called Eastern Orthodox churches. Similarly, the notion of Europe itself only makes sense if we think geopolitically in terms of Christianity where “Europe” is the territory that primarily became Christian



as opposed to the lands south and east of Christendom that became predominantly Muslim. In addition, focusing our historical vision exclusively on a landmass dominated by Christian churches enables us to ignore that much (if not most) of the so-called Western world was Muslim, and that most of the vastly larger Eastern world of the continent of Asia were Buddhist, Confucian, or Hindu.

If the Christian-centric tripartite general division of world history was problematic even for Christendom, it was almost impossible for an intelligible reading of Jewish civilization. Let me give some examples. Even if we ignore the fact that rabbinic Judaism is only one among many kinds of post-biblical Judaism that arises under the hegemony of the Roman Empire, is rabbinic Judaism a creation of ancient Jewish history or a product of medieval history? If we strictly follow our historical scheme, then the TANNAIM (i.e., the rabbis contemporary with the period covered by *the Mishna* of Judah the Ha-Nasi) belong to ancient Israel with the figures of the Hebrew scriptures, while the AMORAIM (i.e., the rabbis contemporary with the period covered by the two Talmuds) belong to the middle ages together with late medieval and early modern (another Christianized division of history) Jewish philosophers and Jewish mystics (kabbalists). At this point the given general historical structure is confusing or, more likely, uninformative.

The same problem arises at the other end of the tripartite division of history. Do traditional rabbis writing responsa primarily with an eye to medieval rabbinic decisions belong to modernity or are they primarily modern because the questions to which they respond often have a distinctly modern context? Similarly, are nineteenth-century rabbis modern when their views about almost every question of science were determined by Jewish precedents whose views were determined by ancient sources, or is it enough that they are responding to questions whose context is modern? For example, is David Gans modern because he lives in the late seventeenth century and he has respect for the astronomy of scholars such as Tycho Brahe, Copernicus, and Kepler? Or, is he medieval because he equally has respect for the science of Ptolemy and the theology of Maimonides and continues (on their authority) to affirm a geocentric universe?<sup>7</sup>

There are similar problems in classifying most major Jewish philosophers between the fourteenth and seventeenth centuries. Is Gersonides medieval because his primary sources for what he believes about the heavens are ancient (notably Aristotle and Plato) and medieval (notably Averroes and Maimonides) or does he belong to the modern because the Jewish thinkers closest to his thoughts are modern astronomers (because his model of cosmic motion involves an earth that has a period around a geometric center rather

than a rotation on its axis around a stationary point) and modern Jewish philosophers (such as Hermann Cohen and even Franz Rosenzweig)? Similarly, is Spinoza medieval because his sources are predominantly medieval philosophers (such as Maimonides) or is he modern because he also was influenced (albeit negatively) by Descartes and his reflections point to the development of modern political thought (such as the secular nation-state, and source critical bible studies)?

There is no clear answer to any of these questions. The problem is not that we do not understand what any of these scientific Jewish philosophers say; the problem is that these categories for historical periodization are largely inadequate.

### Europe and Non-Europe

The division of the spaces of history into Europe and non-Europe also do not really fit the Jewish experience. While Christians north of the Mediterranean had minimal cultural contact with Muslims south of the Mediterranean, primarily because these two mighty religious civilizations were continuously at war with each other, the Jews freely traveled around the Mediterranean on both land masses, developed communal settlements in both sets of locations, and carried out significant communication between civilizations. Hence, while there are some differences between the Jews of the North (i.e., the *Ashkenazi*) and the Jews of the South (i.e., the *Sephardi*) this real cultural divide was comparatively minor, and in any case it did not completely correspond to the division of Europe from non-Europe.<sup>8</sup>

Furthermore, just as the period that defines the transition from biblical to rabbinic Judaism does not easily fit into the structure of ancient and medieval history as Christians define it, so the rise of so-called modern post-rabbinic versions of Jewish identity such as *Reform* and *Zionist* do not easily fit into the presumed division of the modern from the medieval. If our focus were not predominantly Christian, why would the modern period, even in terms of Christian civilization, arise in the sixteenth century? What we mean by modern has as much to do with the rise of the secular nation-state, but there are no such states in the sixteenth and seventeenth centuries, for there are not yet political entities defined by spatial continuity, a shared single language more or less spoken by all citizens, with political sovereignty vested in the citizens (rather than in deities or monarchs). If the nation-state is what distinguishes modernity, then modernity begins, at the earliest, in 1776 with the American Revolution. Furthermore, it doesn't really catch on in Europe until Napoleon's troops impose it as an excuse for France's invasion of its

neighbors. In fact, the modern nation-state does not become a common form of government until the end of World War I in 1919, that is, not until the twentieth century.<sup>9</sup>

### Americas—English Vision with Spanish Blindness

As the term “Europe” is problematic as a point of reference for describing classical history, so is the term “North America” for describing modern history. Jewish history treats Spain as if it were part of Europe, which is true geographically, but until the second half of the twentieth century it is hardly a good fit. In terms of culture and politics, at least until the Napoleonic conquests, Spain should be thought of in connection with North Africa. The misrepresentation of Spanish civilization is even more distorted when the vision of Jewish history faces the Americas. For the most part, American Jewish history means the history of the Jews in the United States, which is primarily a British settlement that gradually spreads west, through diplomacy (e.g., the Louisiana Purchase) and through conquest (e.g., the Spanish American War), when, by the end of the nineteenth century, a significant part of the North American continent is English controlled (the United States and the western two-thirds of Canada). However the eastern edge of Canada continues to speak French, the entire southern part of North America (namely, Mexico) speaks Spanish, most of Central and South America speak Spanish, and today, increasingly so, all of the Southwest of the United States is returning to its earlier spoken Spanish.

Because Jewish history only sees Europe, and the Europe it sees is through the eyes of the French, the Germans, and the English, Jewish history tends to ignore much of Jewish life, both in the past, as well as in the present. Because of its adopted Christian perception, Jewish history views Western European countries, excluding Spain, as “the major leagues” of world history and everyone else is dismissed to the “minor leagues.” Yet such a perception gravely distorts the experience of the Jewish people even today. It ignores the fact that the major intellectual activity (especially philosophical) in past Jewish life occurred in lands occupied by Muslims speaking Arabic, and it is blind to contemporary Jewish intellectual life in lands occupied primarily by Roman Catholics speaking Spanish or Portuguese.

As we shall see, the narrowness of this perception of Jewish history has contributed significantly to the presupposed worldviews of both the Zionists and the religious reformers, much to the detriment of both. Let me now, however, continue the theme of how our modern conception of Jewish history, even among academics, assumes Christian perspectives that distort Jew-

ish history, and how this distortion contributes to the death of Jewish philosophy.

### Biblical History

No doctrine of history is more important to the conceptualization of both liberal Judaism and Zionism than the reconstructed picture of an ancient Jewish history based on the Hebrew scriptures that Jewish scholars, drawing from Christian biblical scholars, advocated in all but the most recent histories of the Jewish people. Both modern movements—Zionism and liberal Judaism—have seen themselves from within different perspectives as a historical return to the Judaism of the Bible.

As the Zionists have read political history, the Jewish people first existed as the autonomous national entity whose political, cultural, and intellectual history is recorded in the pages of the Jewish scriptures; rabbinic Judaism is the form that Jewish life took after the forced loss of political independence, and Zionism is a romantic movement to recapture the nation's earliest glory. These underlying assumptions are representative of all of the nineteenth-century romantic nationalisms that produced most of the modern secular states throughout the world.

The Jewish people see themselves first and foremost as members of a nationality whose modern situation in history as stateless has been seen to lie at the heart of all of its collective problems. It is commonly believed that the nation became a state, which was good for the people; then it became stateless, which was bad for it. Hence the solution of the nation's collective problems lies in returning to the glorious era of national statehood.

As the liberals have read intellectual history, the foundation of Jewish religion lies in a collective, national experience of the Jewish people with a God identified as the specific deity of the nation's most distant ancestors (Abraham, Isaac, and Jacob) with whom the nation entered into a covenantal agreement. Like traditional rabbinic Judaism the liberals believed that the events and ideas recorded in the Hebrew scriptures are a reliable record of actual events, political and intellectual, in the nation's history, and these events constitute both the foundation for the nation's existence and the ideal toward which the nation is morally obligated to strive. Reformers, in particular, limit the record of revelation to the times reported in the Hebrew scriptures, where *revelation* designates a real collective experience of relationship with God, and what the record of the experience purports to have taken place is true. Conservative Jewish thinkers, drawing from the new nontraditional rabbinic Judaism of the reformers, extend the period of revelation to

include post-biblical Jewish experience within the Jewish state in the land of Israel beyond the period of the two national states recorded in the Bible. The extension by the Conservatives encompasses the texts included in the collected rabbinic writings of the *tannaim*,<sup>10</sup> especially those recorded in the Mishna and the standard collections of *midrash*<sup>11</sup> and *mishnah*.<sup>12</sup>

The basic religious views of both groups of religious liberals—Reformers and Conservatives—are similar to the basic view of the Zionists. From the historical perspective of the religious liberals, there is an ancient Judaism that is based on a true record of divine revelation to the Jewish nation, and that revelation produced a good religion. Then there is a medieval Judaism that interpreted and significantly distorted the early true and good ancient faith. Now the goal is to reconstruct the older Jewish faith into a new faith rooted in the truth of the old faith, and this new faith will be good.

At this level of generality, all forms of liberal Judaism clearly should be intellectually located within the same category of modern religion into which we place Western European and American Protestantism. Both the Jewish and the Christian are to be understood as an attempt to preserve what is judged to be of value in the older, classical conservative religion, and to absorb what is judged to be of value in the newer, modern philosophy. In general in all of these versions there is significant respect for the social-political forms developed in the classical faith documents and significant respect for the conceptual views of modernity in philosophy and science. How these Jewish faiths differ from each other is how they balance these opposites of modernity and classicality. The larger the domain of the classical in the canon of the respectable, the more conservative the expression of the religion, both Jewish and Christian. Conversely the narrower the domain of the classical in the canon, the more liberal the expression of the religion, both Jewish and Christian. Again, the liberal reforms restrict revelation to the Hebrew scriptures while the conservatives expand the domain of revelation to include tannaitic texts. However, neither, in opposition to the Orthodox, extends the list of revealed texts into the Middle Ages. In theory neither do the Orthodox. At least formally they maintain that only the Torah was given by God to Moses “face to face.” Yet, in practice, all of the rabbinic literature is treated (both legally and philosophically) as if it is revealed.

This extension is apparent in consideration of three factors: First, it is asserted that there is a divine presence that guides the interpretations of the Bible when three or more rabbis are engaged in interpretation. Second, the meaning of any biblical text depends on rabbinic interpretation whose source is tannaitic and not biblical. Third, all of rabbinic tradition from any one period can authoritatively interpret or reinterpret any earlier rabbinic tradition.

This authoritative role for the entire history down to the present of rabbinic discussions is the primary difference between traditionalist and liberal schools of rabbinic Judaism. Again, for the reformers this process involves only the Torah itself; for the conservatives the process includes only the *tannaim* and *amoraim*. In contrast, for the Orthodox any such radical division between the historical periods of rabbinic life is artificial and both conceptually and legally unjustifiable.

At the time that these religious liberal and secular nationalist ideologies were developed in the second half of the nineteenth century in German culture, much in it was not new. Basically it was an adaptation by Jewish intellectuals of what was by then standard intellectual history of Western Christian civilization. However, already by the very beginning of the twentieth century it was clear how this understanding of history was problematic. Let us here limit our discussion to three overall historical themes that the previous picture implies: First, the understanding of what constitutes revelation. Second, the viability of the division between the religious and the secular in Jewish experience. Third, the unspoken assumption that there is a division between rational and nonrational religion.

### Revelation, Inspiration, and Fraud

The proverbial “elephant in the room” of our discussion of the challenges from scholars to Jewish philosophy is the academy’s objections to the claim that the Hebrew scriptures is a work of revelation and is a reliable source for historical knowledge. With respect to revelation most religious Jews, covering the full spectrum of liberals and conservatives, believe that in some sense these books express the word of God to the founders of the Jewish people. With respect to history most committed Jews believe that in some sense the Hebrew scriptures are a reliable source for the earliest history of the Jewish peoples from the emergence of the patriarchs in the promised land through the most successful Jewish polity, namely, the kingdom of David the Judean. Furthermore, in a meaningful or even definitive sense, this narrative justifies the existence of the Jewish people as a people and provides the critical foundation for this nation’s special claim of right to occupy this land even today. No spiritual claim is more basic than this doctrine that the Torah is “from Sinai,” but no historical claim about the foundations of Judaism and the Jewish people is academically more doubtful.<sup>13</sup>

The medieval philosophical conception of revelation was a product of major challenges to the belief in “Torah from Sinai”<sup>14</sup> derived from Aristotelian philosophy. As we discussed in chapter 3 the identification of the creator

deity of the Hebrew scriptures with the prime mover of Aristotelian physics and astronomy entailed that God is radically simple, and God's simplicity entails that what God is, is what God does, and what God does is a single act that has neither beginning nor end and can never in any respect change. Consequently biblical texts that affirm that God "speaks" or "says" must be interpreted nonliterally to be intelligible in the light of the best science of the classical period. The most rigorous result of this activity of adaptation was Maimonides' theory of negative divine attributes. Negative attributes saved for Jewish philosophy the intelligibility of the biblical claim of "Torah from Sinai," but the price paid for this preservation was that Judaism was forced to radically reconceive what it meant by God.

As we saw previously, the scientific motives for rethinking the concept of God and revelation in classical Jewish philosophy no longer hold, since the Aristotelian challenge was based on what is today recognized as a clear misconception of what is language and how meaning is construed. However, if linguistics no longer raises a significant objection to a simple interpretation of the dogma of creation in Jewish philosophy, history does.

The deduction of multiple incoherencies between different passages in the Hebrew scriptures led modern academic scholars of the Bible to construct an explanation modeled on the methodology of archeology. Archeologists will examine a site and notice many artifacts that do not "fit well" together if they are uniformly treated as products of the same time and place. They know that sites change in two ways. First many objects that end up in a single location actually come from someplace else (e.g., from upstream). Second, new sites are built on the location of older sites, that in turn were built on the location of even older sites, and the objects in these different layers can become mixed together. It then becomes the task of the archeologist to use the *logic* of the different artifacts to construct a hypothesis that locates the found objects into different periods at the same site and/or in different locations at the same time. The academic scholars of the Hebrew scriptures operated with the same kind of logic. They took incoherencies in the facts of the Hebrew scriptures—in the words, sentences, paragraphs, and chapters—and treated them as artifacts that each new set of editors of the text took over and incorporated into the new text these editors constructed. The assumption was that by analyzing the elements of the text into different units and by modeling their collective construction as original products of different time periods and different authors, they could construct a new understanding of the Hebrew scriptures that would be conceptually coherent as well as provide (their primary academic concern) a history of how the Bible was constructed as well as the history of ancient Israel.

To understand the craft of source critical studies of the Bible on the archeology model is fitting for a number of reasons, not the least of which is that these two disciplines—biblical history through textual source criticism and archeology of purportedly ancient sites believed to correspond to the times when the Hebrew scriptures were composed—are intimately connected. In general, both fields operate in the hope and with faith that between the two it will be possible to construct an accurate scientific history (as opposed to rabbinic mythology) of ancient Israel.<sup>15</sup>

However, a biblical text is not an archeological site. If a biblical text was edited into a single whole from preexisting layers of materials, then there must have been some human being or beings who constructed the new whole with conscious intentionality. But this is not the case in archeological sites where the layering of materials occurred by chance. Hence, an archeologist need not ask *why* the site came together in the way that it did. The answer is, for no reason whatsoever. He need only ask *how* it came together (e.g., by upstream flooding, by earthquakes, etc.). That is not the case with edited books or book collections. It is one thing to know how the editors edited, but in this case no explanation of *how* is satisfactory without an explanation of *why* the text was constructed in the way that it was. In this case the most obvious answer to the *why* question is, with the intent of committing a fraud. Different generations of Jerusalem priests, so the story goes, intentionally rewrote the narratives and laws of the Hebrew scriptures to confirm their political authority as the representatives of God in the theocratic state of ancient Israel.

Scholars have debated for at least a century whether this fraud was vicious (i.e., created solely in the interest of political power) or benevolent (i.e., created to effectively rule a people for their own good in accord with what the priestly authors believed truly to be the will of God). Yet, on both interpretations the text was created as a fraud, and that fact in itself discredits, at least theologically, any interpretation of the authority of the text of purportedly divine scripture as truly divine revelation.

So much for the modern philosophers' challenges to the claim that the Torah was divinely revealed. Now let us consider the modern historians' challenges to the claim that the Torah is a reliable source for history. Whatever the determined authority of the Hebrew scriptures as a source for divine revelation, it had been generally accepted by scholars that the text does provide an accurate record (in at least general terms) of the history of an ancient Israel, and this claim is critical in the demonstration by the modern Jewish state of its right to exist as a nation-state on its land. Other nations may have occupied the land since Israel was displaced two thousand years ago, but Israel



is the original owner and as such its claim to possession overrides all other claims. Yet if the origin of the text is purely human, what it says cannot reasonably be accepted as true just because the text says so. This suspicion is all the greater when the moral character of the authors (or editors) stands under a cloud of suspicion of forgery.

It is in this logical context that we need to understand the commitment of students and scholars of the Hebrew scriptures to the archeology of the ancient Near East. It was expected that archeology would provide the external, independent, and objective scientific verification for what the otherwise suspect words of the Hebrew scriptures purport. This archeology has been going on now for more than a century and it has produced very little positive evidence that the words of the Hebrew scriptures provide us with anywhere near an accurate account of the actual history of the founding fathers of the Jewish people.

Let only one textual and archeological example of the problem suffice for our purposes. If the biblical record were reliable then the kingdom established by David and ruled over by Solomon was one of the more powerful political kingdoms in the history of the ancient Near East, inferior only to great empires such as Egypt and Assyria. However, there is no archeological record that any such nation ever existed. If Israel had been in fact such a great political state then surely there would be significant archeological remains to support that claim. Yet, given more than a century of digging, no such evidence has been found. In fact no archeological record of any major state can be found before the time of Ahab, some fifty years after the purported reign of Solomon.<sup>16</sup> Rather, based on whatever archeological evidence there is, in contrast to the biblical narrative, Jerusalem seems to have been only a small tribal capital of a small warlike nation ruled over by petty tribal chiefs such as David and Solomon.

It should be granted that the archeological and biblical studies summarized are controversial, and there is nothing that any one can say in the field of biblical studies that cannot be reasonably doubted. In this sense, from a scientific perspective this view of the history of the ancient Near East is only a theory and not a fact. However, it is a theory that makes the most sense out of the data, both the data that exists, as well as the data that should but does not exist. Hence it is necessary to ask, what if the account in the Bible of the history of ancient Israel is utterly unreliable both because evidence suggests it is not true and because those who composed the story are guilty of intentional fraud. What do these purported facts mean for making a reasonable claim of “Torah from Sinai”? Certainly there must be a resolution of this present tension between what the key rabbinic texts say about “Torah from

Sinai” and what the history of the ancient Near East suggests actually occurred. Yet modern Jewish philosophers seem to have nothing to say in response. They study and repeat what the classical Jewish philosophers said about “Torah from Sinai” despite the facts that classical Jewish philosophy solves problems that today need not be solved, and modern Jewish philosophy faces scientific problems with the history of biblical text, which the classical solutions do not and cannot address.

In my judgment this problem of the reliability of the historical sections of the Hebrew scriptures is the single most important challenge raised by modern science to the believability of any form of rabbinic or neo-rabbinic Judaism. Still, these are not the only problems. Let me conclude this section on misunderstanding Jewish history with a brief analysis of two standard dichotomies assumed almost universally in modern Jewish intellectual history, which seem to me to be utterly inadequate. The first is the dichotomy in society between the so-called secular and religious. The second is the dichotomy of *reason* and *emotion*. These two topics bring to a close the subject of the misunderstanding of Jewish history, which brings to a close our discussion of the misunderstandings of modern science to which I ascribe primary responsibility for the death of Jewish philosophy.

### The Secular and the Religious

No concept is more distinctive of the modern mind set than the division of all concepts as well as all political institutions into the dual and purportedly mutual exclusive categories of the religious and the secular. Yet it is a conceptual framework that does not easily fit any period of Jewish political and intellectual history before the second half of the nineteenth century. It seems to me that the basis for the idea is the division in feudal Christendom between matters that fall under the political domain of the church and matters that fall under the political domain of the king or duke or baron or knight. This distinction in turn rests on a conceptual distinction between a clergy whose primary functions are to pray, and therefore care, for the welfare of souls, primarily in a spiritual world on one hand, and a nobility whose primary functions are to engage in warfare, and thereby care for the welfare of bodies in this material world on the other hand. Finally, this cosmic level of political-conceptual dichotomy is in turn somehow an interpretation of the biblical division in the first Jewish state of the roles of kings and priests, where kings of Israel trace their origin to the military leadership of Moses and priests of Israel trace their origin to the liturgical leadership of his brother Aaron. However, this is really a form of Christian midrash on the biblical

text. It is in no sense a literal inference from the Hebrew scriptures and it does not reflect any rabbinic reading of the text.

There are distinctions in Jewish history that resemble the division of the secular from the religious, but they are not the same thing. For example there is a distinction between reasoning based ultimately on scripture and reasoning based ultimately on human experience. This conception separates claims that are universal from claims that are particularly Jewish. The former is universal to humanity because all humans perceive and reason in the same way. The latter are particular not because Jews have a different nature than non-Jews, but because the Torah is an inheritance solely for the Jewish people. But this is not a distinction between the secular and religious. For example, the distinctly Jewish sources deal with all sorts of questions that in modern political terms would be called secular. The most obvious example of this is an entire tractate of the Talmuds that deals primarily with questions of damages caused by irresponsible ownership of property (NEZIKIM). These otherwise standard concepts in any secular legal system are clearly part of rabbinic, and therefore religious, law.

The only rabbinic concept of which I can think that comes close to the modern distinction between the secular and religious is the distinction of *external books* from (by implication) internal Jewish books. However, it is not entirely clear what makes a book *external*. It probably means works whose reasoning is accessible to all human beings precisely because they are products of universal nature, as opposed to books whose premises come from records of revelation such as the Torah that were given specifically to the Jews. On this analysis the distinction between the external and the internal is just another way of stating the earlier distinction between the universal and the particular, and this distinction, as we have seen, is not really a distinction between the secular and the religious.

If this analysis is correct then there is little justification for Jewish intellectual and political history to make a sharp separation between the secular and the religious. The religious liberals have based much of their reformulation of Jewish identity on this distinction, as have the secular Zionists. The former tend to weed out of their professed Judaism every aspect of Judaism that they judge to be secular and affirm every aspect of the Judaism that they judge to be religious. Some liberals apply the principle absolutely but what they produce from their rigor is a distortion of traditional Judaism in which Judaism becomes indistinguishable from any other form of Western, liberal Christianity. It is a form of Judaism that could never understand the appeal of any kind of Zionism because it could not understand the inherent nationalist element in all of Judaism. Conversely some Zionists apply the same prin-

principle with equal rigor and produce an opposite form of distortion of Jewish identity that is indistinguishable from any other form of Western, post-Christian material humanism. Consequently it is a form of nationalist Jewish identity that deeply lacks any sensitivity to the so-called spiritual dimension of Judaism. As such both are distortions of traditional Judaism. They are so structurally because they presuppose the validity of a conceptual-political dichotomy that in reality does not fit Jewish religion and Jewish experience. Rather than in fact being an element of a schema that functions to make Jewish history intelligible, it functions as (and may actually have been intended to be) a reconstruction of a new, previously unknown kind of Judaism by modern Jews who see this innovation as an improvement (rather than a description) of Judaism and Jewish identity. How functional is this distinction for a reconstructed Judaism will be examined in the next section of the book. However, here our only consideration is how useful this schematic element is in understanding Jewish history, and my suggestion is that Jewish history would be better off without assuming the usefulness of the division.

### The Rational and the Emotional

Today a significant number of Jewish intellectuals, especially among Jewish liberals, no longer are interested in defending a conception of the *religious*. Instead, they substitute for this term the adjective *spiritual*. In doing so they consciously reject dichotomizing their Jewish identity purely in terms of the secular-nationalist or the religious. However, in doing so many of these contemporary Jewish intellectuals embrace another kind of dichotomy that is no less foreign to rabbinic thought, equally unusual as a way to understand Jewish intellectual history, and equally inadequate (possibly harmful) for constructing a persuasive contemporary Jewish philosophy. It turns on a radical separation in terms of cognition between the domain of reason and the domain of the emotions.

Many orthodox Jews like to refer to themselves as *Torah true*. In doing so they draw a clear line about where they stand in the conceptual divide between classical rabbinic thought and modernity. Torah true Jews assert that they “stand with both feet” clearly planted in the world of the classical. How rigorously they mean what they say can be debated,<sup>17</sup> and that is not a debate into which we need enter here. What clearly is true is that all committed Jews to some extent live in modern states with involvement in modern Western culture, and that involvement at many levels forces a discontinuity both as full members of modern society and as participants in Jewish life. How that discontinuity is resolved, in life as well as in thought, determines where any

individual Jew stands in the continuous line from the classical world of classical Jewish law and theology and the entirely modern world of contemporary Jewish sociology and psychology. In making these decisions people must employ all of their consciousness, and sentience in this case always involves at least two human capacities—the active rational functioning of the intellect and the passive reflective functioning of the emotions.

It seems psychologically reasonable to believe that there is in principle no inherent opposition between these two faculties, since both play a role in every conscious mental act. However, it is true that the Aristotelian-Platonic tradition behind classical Jewish philosophy exaggerated the role of reason over the role of the emotions. It did so because it thought that reasoning is something you do (i.e., it is active and therefore is an action) and therefore reasoning can be controlled through acts of will, whereas emoting is something that happens to you (i.e., it is passive and therefore is a passion) and therefore it cannot be controlled through acts of will. However, we now clearly know that even this dichotomy between the active and the passive is false. All mental acts are to varying degrees passive and active, conscious and nonconscious, as well as rational and emotive.

There are two powerful traditions of classical thought to which modern Jewish thinkers turned for models. The first was what Christians call *scholasticism*. The late nineteenth- and early twentieth-century reformers oversimplified human cognition by over-extending the role of reason in decision making. They did so primarily because of their commitment to seventeenth-century natural philosophers such as Leibniz and (more importantly) Spinoza. What these seventeenth-century philosophers of rational enlightenment taught was a response to the dramatic growth of human knowledge in mathematics and the role of math in creating entirely new kinds of sciences that held out the possibility of human knowledge without limitation. It was their great (undoubtedly exaggerated) enthusiasm for human rationality that led them to critique classical philosophers such as Thomas Aquinas and (more importantly) Moses Maimonides in a way that enabled them to transcend their classical sources in favor of developing a purely rational form of ideal religion.

The second powerful tradition of classical thought to which modern Jewish thinkers turned was what Christians call *mysticism* and Jews call *Kabbalah*. They did so primarily because these late twentieth century, primarily North American, totally modern-by-environment-and-education Jews were discontent with the liberal religion that their parents had them learn in Jewish synagogue-related schools, but equally discontent with the materialist secular humanism they learned in their studies at non-Jewish universities. They recognized in both educational institutions a common commitment to the val-

ues of classical Jewish philosophy, and inferred that this philosophy (which they mistakenly took to be all philosophy) was the source of the error they recognized not just in their education but in their spiritual life as well.

At approximately this same time in North American secular education, Jewish higher education discovered the work of both Martin Buber and Gershom Scholem who in radically different ways promoted Kabbalah, identified as a Jewish version of mysticism, and described as a tradition of Jewish thinking in opposition to Jewish philosophy that is both intellectually compelling and “Jewishly” legitimate. Whether or not Kabbalah is really an instance of a more general form of thinking called mysticism is a topic of current scholarly debate,<sup>18</sup> one into which we need not enter. Whatever Kabbalah is, be it mysticism or not, it clearly is a distinctive form of classical Jewish philosophy that embraces an expansive understanding of reasoning that is directly opposed to the limited kind of reasoning that the modern religious Jewish liberals inherited from the tradition of Maimonides and Gersonides. The difference between the two is the epistemic value each assigns to the emotions. Kabbalah deeply values them while the Maimonidean tradition treats them with disdain.

Closely related to the epistemic judgment of emotions is the judged value of the senses and the imagination in thinking about truth. In general the Maimonidean tradition regards sensation as a necessary but base condition for knowing that is and should be transcended in the highest forms of mathematical reasoning, whereas for the Kabbalists pure algebraic thinking is too remote from reality to understand reality—as it is experienced both while awake and asleep, in the lived life of this material world and in the fantasized life of an imaginary cosmos of which this plastic world<sup>19</sup> is only a reflection.

From the perspective of both modern psychology and modern biology, these are again false dichotomies. From the perspective of psychology, so-called rational knowledge is a very small part of what we know, whose sources of information are in every sentient act from every part of the body and not just from the intellect. From the perspective of biology, clearly not all knowledge is algebraic. Much knowledge is geometric and geometric modeling is almost always visual. The most notable modern example of knowing in this sensual way is the model of DNA in a double helix as the way that James Watson and Francis Crick explained the fundamental nature of all living things.

The purpose of this discourse on the history of modern epistemology has been to highlight one last way in which modern Jewish philosophy has failed because it has ignored modern science. Many of the most important disputes in modern Jewish life are false disputes because both sides assume sharp dichotomies where none in reality exist. This is especially true of the conflict between liberal and traditional Jewish religiosity. Tradition and modernity

are not opposites. Rather they are idealized endpoints of a single spectrum. There is no reasoning that does not have an emotive element, and there can be no real emotive commitment to any stance that is not founded in reasoning. Thinking is a form of action, but things that matter in thought always involve deep feelings. Finally, there is little thought that does not involve imagination and there is little useful imaging that does not involve reasoned judgment.

All of these ways to transcend the standard dichotomies of modern Jewish thought can be learned from the modern scientific disciplines of history, psychology, and biology. It is to the discredit of modern Jewish philosophy that it has so far failed to learn them.

## Notes

1. For the ideological underpinnings of liberal Judaism, see Michael A. Meyer, *Response to Modernity: A History of the Reform Movement in Judaism* (New York: Oxford University Press, 1988). For the ideological underpinnings of Zionism, see Arthur Hertzberg, *The Zionist Idea: Historical Analysis and Reader* (Garden City, NY: Doubleday, 1959).

2. See, for example, Menachem Fisch, *Rational Rabbis: Science and Talmudic Culture* (Bloomington: Indiana University Press, 1997).

3. As the discussion in the previous four chapters should have made evident.

4. As found in the final two sections of the Hebrew scriptures—the Prophets and the Writings.

5. As found in the first section of the Hebrew Bible, the Torah, and in the purportedly historical books in the Prophets (Joshua, Judges, 1 and 2 Samuel, and 1 and 2 Kings) and the Writings (1 and 2 Chronicles).

6. I understand Jewish philosophy (FILOSOFIA YEHUDIT in Hebrew) and Jewish thought (MACHSHEVET YISRAEL in modern Hebrew) to be significantly different enterprises. The latter belongs more to what I called in my *Introduction to Modern Jewish Philosophy* (Albany: State University of New York Press, 1989) popular Jewish thought. Jewish philosophy is a professional academic discipline practiced by thinkers with professional academic training as philosophers, irrespective of religious or national identity, about the beliefs of Judaism and the Jewish people in light of earlier works by Jewish philosophers. In contrast, Jewish thought consists of opinions by a wide variety of Jewish intellectuals about subjects of concern to the secular and religious institutions of Jewish communal life. The first part of this book is a philosophical critique of Jewish philosophy. The second part of this book will be a set of constructive suggestions for the agenda of future Jewish philosophy with respect to Jewish thought in general. It is assumed throughout that while Jewish philosophy and Jewish thought are different things; neither discipline is logically independent of the other.

7. See Noah J. Efron, *Judaism and Science: A Historical Introduction* (Westport, CT: Greenwood Press, 2007). The statement here of Gans' rejection of heliocentrism is based on a private conversation with Efron.

8. For example, Italy and southern Spain, on the European land mass, are Sephardic and not Ashkenazic.

9. See Roger Chartier's *Cultural Origins of the French Revolution*, translated by Lydia G. Cochrane (Durham, NC: Duke University Press, 1991) and Dale K. Van Kley's *The Religious Origins of the French Revolution: From Calvin to the Civil Constitution, 1560–1791* (New Haven, CT: Yale University Press, 1996).

10. That is, those earliest rabbis who lived before the completion of the Mishna (200 CE).

11. That is, literature by *tannaim* that, in literary form at least, are discussions of the meaning of passages from the Hebrew scriptures.

12. That is, literature by *tannaim* that, in literary form at least, are independent of the biblical text.

13. See Richard Elliot Friedman, *Who Wrote the Bible?* (San Francisco: Harper, 1989) as well as Israel Finkelstein and Neil Asher Silberman, *The Bible Unearthed: Archeology's New Vision of Ancient Israel and the Origin of its Sacred Texts* (New York: Free Press, 2001).

14. What I mean by this expression is obviously based on the traditional rabbinic doctrine of "TORAH MI-SINAI" but I mean by the English translation something much broader and significantly less specific. As we shall see it includes a number of very different kinds of interpretations of the claim that the Torah is the product of a collective experience of the presence of God to the children of Israel through the agency of Moses in the Sinai Peninsula.

15. This hope has existed at least since the seventeenth century when Spinoza wrote his *Tractatus Theologico-Politicus*, Gebhardt edition, 1925; translated by Samuel Shirley (Leiden: E. J. Brill, 1989).

16. The dynasty of David and Solomon over the purported united kingdom of Israel lasted from about 1000 to 920 BCE, while the rule of Ahab over the separate northern kingdom of Israel lasted from about 870 to 850 BCE.

17. For example, can Jews who take seriously their participation as citizens in a modern national state be entirely classical? Can Jews who not only use modern communication tools but who understand the physics behind how they work, call themselves entirely classical? And so forth.

18. See Steven T. Katz, ed., *Mysticism and Religious Traditions* (Oxford: Oxford University Press, 1983).

19. That is, the world perceived by our four external senses.





PART TWO

THE REBIRTH OF  
JEWISH PHILOSOPHY





## Introduction II

The first part of this book dealt only with problems, not solutions. The second part deals with solutions, but the solutions are only opinions, not knowledge. Although the proposed solutions are interconnected, I have separated them into three familiar central topics in Jewish philosophy—creation, redemption, and revelation. My contention is that all three have to be rethought as a dialogue between the major conceptual texts of rabbinic tradition and contemporary science. The goal of the dialogue is truth about absolutely everything. The discussion assumes, at least as a working hypothesis, that both areas of inquiry make truth claims that are worthy of consideration by intelligent people, and that whatever the truth is, it is something that reflects what these disciplines teach.

The project is not new. It claims to do precisely what classical Jewish philosophy attempted to do as a dialogue between the ancient tradition of rabbinic interpretations of the Hebrew scriptures and the classical interpretations of the ancient Hellenistic writings in the physical and human sciences. In its most general terms, the second part of this book sets forth a future agenda for a study of science in relationship to rabbinic Judaism as a replacement for what has been the agenda in modern Jewish philosophy for the past century. In place of a study of the relationship between Judaism and the Jewish people on one hand and the tradition of continental philosophy on the other hand, this part proposes a new study of the relationship between Judaism and contemporary physical and human sciences.

I am willing to accept, without argument, that the now three-hundred-year-old philosophical tradition of continental philosophy has dictated the agenda for the field of modern Jewish philosophy. However, so defined, I believe the field to be dead, as I argued previously, dead because it has nothing to contribute to what is the primary task of all philosophy, including Jewish philosophy—the discovery of truth about everything. I believe that Judaism and science are both committed to the search for truth as fundamental and therefore defining values, and thus in principle they should be in agreement. However, as we have seen, they do not seem to agree. The final part of this book will make some suggestions for research programs intended to resolve the apparent conflict.

The positions to be outlined presuppose three sets of lessons learned from the first part of this book. The first is that Jewish thinking presupposes an understanding of history at its most general level, but the conception of the scope of history in past Jewish philosophy has been far too narrow. The Jewish people are not only those people who came out of Judea as rabbinic Jews and eventually settled in Western Europe and North America. Furthermore, Jewish religion is not limited to claims about the Jewish people in relationship to God and the world. In fact it is not even limited to claims about God and humanity. Judaism makes critical faith claims about the relationship between God and the entire universe, organic and inorganic, and its understanding of who the Jewish people are and what is their mission within the universe requires this most general perspective to be conceptually adequate in order to interpret Judaism's foundational texts.

The second assumption is that Jewish thinking should transcend the dichotomy of thinking about reality in terms of the mental and the physical. Reality is to be understood as a relation between God and his/her creatures within the continuously changing space of the created universe. As God is one, so ultimately there is a unity of being to all his creatures—including inorganic as well as organic entities, space as well as the occupants of space, matter as well as spirit, and body as well as mind. What the declaration of the Shema<sup>1</sup> affirms is the ultimate unity of absolutely everything.

No analysis in modern science more clearly highlights the inadequacy of thinking about reality in terms of traditional ontological dichotomies than the analysis of light in modern physical cosmology and optics. The geometry and the anatomy of light shows that seeing is both a mental and a physical activity, whose nature in itself undercuts any radical distinction between objectivity and subjectivity. It is not the case that the lenses, fluids, shapes, and neurons that make up the physiology of sight, and the spatial geometry that

describes how visions are constructed, in themselves cause sight. Rather these are only tools by which human minds construct what they see. Ultimately we are conscious not of what the physical organs of our brain and nervous system construct geometrically to be spatial reality; rather we are conscious of what our mind judges to be reality based on those mere physical reports. Yet, that is not to say that something called a mind has existence independent of a brain. Similarly we cannot claim from the data of vision that reality is something nonmaterial like energy or information, or that reality is something material like electrical impulses measurable in neurons. Rather, whatever reality is, it is something that unifies the products of both sources into a single picture.

The third assumption asserts that Jewish thinking must face the apparent facts that, on one hand, doctrines of Jewish chosenness or election are fundamental to any attempt to make intelligible Jewish identity, but that, on the other hand, all past conceptions of the distinctiveness of the Jewish people have involved, explicitly and/or implicitly, distinct conceptions of race, and all current theories of race are both scientifically false and ethically evil. The suggestion is not that Jews should cease to affirm the moral and religious value of identity with the Jewish people. Rather, the suggestion is to explore ways of interpreting that faith obligation that do not entail, as it has in the past and continues to do in the present, a racist understanding of who the Jewish people are in relationship to the other people of the planet earth.

The first lesson charges that until now Jewish understanding of reality has been too narrow to support an adequate quest (and Judaism is a quest) for the truth about absolutely everything. The third lesson charges that Jewish thinking distorts reality when it sees everything primarily in terms of Jews and other human beings residing on the planet earth. From this perspective there is no way to grasp at least one fundamental Jewish doctrine—God is the creator of the universe—and to the extent that the doctrine of divine creation is not intelligible, the conception of reality as an interplay between God and the universe is unintelligible. Whatever reality is, it has something to do with the Jewish people in relationship to other human beings on the planet earth. Yet, Jews, human beings, and the earth are temporally and spatially a very small part of reality, in fact too small to provide a perspective to grasp God, the universe, and the relationship between them.

If the biblical narrative is to be believed as history, at first the world and life view of the Hebrew people was limited in perspective to a small nation situated in the Judean hills that lived in relationship with a small deity who defined himself solely through his relationship with this people. It is only

through a series of national disasters of global military conquest that Israel's conception of absolutely everything was broadened enough to begin to speak of a God who rules every nation and all people, with a Hebrew nation that defines itself in terms of its redemptive responsibility to all other nations of the earth.

It was not until the tenth century, in Muslim lands that even this less but still narrow conception of reality was further broadened, through exposure to classical science, to become truly for the first time, a conception of a universe beyond the surface of a single planet governed by a deity who created, governs, and will redeem absolutely everything—in all space (atomic, terrestrial, and celestial) at all time (from the origin to the end of the entire universe). However, even this most universal conception of everything in classical Jewish philosophy was too narrow. It asserted that the universe has only three dimensions, but we now have reason to believe that it has many more. The time frame between the beginning and the end of everything is vastly longer than anything that the classical philosophers could imagine, even though they could say that the universe is eternal. Finally, the area of the universe is vastly greater than anything the classical philosophers could imagine.

Hence, the task facing modern Jewish thinking is to make intelligible, to the extent that it can, what kind of role is played by the history of a small nation (Israel) confined to a small speck in space (the earth) in the story of a deity who directs the entire universe. Furthermore, what can we say about this deity who relates beyond the vast universe in general to this little people in this little world, and how does God's relationship to this speck reflect on God's relationship to absolutely every other speck in the universe?

Even if we narrow our scope from the cosmos to just the planet earth, the world and life view of Jewish thinking remains too narrow. Jewish thought has thought about the world exclusively in terms of the lands where Jews have lived throughout history. However, there is far more to the planet earth than just the land masses where Jews have lived, and the God of Israel is not just the God of Israel but the God of everyone. Furthermore, the earth has a long history before any humanoids existed and the earth may have a long history after humanoids become extinct. Hence, the claim that God is the God of the universe entails that to understand who or what God is must include an understanding of God as the ruler of a reality devoid of humanity. Therefore, for Jewish thinking to be conceptually adequate thinking it must overcome its nationalist myopia while continuing to make sense out a faith commitment to the Jewish people. Similarly, intelligent Jewish thinking also must deal with its historic species myopia while continuing to make sense out of a special commitment to the survival and well-being of the human species.

Now let us assume these three lessons from our critique of modern Jewish philosophy—the cosmic dimension of divine history, the unity of reality, and the necessity of an interpretation of divine chosenness that transcends race, species, and planet—and move on to the constructive part of this book—a discussion of the distinct issues that should direct the birth of a new academic discipline whose subject matter is a conceptual dialogue between modern science and traditional Jewish philosophy in terms of the possible relations that hold between the temporal spaces of the universe and its inhabitants. I have organized this discussion into three parts, following the tradition in Jewish philosophy (classical and modern) of subdividing theology into the categories of creation (the origin of everything), redemption (the end of everything), and revelation (the course of everything between its origin and its end).

### Note

1. The biblical imperative conventionally translated as, “Hear (SHeMA) O Israel, the Lord our God, the Lord is one” (Dt 6:4).





## CHAPTER SIX



# Interpreting Creation: God, the World, and the Physical Sciences

At its most general level *creation* is a doctrine that asserts the fundamental relationship between God and the universe. God is here understood as *the creator*, and the world is *the creation*. Each noun is a singular, which suggests at least initially that whatever the universe is, it can be understood to be a single entity. Similarly God can be understood to be a single entity. However, in both cases we are not talking about terms that have absolute meanings. We speak here not of God as such but of God as the creator, which means God as he is to be understood in relation to the world. Similarly we do not speak here of the universe as such but of the universe as a creation. Whatever God and the universe are in themselves, here they are understood only as defining terms of a relationship, and the relationship, creation, is our central focus.

In the course of discussing the inadequacies of the understanding of creation in past Jewish philosophy we isolated ten critical issues for setting the agenda for a future study of creation within Judaism. These are following:

1. From the history and archeology of the ancient Near East: Are academic bible scholars better trained than rabbis to (a) say what the Bible means and (b) serve as moral guides for our lives? Are Bible scholars wiser than rabbis?
2. From quantum mechanics: (a) The moral value of individuals is questionable in God's physical universe. (b) The existential value of individuals is also questionable. Both problems significantly undercut the rationale for a liberal Judaism.

3. From astronomy: Since constellations are not real, how does the God of the universe relate to earth-bound creatures? From microbiology and microphysics: How does God govern particles?
4. From relativity physics: What is the relation of God to space-time, given that space and time are inseparable?
5. From general physics: What is the soul? Is it a form of energy, is it something spiritual, or is it something else?
6. What would a cosmology look like that fits the data of physics and astronomy but assigns reality to morality in the physical universe? Where in the modern conception of the universe is there room for quality and purpose as physically real?
7. Ignorance of physics results in inadequate views of the universe in a number of respects: The universe of humanists and other Jewish philosophers (a) is too small and too shallow (too small from the perspective of the cosmos and too shallow from the perspective of the micro cosmos), (b) can make no sense out of the notion of purpose in our purely mechanical/mathematical worldview, and (c) cannot account for all changes that occur within our universe.
8. Our universe is too old and human existence is too brief for humanity to provide the reason for the existence of the universe. If we give up this humanist assumption, how can we understand why God created the universe?
9. Especially in light of the principle of inertia, is there a good reason to posit a creator of the universe?
10. Jewish thinking needs to rethink ontological monism and negative theology.

For guidance in how to rethink these subjects, models can be adapted from the metaphysics of both Alfred N. Whitehead and Franz Rosenzweig. The body of this chapter is an explanation of each of these ten issues.

### **The Bible and Wisdom: Academics and Rabbis**

From the history and archeology of the ancient Near East: Are academic bible scholars better trained than rabbis to (a) say what the Bible means and (b) serve as moral guides for our lives? Are Bible scholars wiser than rabbis?

Classical Judaism referred to rabbis as CHAKHAMIN. Traditionally the Hebrew term meant sages or *wise people*. In a different form the word CHOKHMAH has meant not only *wisdom* but also an academic discipline such as a science, so that CHAKHAMIM can also be translated as *scholars*

and *scientists*. In the pre-modern world of Jewish communities there was little separation between these alternative meanings. Certainly there was no separation between being a scholar and being a scientist, and only rarely was a Jewish scholar not a rabbi or a rabbi not a scholar. Thanks significantly (but not entirely) to the development of the modern university in early modern Christian Europe and the admission of Jews into its “sacred halls” in the twentieth century, today there is a significant difference between Jews who become academic scholars and Jews who become rabbis. Our question is, can either of these societies—the academics and the rabbis—be said to be wise?

In general, scholars as scholars do not claim to have wisdom, or, if they do make this claim, it has nothing or little to do with their academic accomplishments. Their scholarship, they will insist, makes them more educated or even (depending on what it is that they know) more cultured, but not wiser. On the other hand, rabbis often do claim that their professional title does have something to do with wisdom.

One source of a rabbinic claim to wisdom can be traced back to the conclusion of Maimonides’ discussion of the first three books of his comprehensive code of Jewish law. The three book section is known as SEFER MADA (The Book of MADA), where MADA, which literally means knowledge, can also be translated as *science*. In fact it is the closest term in modern Hebrew to the English word *science* as a certain set of disciplines (physics, chemistry, etc.) as opposed to other kinds of academic disciplines (English, history, etc.). The first of the set deals with the foundational beliefs of rabbinic Judaism, the last of which states that through the study of the Torah under the guidance of the ongoing, continuous tradition of rabbinic interpretations of the Torah, students will gain the kind of virtues necessary for a scientific understanding of the created universe, without which true knowledge of God the creator would be impossible, without which there is no share in the world-to-come. Salvation consists in true knowledge of God (especially as the creator), knowledge of God depends on mastering the sciences (especially astronomy and physics), mastering the sciences depends on developing the kind of virtues of character that enable an individual to have the self-discipline to master the sciences (patience, curiosity, intelligence, and an uncompromising commitment to the truth), and the best program of communal and individual preparation in the attainment of these virtues is the individual mastery of the Torah learned within a community of other dedicated students of the Torah.

In general, the rabbinic claim is that learning the Torah is not merely an academic enterprise. The Torah cannot be simply read as a book. Rather, it is a system for living a certain kind of life that governs every aspect of life,

from birth to death. Furthermore, the Torah cannot be mastered living alone. It requires a community of people equally committed to living their lives in the way that the Torah instructs. First you need a community to teach you what the Torah says. Second, you need a community to provide you with a social setting necessary to live by the Torah. Third, you need a community to reinforce you and support you in your pursuit of this lifestyle.

What then is it that these students of the Torah master? It is not merely knowledge of all the laws that govern every aspect of a lived life. Rather, the knowledge is only a means to an end. It is the end that is wisdom, and wisdom here, as it was for the classical Jewish philosophers, consists in an attainment of ultimate goodness, which itself is identical with intimate knowledge of and a relationship with God.

There was a time when the professors who ran pre-modern universities would have made the same claim. The early western universities were extensions of the church (first the Roman Catholic Church and later, the Protestant Church as well) and as extensions of the church their program of study shared the same goals of the yeshivot run by the rabbis. Even later, through the first half of the twentieth century, many universities and colleges claimed a similar purpose, equally ethical but less theistic. Princeton University, for example, claimed that the goal of their education system was to create something they called “a Princeton man” (who generally was imagined as a cross between Woodrow Wilson and Eugene Debs). Yale made a similar claim about a mythical ideal “Yale man,” and Harvard about a “Harvard man.” To be sure these ideals were educated. They were learned. But they were not professional scholars.<sup>1</sup> Even once formally separated from its Christian roots, universities continued to advance an educational ideal in which academic knowledge was not an end in itself. Rather, education continued to be understood as part of a system of character preparation for the individual realization of the highest human moral goodness.

Clearly by the end of the twentieth century the attainment of moral virtue has ceased to be viewed as a goal that has any place in a modern university. For example, the current president of Arizona State University, Michael Crow, proudly proclaims his institution to be the “new American university,” which means that ASU is a flagship pointing out a direction that all universities will eventually follow. What this university offers (sells) to the American public is *information*, and information is not (by implication) *knowledge*. *Information* is a commodity that is useful for all kinds of people and for all kinds of purposes. In contrast, the term *knowledge* preserves the moral-religious meaning of the early Hebrew title of rabbi (literally the master or teacher) as a *sage*, that is, as a master of a moral system whose end or supreme good is a kind of knowledge of or unity with God.

As the university has become a place for dispensing information to professionals who will serve the general community, so the liberal Jewish seminary has become a place that dispenses information about Judaism (history, laws, stories, and training in practical disciplines like community politics, public speaking, pastoral care, and fund raising) to individuals trained to serve (not to lead) Jewish communities. As the ideal end products of university education are people who can be well employed in the nation (teachers, medical doctors, lawyers, engineers, and even business management consultants), so the ideal end product of liberal seminaries are rabbis who are public servants (teachers, administrators, and dispensers of psychological first aid) rather than sages who lead communities because they have mastered a path that leads to theological and moral perfection.

Hence, the first answer to the question of who teaches wisdom—rabbis or scholars—is none of the above. But there is another answer, and this one goes to the heart of rabbinic Judaism. The claim has two parts. First, the Torah is the primary source for moral and spiritual wisdom. Second, the rabbinic tradition is the key to understanding what the Torah says. Both parts of this fundamental claim are rendered doubtful by modern scholarship, and the liberal rabbinic seminaries, precisely because they follow the model of modern universities, neither face nor answer these challenges. In these seminaries the Torah is not studied with the tools of traditional rabbinic scholarship. Rather, the Torah is studied with the tools of modern academic scholarship (especially as part of the history of the ancient Near East), but these tools, despite their many other virtues, teach nothing about morality or theology. Quite the contrary, precisely because they are modern academic tools for studying history, they are methodologically incapable of saying anything whatsoever about the divine world that transcends the *plastic* universe of the mundane or about the universe of moral values that transcends all mere empirical descriptions of this world. Seminaries no longer study the Bible as a source of theology and ethics, but only as data for historical reconstruction in a way that is indistinguishable from what is offered in the university.

In this way the line between the Jewish seminary and the national university disappears and the seminary becomes just another university. Its sole advantage is that its students are more exposed in the amount of time spent in study of texts relevant to Jewish life. Its major disadvantage is that its students are, at best, at the academic level of students in professional schools and not at the level of academic scholars. The difference between the way seminary students learn the Bible and students of Bible in secular universities learn the Bible is the difference between students of anatomy in medical schools and students in departments of anatomy in re-

search universities. The former may excel the latter in acquiring information that is useful to the community, but only the latter have at least the hope of acquiring a knowledge that, in principle, is a precondition for achieving moral and intellectual perfection. So, while neither the modern university nor the modern seminary seems to be committed to wisdom, it is only the university that offers the kind of education that can lead to wisdom. Yet, if this is the case, what is it that modern rabbis know that qualifies them to lead a Jewish community that, at least traditionally, had the goal of achieving unity with God?

In defense of the rabbinic seminary and its products, it should be said that perhaps knowledge of God is no longer what Jewish communities are about. Rather they are today just instruments for fostering ethnic identities whose end is to maximize, through collective effort, Jewish self-defense against external enemies. Yet, if this is so, the Jewish community proceeds in a most illogical way. It hires people (rabbis) and pays them significant salaries to teach texts (notably the Hebrew scriptures) that are understood through rabbinic commentaries, but the rabbinic commentaries are not the best sources for understanding what the scriptures really say, and the scriptures themselves are not the best sources for training ethnic community, political, and social leaders. It is not clear why scripture should matter at all, but if it does, it would be better to hire, out of the new American information-oriented universities, MBAs to invest and manage community funds, social workers and educators to serve the community's families, and politicians to govern the community and represent it in the general society. For all these purposes rabbinic seminaries add little value.

The answer, of course, has to be a viable interpretation of the Torah as a way to wisdom and rabbinic texts as a meaningful part of training in the way of the Torah. It seems to me that the primary business of a Jewish seminary is to teach the rabbinic scriptures, by which I mean the following: Taken in unity as a multi-book rabbinic collection, the Hebrew scriptures are a religious-philosophical epic whose intent is to provide a complete philosophy of life. That philosophy includes an idealized law code set within a philosophical attempt to make sense out of everything in the past (i.e., a *heilsgeschichte* or religious-philosophical history) to set a program of individual and collective moral behavior in the present (i.e., a religious-philosophical political sociology) whose idealized end is an anticipated realization of absolutely everything in the future (i.e., a religious-philosophical eschatology or futurology). The collection incorporates into its vision every conceivable kind of knowledge, including all scientific knowledge, but it is not in itself a book about

knowledge, if by *knowledge* we mean something like an encyclopedia that asserts what we know about everything. Rather, it is a book that lays out a religious-philosophical direction, presupposing an encyclopedic knowledge of the time of its authorship, to an ultimate end out of an ultimate beginning of absolutely everything in unity. The unity is a unity of the creator (God) and his creation (the universe) where what God creates originates out of himself and in the end returns to himself, in perfect unity.

The rabbinic scriptures are a specific historical chain of interpretation of the Hebrew scriptures. That chain includes, without break, the products of Jewish thinking about this collection from the earliest rabbis of the Mishnah, the midrash, the Talmuds, and the codes through the unending continuation of this process of writing commentaries on commentaries of commentaries through the present day on to the end of the universe.

Three points about this chain of tradition need to be emphasized here. First, it is an unbroken chain that is continuous through history. No period in the process has a favored status over any other period. Modern commentators are not inferior to commentators who lived before the time of Joseph Karo, who are not inferior to commentators who lived before Judah Ha-Nasi.

Second, these commentators say radically different things even though they are commenting on the meaning of the same texts. They differ even though they all share a commitment that the goal of the study of these texts is the discovery of knowledge, and that pursuit integrates their knowledge of the inherited texts as intellectual historians with what they know about reality from the contemporary sciences. In this religious-philosophical pursuit the best conclusions of the intellectual historian and the best conclusions of the scientist may not be in perfect agreement. (In fact they may rarely have a simple agreement.) In these cases where knowledge is not at least as yet possible, the search of the students of the sages is to achieve the most reasonable opinion, which means some kind of balanced conclusion that does justice to the authority of all the sources being considered.

Third, the search for reasoned opinion out of the respectful interplay of the rabbinic scriptures and modern science is in itself a religious act through which is revealed the will of God. That the process is a spiritual quest in which God reveals himself is an essential affirmation of a viable Judaism. In more classical rabbinic terms, the affirmation of the process of the dialogue between classical Jewish philosophy and contemporary science is a foundational belief (YeSOD). However, this belief, like all the others, is subject to doubt from the perspective of modern science at least, and those doubts must be faced and overcome.



## Liberal Judaism and the Value of Individuals

From quantum mechanics: (a) The moral value of individuals is questionable in God's physical universe. (b) The existential value of individuals also is questionable. Both problems significantly undercut the rationale for a liberal Judaism.

For most of the past century the major issue dividing Jews from Jews has been the viability and the range of divine revelation to human beings, especially to Jews. It is this issue that lies at the heart of the fundamental division between liberal and traditional Judaism. This conceptual division is explicit and overt.

What is less obvious is that the division over revelation rests on a fundamental difference between liberal and traditional Jews about the nature and character of the proper relation between the collective and the individual members of the collective. Traditional Judaism, precisely because it is *traditional*, that is, rooted intellectually in a set of pre-modern intellectual conceptions, assumes ontological priority and epistemological authority of the collective over its members, whereas liberal Judaism, precisely because it is *modern*, assumes the ontological priority and epistemological authority of the individual over the collective. The source of this more basic philosophical difference is, in my opinion, physics.

Modern physics has presupposed, at least since the seventeenth century, that what ultimately exist are extremely small individual entities that on final analysis have no qualitative differences. They are innumerable copies of the same thing whose different functions are ultimately caused by their location in fields of space-time and that location is simply an accident. All collections—be they molecules, or compound organisms, or living things (vegetable, animal, or human), or societies (social, political, or religious)—ultimately are fictions constructed by minds which themselves are no less fictions than what they imagine. This is the ultimate truth behind the political assertion that all human beings are equal; they are all ultimately fictions whose constituent parts are all qualitatively identical. Yet, as a moral implication from an underlying assumed ontology, the statement of human equality is too conservative. More accurate would be the claim that all things are equal because everything in the universe ultimately is constructed from qualitatively identical components subject to the same physical laws. Nothing has more *rights* than anything else in God's created reality because all differences between things are due to accidents of time and place in the empty playing field of the universe.

Yet, if modern<sup>2</sup> Newtonian physics supports these—radical, liberal, moral, and political—claims of equality, more contemporary post-Newtonian physics would support more conservative moral political inferences. The in-

dividualistic claims derived from modern science make the most sense with a simplistic understanding of a materialist atomistic universe that no contemporary physicist could accept as good science. First, as far as we know there are no ultimate constituents of the universe. Although many scientists hold out the hope that eventually we may find the long-searched for *atoms* (i.e., the ultimate indivisible constituents of absolutely everything),<sup>3</sup> everything we have so far discovered can be further divided into ever more basic constituents, and, based on centuries of experience, it seems more reasonable to assume that whatever new elementary particles we find, they too eventually will be seen to consist of even more basic constituents, ad infinitum.

Second, the hope that in the end there must be ultimate constituents of the universe is derived from the difficulty our human minds have in imagining that what really exists does not definitely occupy completely determinate times and spaces. The real should be clearly real and not *fuzzy*. Fuzzy thinking must be the result of the inadequacy of our thinking and not of the way that the things about which we think really exist. However, quantum mechanics seems to suggest that reality does not fit this fairly simplistic hope.

If the laws of quantum mechanics are not fictions that merely enable scientists to make certain predictions and to build certain kinds of instruments, but if these laws really do describe the way things are, then the Heisenberg uncertainty principle is a description of what the universe is like and it is not just an epistemological tool. What this principle asserts is that any determination of the momentum and the position of particles have a certain probability and that probability is subject to the following law:  $(\Delta x \cdot \Delta p \geq \hbar)$ . The product of the uncertainty of the precise position of a particle ( $\Delta x$ ) and the uncertainty of the same particle's momentum ( $\Delta p$ ) is equal to or greater than a constant known both as the reduced Planck constant and the Dirac constant ( $\hbar$ ). This constant is derived from another constant, known as the Planck constant ( $h$ ), which is approximately  $6.626 \times 10^{-34}$  joule/seconds.

If the modernist atomist view of the physical universe is a true picture of reality, then every particle in the universe should occupy an exact position in space and its momentum through space should be determinate. This understanding of reality should entail that, at least in principle if not in fact, the exact position and the precise momentum of any particle can be measured with certainty, that is, with zero uncertainty. However, the Heisenberg uncertainty principle asserts that this common sense inference is false, and the error is not because of a limitation of what we know about reality, but because of the very nature of reality itself. If we focus our attention solely on a single particle and not look at the particle as a member of a group (or system)

of particles in some larger collection of particles such as a molecule, then there is a limit less than certainty (i.e., less than 1) to the probable combined position and momentum of the particle. That limit on uncertainty is 0 plus the reduced Planck constant.

Let me suggest that the source of the paradox is that the mathematical laws of particle physics are probability equations, and probability claims apply to sets of individuals more readily than they do to single isolated members of a set. Consider, for example, the statement that any single roll of a single six-sided die has a probability of being the number 2 and that probability is  $1/6$ . It is  $1/6$  because the faces of the die are numbered 1 through 6 and the die is not weighted to favor any one side over any other side. In this case, I know with reasonable certainty that the probability of my opinion that the die will land on any particular side is  $1/6$ , and there is nothing else I can know that will improve that probability. I can never know with certainty what the exact position will be on any single roll of the dice because there is not anything more to know. In this case with a so-called fair die and a “fair throw of the die,” there is nothing that God can know that I do not know. The reality is precisely that there is a  $1/6$  probability of any specific number appearing on the next roll of the die. In other words, this statement about probability is not primarily a statement of what I do or do not know; it is a statement about the reality or nature of the die itself and the way the die moves in this world.

So is it the same with the universe, if in fact the laws of quantum mechanics provide an accurate description of the laws of the physical universe.<sup>4</sup> Probability equations about particles are not merely statements about our knowledge of the movements of the particles; rather, the statements are actually descriptions of the reality of the particles. Furthermore, if the laws that govern the physical universe tell us something about the mind of the creator who created this creation, then God thinks of creatures not primarily as individuals but as parts of larger collections, where the laws express knowledge that asserts certainties about collections<sup>5</sup>, and it affirms only reasonable opinions about the individual members of the set.

We will discuss later what the application of this model entails for interpreting the traditional rabbinic concept of free will and determinism. For now I want to focus solely on what this model says about the ontological priority and epistemological authority of the collective over its members. Simply put, an adequate understanding of quantum mechanics, which means an adequate general understanding of contemporary physics, cannot in any sense justify, as it has in the past, any liberal, moral, and political claims about human rights. If there are human rights, for example, they do not fol-

low in any way from the ontological relationship between members of groups in physical systems. To the extent that our claims about political ethics rests on analogies between the human political state and the physical natural world, modern physics would suggest as more natural the view that individuals are determined through their participation in the collectives, so that the collectives have ontological priority and therefore moral authority over their individual members.

This conservative deduction from contemporary physics has no less religious implications than it has political implications. It justifies the Jewish traditionalist claim that assigns authority to the spokespersons of the Jewish community over the right of individual Jews to determine what, for now at least, is the meaning of the Torah in concrete situations. Contrary to religious liberalism, it is the community that has the right to determine how individual Jews are to decide the way they as Jews should relate to God as the God of Israel's forefathers. The collective has this authority over its individual members because the laws of physics suggest that God the creator created his created universe in terms of general rules without primary concern for its individual members. Hence, the Torah was given to the Jewish people to be interpreted by the people's formal representatives on behalf of every individual Jew. The issue here is not who has the correct interpretation of the Torah, certain individuals who oppose the community or the official representatives of the community. The representatives may or may not be right, but either way their decisions, irrespective of their talents, are politically authoritative and morally justifiable.

On the other hand, science alone can never settle these kinds of moral political questions. It need not be the case that those who are now in authority will remain in authority. Authority ultimately must be earned. It depends on the intellectual and moral talents of the community's leaders. Eventually, given a leadership wanting in knowledge and moral character, the leadership will be passed over and invested in others who handle their responsibility with greater intellectual skill and moral integrity. Hence, what I have said does not in itself settle the issues of authority between traditional and liberal rabbis. Rather, what the previous discussion should teach is that the grounds for a liberal attack on the authority of the traditional rabbinate must be based on historical claims about the moral and intellectual ability of the traditional rabbinate to rule well, that is, to accurately reflect the determined will of the creator for the nation Israel. The traditional rabbinate itself cannot claim authority simply because it has had authority, whereas on the other hand the liberal rabbinate cannot ground its claims against that rabbinate solely on the authority of modern science. On the contrary, modern science in itself

suggests, if anything, a defense of traditionalism over (at least classical) liberalism.

With these suggestions about what should be the parameters of the debate, let us leave the issue of Jewish religious politics. Traditional Judaism developed its interpretations of the Hebrew scriptures and its beliefs about the *root principles* (IQQARIM) of Judaism on the basis of a scientific worldview that ceased to be adequate more than five hundred years ago and has been rendered generally indefensible for at least a century. In opposition to traditional Judaism, liberal Judaism arose and developed significantly different interpretations of the Hebrew scriptures and statements of fundamental beliefs (moral, political, and religious) that were grounded in a modernist science that is at least two hundred years old but whose inadequacies have been becoming increasingly apparent for about a century. The physics of the twentieth century is a significant correction on the physics of the eighteenth and nineteenth centuries, and as the earlier physics played an important role in changing the way liberals thought about morality, politics, and religion in the twentieth century, so the changes in physics in our time should provoke a serious rethinking of liberal values in the twenty-first century. This chapter suggested a form that this new thinking should take. Let us set aside politics for now and look at theology.

### Divine Providence

From astronomy: Since constellations are not real, how does the God of the universe relate to earth-bound creatures? From microbiology and micro-physics: How does God govern particles?

Let us now look at the second purported religious implication of the uncertainty principle—how it informs and does not inform the *prima facie* paradox between asserting human free will and absolute divine determinism. The usual statement of the problem in philosophy of religion texts reads as follows: On one hand, God is perfect in every respect, which entails that God knows perfectly everything; he has unlimited power to do anything he desires to do; and he always desires to do what is best. On the other hand, human beings are free to make moral choices. If they were not free, they could not be held morally responsible for their behavior, which they are. Furthermore, if they are free to choose at least some of their actions, their actions cannot be determined in advance, which means that the actions subject to human free choice are contingent. However, precisely because they are contingent, they are unknowable by anyone, including God. The first set of claims about divine perfection entails that nothing in creation occurs that God does not

know and could not happen if God did not desire it to happen. The second set of claims about human freedom entails that there are some events that occur that God does not know, that God cannot prevent, and/or that God does not condone. Hence, the two sets of beliefs are incommensurate.

This common way of stating the central problem with the traditional belief in divine providence does not do justice to the way the problem was conceptualized in classical Jewish philosophy. Different philosophers had different ways of laying out the problem, and among these views the clearest presentation, conceptually and logically, was the version of Gersonides. Gersonides' view can be summarized as follows: God knows everything that can be known perfectly but he does not know what cannot be known and nothing can be known to the extent that it is contingent. To know something is to know the causes that necessitate it, but to the extent that any event is contingent it does not have a necessitating cause.

The kinds of things that have necessitating causes are the laws of nature that determine what everything is insofar as it is something and determine what happens to anything insofar as it is determined. Things are determined insofar as what they are and what happens to them follows from their defining essence or their essential nature.<sup>6</sup> However, the concrete particular creatures of the empirical world consist of more than their natures. The only entities in this world of sense experience that are so restricted in nature are numbers. Numbers are real and individual; they are not just ideas. However, they do not occupy either space or time; they are not capable of sense experience; and nothing can have sense experience of them. All of the empirical particulars in reality are not just forms. Rather they are materialized forms that in virtue of their materialization occupy space and time. These material entities are particulars precisely because they uniquely occupy a single space at any specific time. It is this conjunction of spatial and temporal location that uniquely identifies them. However, it is unknowable to the intellect precisely because the intellect is not an organ of sensation. Hence, particulars are unknowable even to God. However, not knowing them is not an imperfection, because there is nothing to know. Things are materialized at particular times in particular places only insofar as they are material entities, but to be material is to be nothing at all, since things are something (i.e., they have an essence or they possess essential forms) only to the extent that their forms are what they are to the exclusion of their materiality (i.e., to the extent that they are something not locatable in time and space).

In this way Gersonides is able to preserve the theological claims that God is perfect with the moral claims that human beings can make moral choices. God governs his/her creation through his laws of nature. These laws govern

the universe in the best of all possible ways, which means that if these laws were even slightly different than they are then the created universe could not exist. The same principle applies to the 613 moral laws that were revealed to Israel through the Mosaic revelation at Sinai. These laws present the best possible program for moral and intellectual perfection, so that those who master and obey this discipline will maximize their opportunities for a happy life no matter what is their fortune. However, this does not mean they will be, in absolute terms, perfectly happy. Every individual is born at a particular moment in a particular place as a material entity, and no individual can choose the moment of birth. Yet that moment sets the individual on a specific life course with specific opportunities and specific disadvantages that are unique to that particular moment of historical origin. Hence, the lessons of the Torah cannot guarantee absolute happiness for people not born at the most perfect moment in the most perfect place. It only guarantees that no matter what is their fortune, no matter on to what specific course they are born, with obedience to the Torah they will achieve more happiness than they could achieve otherwise.

What Gersonides' natural philosophy did for pre-modern science and classical rabbinic theology, quantum mechanics does for modern science and contemporary theology. The critical role of quantum mechanics in this theological story is that it makes sense of the claim that insofar as any of the creatures of the universe are particular—be they subatomic particles or compounds of compounds of compounds of particulars—what happens to them in the concrete is a matter of chance, in principle unknown to anyone, including God, and that this specific kind of ignorance is not an imperfection in the knower, because it is not a failure to not know what is in principle unknowable.

However, this discussion does not mean that the question of how God governs his/her creation has been solved by quantum mechanics. On the contrary, we have not as yet said anything about how and what God knows at all. The discussion of Gersonides' theory is set entirely within the physical framework of the Aristotelian-Platonic-atomist synthesis of medieval science, which is a science in which functionally no one today could intelligently believe. Before we can talk about divine providence we must first talk about what it means to speak about God at all as the creator of our present created universe which, to the best of human knowledge, is guided at least physically by a mathematical set of principles that govern the interaction of simple and compound forms of energy that behave collectively under certain sets of rules expressed in quantum mechanics. All we have said so far about

divine providence is that it is in principle less problematic in contemporary science than it was in classical science. In classical science what ultimately exists in the created universe are concrete particular individuals who are in principle totally determinable from the perspective of physics and inherently free from the perspective of ethics in the context of intellectual disciplines understood to exhibit ideally perfect coherence. In contrast, contemporary science assumes that what ultimately exists in the created universe are concrete collections of individuals which as collectives are in principle determinable but as individuals are in principle indeterminate. Furthermore, this physics presupposes a radical separation from ethics, where in principle it is assumed that ethics and physics are incommensurable.

So, while quantum mechanics closes the door on one problem, namely divine governance, it opens the door to an even more difficult problem than the one faced by classical Jewish theologians. For Jewish thinking it is not enough to explain what it would mean to say that God is the creator of the universe. Jewish thinking would also want to claim that the creator is good and the world that he creates is also good. Such claims were compatible with the claims of pre-modern science, but they seem to be incompatible with an adequate knowledge of modern science, especially of physics. It seems to be unintelligible to claim that, based on what physics teaches this world has anything to do with morality insofar as it is a created, physical universe. However, this conclusion would seem to entail that from the perspective of creation alone, as a creator God cannot have acted as a moral agent. If the universe is neither good nor bad, and this is the universe that the creator created, then the creator insofar as he is a creator is neither good nor bad.

The issue now becomes a question about the nature of God. What the classical Jewish philosophers did was use a now obsolete system of physics to interpret what scripture can mean by calling God a creator. What they said is now irrelevant, not because of a justified loss of confidence in scripture,<sup>7</sup> but because of a justified loss of confidence in a philosophy whose source of explanation is a kind of science that we know is not true.

It was classical science, not the Bible, which forced Jewish philosophers to deny the literal meaning of all textual descriptions of God in physical terms. Given the lack of authority of that science, the issue of the best interpretation of biblical theology is again an open question. Understood in its most literal way, the God of the Hebrew scriptures is a physical being who assumes physical forms and moves through time in space. How in the light of modern science, especially physics, should we understand these biblical claims about the physicality of God?



## The Physicality of God

From relativity physics: What is the relation of God to space-time given that space and time are inseparable?

The third purported religious implication of contemporary physics for Jewish religious thinking is that it undercuts the entire tradition of classical Jewish theology to return to the stage that our ancestors were at when they decided that the Hebrew scriptures are divinely revealed.<sup>8</sup> Since the scriptures are a paradigm example of divine revelation, what they say informs us minimally of how to understand the direct relationship between God and political-social collections of human beings. Furthermore, as revelation, what these scriptures say must in some profound way be true. The issue is, therefore, how are we to interpret the recorded words and sentences, many of which seem clearly not to be true? The traditional solution to the problem was to claim, at least as what some theologians today like to call a research project, that there are nonliteral ways to read the scriptures through which the truths revealed can be uncovered and made explicit. All that is needed, besides intelligence and dedication to hard work, is a correct key to interpretation. The classical Jewish thinkers believed that science provided the key precisely because it provided a textually independent source by which claims of biblical interpretation can be verified. However, we no longer can accept this authoritative role for classical science, because we now know, because of science, that their science is not true. False claims cannot serve as a standard or corrective for determining truth in any text, let alone in the Hebrew scriptures. The issue is, can modern science, especially in the light of quantum mechanics, provide a replacement standard, and if it could, how would it guide our interpretation of the Hebrew scriptures? This question is the topic of this section.<sup>9</sup>

The biblical narrative begins with a description of God's distinctive act of creating the universe. That act is divided into seven distinct stages that are called *days*. What distinguishes the days is the progression of details. The first three days involve the differentiation of space. On day one a region of light (called *day*) is separated from a region of dark (called *night*). On day two a sphere of earth is separated out at the center of the universe, which is encircled by two distinct rings of water separated by something God creates to divide them. This ring of space that separates the two rings of waters becomes the *sky*. Next, on day three God moves the location of the sphere of earth in relation to the rings of water and sky so that part of the earth-globe extends through the lower waters into the sky in order to establish a surface on the earth that is *dry land*. Finally, also on day three, God commands the earth to

produce vegetation which will be the nutritional support base for the living things that will occupy all three basic divisions of the space of the universe—the waters, the dry land, and the sky.

The next three days are given over to the creation of the living things that will occupy the differentiated spaces of the universe. On day four God creates entities that emit light (called *lighters* or stars) to occupy the space of the sky. On day five he creates a kind of thing that swarms in the waters (called a *swarm* or fish), a kind of thing that flies in the sky (called a *flier* or a bird), and sea serpents.<sup>10</sup> Next, on day six God commands the earth again, this time to create the creatures that occupy the dry surface of the earth-globe, and that these kinds of things are all created in the singular. First earth creates a domestic animal, then creeping thing (or *bug*), and then a nondomestic animal (or, wild animal). Next God concludes the work of the sixth day by creating, with some assistance from an unnamed helper (probably the earth), a single human being who is both male and female. Then, at the end of creation, on the seventh day, God creates *rest* to complete the work of setting the stage for the historical narrative that is to follow that describes the dynamic, violent history of the relationship between God and humanity, with humanity divided after creation into multiple, violently related sub-groupings.

The first division is between now separated males and females. Then come the different nations of human beings on the surface of the earth. Then the nations are separated into Semites (i.e., descendents of Abraham), the Semites into Ishmaelites (descendants from Hagar) and Hebrews (descendants from Sarah), and the Israelites into priests, children of the households of Rachel (namely, the tribes of Benjamin and Joseph's two sons) and Leah (namely, the remaining nine tribes, notably the tribe of Judah). In time these tribal associations will become minimalized and what will be emphasized is the lineage of all the descendants of Abraham and Sarah (namely, the Jewish people) as radically separate from all of the other human nations of the earth.

It is most likely that this narrative was written primarily to be understood as a myth rather than as a history. What makes it myth is that it is a way of explaining something that cannot be explained in any other terms. Plato presents a very similar myth in the *Timaeus*, which the myth teller (Timaeus) explains is a form of informal argument intended to bring the hearers to understand something about reality that cannot be adequately understood through the scientific tools of logic, rhetoric, and demonstration.<sup>11</sup>

Given this understanding of the biblical narrative, questions about historical accuracy are the wrong kinds of questions to ask. This tale ultimately has nothing to do with empirical history. For example, we are not told when creation happened. How long it took is irrelevant to the text. (If it were relevant,

then the author would have dated its beginning and its completion.) It is not even clear that creation is a temporal act, since the only time references in the text (*day* and *night*) are explicitly identified with regions of space and not with changing events in time.

Rather, the text intends to tell us about the nature of what we call the physical universe, and as such it is a tale about physics. It says that the universe is basically divided into space and things that occupy space. The space itself is a living thing, which simply means it performs self-generated actions. As such, it is divided into three distinct kinds of domains—domains filled with gases (i.e., space), domains filled with liquids (i.e., the seas and other bodies of water), and the domains upon which living animals (i.e., insects, fish, animals, and humans) roam. Furthermore, these creations all have only general and not specific identities. Presumably all of space can be specified into specific spaces, but that is not what the scriptures assert. Spaces are general spaces such as the space of the sky, the seas, and the earth. On earth there is even more specification, namely, the lands of specific nations and the holy places within these lands. However, for the most part, with the possible exception of the place where Abraham sacrifices Isaac, no place is given a unique, definite identity.<sup>12</sup>

What is true of space is all the more true of the inhabitants. The stars are just called “things that cause light.” Only two of them are given a more definite description (a “big light” and a “small light”), but neither is given a definite description or name. What uniquely identifies them is their commanded function, namely, to govern the lights in the sky in an orderly way so that Jews will be able to determine the Sabbath, the months, and religious festivals, which only matters so they will know when to make commanded sacrifices.

What is true of the stars of the sky is also true of the animals of the earth. None of them have names. Rather all of them are described exclusively by either what they are or what they do. Birds are fliers in the sky, fish are *swarmers* in the sea, and animals are living things on the earth. In general animals are just animals, who are distinguished as a group solely in terms of their qualifications for being human food. All of them are indistinguishable products of the earth according not to any sign of individuality but solely according to their kind, that is, according to their species identity. Even the first human does not have a name. He is simply called *the human* (HA-ADAM), which means he is a thing formed from top soil (ADAMAH) and he is the first one from whom all subsequent ones are copies.

How then, in the light of contemporary physics, can we interpret this narrative account of the physical universe? Let me suggest here, in the most gen-

eral terms, an outline for an account. The ultimate constituents of the physical universe are ultimately small objects and/or short movements and on both determinations of ontology the individual constituents of reality lack any singular identity. If they are motions, then what describes each of them is the precise moment and location of their origin. However, if quantum mechanics describes reality, both the moment and the location of origin cannot be uniquely measured. Hence, in principle the singularity of the different motions that constitute the universe cannot be specified. Similarly, if the ultimate individuals of the universe are particles, they exist only in relation to other elements with which they form a compound. From this perspective, individual living things are clusters of particles that have general but not specific identities. On either interpretation individuals are momentary snapshots of perpetually dynamic processes in which the general processes are more descriptive of reality than are any of the things subject to these processes.

The philosophers who have come closest to describing this picture of physical reality are Heraclitus, Alfred North Whitehead, and Franz Rosenzweig. Heraclitus purportedly maintained that all of reality is change. Whitehead described this change as series of motions defined by their origins and their ends, both of which he identified with faces of God. And Rosenzweig interpreted these origins and ends of all real entities in terms of biblical and rabbinic notions of creation and redemption.

### The Nature of the Soul

From general physics: What is the soul? Is it a form of energy, is it something spiritual, or is it something else?

Heraclitus, Alfred North Whitehead, and Franz Rosenzweig understood the universe as a whole and in its many parts to be a living, breathing thing. As such all three philosophers would claim reality for souls, which traditionally are understood to be principles of life. In contrast, modern science tends not to discuss souls at all, and tends to want to account for (or explain away) life in more purely mechanical and mathematical terms than those thinkers who call a soul a principle of life can allow. Our question here is, does modern physics leave open a place for a conception of soul, and can life in principle be explained without such a principle?

The most obvious answers to the question are yes, no, and maybe. No, because most philosophers of science tend to favor a materialist account of reality in defense of which all claimants to existence, including souls, are reduced to material entities. So, typically, mental acts certainly exist but they

are not mental (i.e., not spiritual) beings. Rather they are electrical-chemical reactions in a network of neurons extending from the brain through the entire body, all of which are physical objects.

Other philosophers, far less numerous among scholars of science, will say yes. Obviously from experience there are mental acts. The issue is not whether or not they exist. The issue is whether they are material entities or spiritual entities, and these philosophers would claim that they are neither. Rather, they are a third kind of entity that is neither mental nor physical. A good example of a contemporary philosopher, in this case a philosopher of technology, is Brian Cantwell-Smith<sup>13</sup> who argues that mental acts are best understood ontologically as akin to information, as in a computer, and information does not exist in the same (material) way as the hardware (which is analogous to the body) or even the software (which is analogous to the brain) of the computer (which is analogous to the person). Both the hardware and the software are material objects, but the program and the information are not. Still they exist and, like material objects, they are objective and exist independent of so-called mental acts. Cantwell-Smith's suggestion seems to be that by thinking of information as its own distinct ontological category we can avoid all the historical problems of the debate between idealists, materialists, and so-called realists in the history of philosophy. Presumably a soul is a reification of all of the information that a person processes, and as such, a soul exists.

Still other philosophers, especially those with a reasonable understanding of the intellectual history of religion, will answer our question, maybe. Whether or not souls exist depends on what we think souls are, and at least in the case of Judaism the conception of the nature of the soul has changed radically. Briefly, the sources of the concept of a soul in Jewish philosophy are the Platonists and the Aristotelians who have radically different conceptions of what it is. For Aristotle and the Aristotelians, a soul is a principle in a substance that accounts for life functions, namely, actions whose immediate cause is an intention of the actor. As such a soul is not itself a substance and it has no existence independent of its host. In contrast, for Plato and the Platonists, a soul is a spiritual entity that exists independent of at least space but stands metaphorically in a special relationship to a spatially located body. The relationship to its associated body is sufficiently intimate that it may not be able to survive the disintegration of the body, but at least in principle a soul is sufficiently independent of a body that it may (but need not) exist prior to a body, continue to exist after the demise of the body, exist in some other body, or even exist independent of a body. Different Platonists made different choices from these selections.

The Hebrew scriptures themselves are neither Platonic nor Aristotelian. They use two terms that came to be interpreted to mean a soul, but neither has that meaning in the Bible itself. One term, NESHAMAH, simply means breathing and breath, so that to say that something has a soul is to say that it has breath or that it breathes, that is, that it is alive. The second term, NEFESH, means to be alive, so that anything that is alive is called a NEFESH. Here the term means that the subject is alive; it is not a second entity that exists in the subject.

The ancient rabbis who interpreted the Hebrew scriptures were in all probability at least influenced by the Stoics, and the Stoic conception of the soul was a mixture of Platonic and Aristotelian influences that emphasized the term's association with the state of being alive that in turn had as its most distinctive marker the activity of breathing. The classical Jewish philosophers absorbed the view of the soul of the earlier rabbis, but gave that view, depending on their own philosophic commitments, a more Platonic or a more Aristotelian interpretation.

In general the classical Jewish philosophers divided the created world into two distinct but related domains—the material universe and the spiritual universe. Things like bodies and brains occupied the material realm; things like souls and minds occupied the spiritual realm; and Jewish philosophers tried to figure out how the two were related. Generally, in my judgment, these Jewish philosophers—like their Muslim and Christian peers who had exactly the same problem for exactly the same reasons—never succeeded in solving the problem of a relationship between the mental and the physical, primarily because there is no solution. Clearly, based on experience, the material and the mental mutually influence each other even though sometimes they act independent of each other. Hence, they cannot be (as Spinoza tended to suggest) utterly independent of each other. However, in some instances they are independent, so that the mental cannot be reduced (as Marx and Behaviorists tend to suggest) to the material, and the material cannot be reduced (as Idealists tend to suggest) to the mental.

The question of the nature of the soul in relationship to its associate body is purely a philosophical question in which nothing of religious importance, at least for Judaism, should be at stake. While the doctrine of the soul has been affirmed by practically every Jewish thinker from the time of the ancient rabbis down to the present, no one can claim that it is a doctrine of the Torah. Rather it is a philosophical claim, rooted in a now obsolete set of philosophical doctrines that as such have no epistemic authority in Judaism. The value of the doctrine is that it makes sense out of certain obscure phrases in the scriptures. But it is the scriptures and not philosophic interpretations

of the scriptures that are authoritative for Judaism. A philosophical interpretation of the Bible is authoritative for Judaism if and only if it is true. Now it is by no means impossible that we should believe in the existence of a soul in the way that the Platonist rabbis interpreted the Bible. Certainly accepting their judgment makes it conceptually easier to accept many prayers in the traditional prayer book (SIDUR) because the rabbis who composed those prayers were deeply influenced by Platonic philosophy.<sup>14</sup> However, the need to reinterpret what the traditional prayer book says is not in the same class *Jewishly* as reinterpreting what the scriptures say. The former is solely a creation of rabbis, whereas the latter must fundamentally reflect (if Judaism is to be intellectually viable as a faith system) in some critical way *divine revelation*, that is to say, what God revealed to his people Israel, and, once again, the literal meaning of the Hebrew scriptures does not assert a Platonic or even an Aristotelian understanding of what a soul is and how it is related to a body.

In fact the literal, pre-rabbinic understanding of what it means to say that something is alive is closer to the contemporary sciences discussed in the first part of this book than it is to the post-biblical, traditional rabbinic understandings of the scriptures in terms of Platonism. There is one reality in which we, God, and everything else live. To be sure, we human beings experience reality through multiple, seemingly non-traversable separations. First and foremost is the separation of the creator from all of his creations. Then, within the domain of creatures, there is the separation of the spiritual from the physical while the mental belongs to the domain of the spiritual. However, all of these separations, which are strongly suggested by our experience of reality by means of the five senses, are not correct interpretations of what reality is.

The senses are the tools by which we encounter reality, but they do not report reality as it in fact is. In fact, as the prayer the Shema' affirms, there is only one ultimate reality in which God and the universe are one, which entails that all of the different universes we experience, notably the domain of the mental and the domain of the physical, are also one. In my personal judgment, both the mental and the physical are real but neither is reality. What we know to be mental and physical are simply clues from which we must construct an understanding of reality as a single thing that transcends all the categories through which reality is revealed to us. These judgments are opinions, but they are not mere opinions. They are based on my own experience, but also on my knowledge and confidence in the reports of rabbinic Judaism through traditional (especially conceptual) texts and the reports of modern studies in the physical and the life sciences, combined with my faith as well that these too-difficult-to-fathom but moderately trustworthy sources for rea-

sonable belief must be able to agree since they offer interpretations of the same reality.

Although modern physics tells us that the ultimate constituents of reality can be understood by analogy equally well as waves or particles, I personally find the conception of things as waves closer to the way things in fact are. I am moved to a preference for waves, mainly because of the ontologies of the German-Jewish philosopher of history, Franz Rosenzweig, and the Anglo-American philosopher of science, Alfred North Whitehead. I will have more to say about their views as a reflection of (as well as a source for) of my own views in the last section of this chapter. For now, however, I only want to add a brief note on their understanding of the nature of the human soul.

For Rosenzweig, the three fundamental elements of what he calls “the Truth” (which more or less corresponds to what I am calling reality) are God, the human, and the world.<sup>15</sup> All three elements are movements rather than substances or things. All three are processes of coming to be. In God’s case the motion that defines him is from what he is initially to what he is at the end, where what he becomes is completed by the actualization of the other two elements. In other words God is that act of becoming in which what is already becomes more fully what he is.<sup>16</sup> In the case of the world of objects, the motion of everything is from an origin at birth as nothing definite to an end as something completely definite at death.<sup>17</sup> In the case of the human, the motion is from nothing to nothing.<sup>18</sup> For our purposes it is sufficient to say that what defines the human is not the way he is a body, namely, a physical object among physical objects in time and space, but the way he is and is not God, namely, an act of consciousness of the world of objects who, in virtue of that consciousness, has unfulfilled desires that he strives to fulfill. The critical difference between the human and God is that what God wills becomes reality (creation), whereas what the human wills comes in the end to nothing. It remains despite intent pure exercise of will.

In Rosenzweig’s description of the human as an ongoing act, from birth to death, of unfulfilled desire, Rosenzweig uses three terms distinctly (although not exclusively) about the human. The terms are *personality* (Persönlichkeit), *self* (Selbst), and finally *soul* (Seele). Personality defines humans insofar as they are identical with their body, that is, as physical things among physical things in the world. Its opposite is the self, which is what humans are not by the definition of the physical world but solely by their internal definition. It is, in other words, what persons are, not to others but to themselves. Finally, a soul is what humans are not only to themselves and not only what they are to others, but what they are or are becoming as they are in reality—a particular kind of movement in relationship to the creating motion of God and the



being created movement of the created world. Note that for Rosenzweig, a soul is not something mental that stands in opposition to some physical body. Rather, the human, so less than God and the world, is a single movement defined by progress from an origin to an end. The definition of the movement defines the human from original consciousness in birth to final consciousness in death, and it is this definition that is the soul.

Whitehead's understanding of being human is very close to Rosenzweig's. The critical difference between them is their education that leads them to speak in very different languages. Rosenzweig speaks as a scholar of history, the Bible, and the rabbis whose language is the language of post-Hegelian German romantics. In contrast, Whitehead speaks as a philosopher of science and as a logician, whose language is the language of Anglo-American ideal language motivated philosophy. What is interesting is how similar their conceptions of reality are despite their cultural differences. I believe that the grounds for their agreement is the intellectual compatibility of what modern science says about physical and human reality and what Jewish tradition says once freed from its subjugation to what is now an obsolete interpretation of the Hebrew scriptures.

Where Rosenzweig speaks of motions in semi-mathematical equations, Whitehead speaks of "actual entities" or "actual occasions" that become interrelated and ultimately integrated through *prehensions* into new more complex actual entities. As with Rosenzweig, reality is a set of disparate purposeful processes, moving from origins as nothing to fulfillment as something through which the infinite number of created individuals moves toward a unity that constitutes the world. This world movement of individuals as nothings defined at their origin to *some things* defined for integration with other *some things* constitutes the physical history of the universe. Taken at this most general level, the movement of the universe is a movement from an infinite potentiality for becoming something to a final infinitely extended actuality in a single end. Both the origin and the end are God. The origin is God's *primordial nature* in unlimited potentiality for becoming. The end is God's *consequent nature* in unlimited actuality of being. The world, including the human, is constituted by the infinite number of these smaller movements toward unity by which freely created individuals enter into relationship and fulfillment (which Whitehead calls *prehension*) with other worldly movements, as all the movements constantly coalesce into incorporation in a single universal ultimately complex movement toward unity that describes reality.

My personal belief is formed by both Whitehead and Rosenzweig out of the same sources that shaped their views. However, there is one part of the sources of the worldview that is incoherent with the worldview itself. Clearly the un-

derstanding of reality presented and endorsed here posits a moral universe. Here by *moral universe* I mean a universe that not merely allows humanity to make moral judgments but a universe that in and of itself, with or without the presence of humanity, can be judged morally. Good and bad are values that not only characterize the way that humans judge reality; they are values drawn from and applicable to reality. In the end I think this is the single most important source of real disharmony between modern sciences and Western religions. For science, as it is understood today, the world has neither positive nor negative moral value. For at least all three Abraham religions, precisely because God created it, the world in and of itself is inherently good. The next section is a set of reflections on this at least apparent conceptual conflict.

### A Moral Universe

What would a cosmology look like that fits the data of physics and astronomy but assigns reality to morality in the physical universe? Where in the modern conception of the universe is there room for quality and purpose as physically real?

The one claim of past Jewish thinking that cannot (or at least should not) be compromised is the biblical affirmation that at least as God created it, the universe is morally good. This is a *moral universe*. However, it is far from clear what this judgment means, for *moral* need not mean good for the human species. On the contrary *good* means good for God, which need not be the same as good for humanity. This section briefly discusses what it means to say that creation (i.e., our universe) is good for God, and what this kind of goodness has to do with human goodness.

To date, astronomers and astronauts have been unable to find any evidence of the existence of any life forms, whatsoever, anywhere else in the universe. However, that does not mean that none exists, and it certainly does not mean that none existed beyond the planet earth in the past or will not exist at some much later time in the future. Our own small solar system is largely unexplored and this star is only one small member in a single galaxy that contains a huge number of other star systems. So there is no way to prove beyond any reasonable doubt that we earthlings are the only life forms in the universe.<sup>19</sup> Yet, the more space we explore and the more we find it to be devoid of (even inhospitable to) life forms, the more incredulous it becomes to claim that God created the universe as a home for humanity. In fact, even if life exists or existed or will exist somewhere else in the universe, it is extremely unlikely that the universe was created for human use. Given the small amount of space occupied by life in the universe as we know it, it

seems most likely that the evolution of life in all of its forms, including the human, is an accident (i.e., an unintended event).

If the universe is moral then it has moral value, and if it has moral value then there are criteria to serve as a standard for making moral assessments. However, whatever the standard is, it is unlikely that it has anything to do with humanity. This negative judgment undoubtedly is troublesome for modernists and humanists who believe in the inherent goodness of the human species and infer from this primary faith commitment that all other kinds of things at least are less good than humanity. Similarly a traditional Christian might also find this judgment of nonhuman moral primacy to be problematic, because it calls into question why God, given his desire to be incarnated, would choose to be incarnate as a human being.<sup>20</sup>

Similarly, some Jews—notably Lubavitcher Hasidim—will find the implication drawn here from astrophysics to be problematic, since Chabad accepts a strong version of the claim that at least Jews have a higher nature than other creatures.<sup>21</sup> However, the scientific claim ought not to be problematic for devotees of several notable classical Jewish philosophers. Maimonides, for example, argued that many things seem to be evil because many things do not happen for the sake of human beings, but God does not govern the world for their sake. Rather, he governs creation for his sake, and Maimonides adds that morally this is the way things should be. He affirms that the highest good for human beings, as it is for all creatures, is to serve their creator. God is the king and human beings are the servants, and it is not morally right for the master to serve the servants. The servants are servants to serve the master but the master does not and should not exist to serve the servant.

Hence, what it means to claim that the created world is a moral universe is that in some sense the universe can be seen as a single entity, the parts within it are just that—parts whose own ends are to be subservient to the end or ends of the organic whole, and the whole exhibits some kind of purpose or purposes. The question is just what that purpose is. However, in principle this is a question that a priori stands beyond the limits of what can be called science. It is this scientific dogma that lies at the heart of whatever principled conflict there is between all religions and the contemporary Western tradition of doing science.

Although they deny that they as scientists apply moral values or purposes to life, it seems that *prima facie* that is just what evolutionary biologists and psychologists claim. It seems fairly straight forward that, according to neo-Darwinism, DNA is the information that determines much of the nature and behavior of all physical life forms, and that information has a purpose,

namely, to maximize the realization of itself. *Prima facie* this judgment about the self-replicating purpose of genetic information agrees with the first chapter of Genesis that claims that all life forms are commanded to be fruitful and multiply. Still, there is a difference. In the evolutionary account, it is the distinct species genetic code that calls for self-perpetuation and not the species itself. Yet, both the Bible and evolutionary science seem to make the same claim about the moral nature of life: Life is a prime moral value and all living things bear an obligation to perpetuate it.

It would seem that from this perspective—which attempts to synthesize at least conceptually, without attempting to compromise the claims of biblical faith, the life sciences, or astrophysics—God created a universe of enormous empty space, brought forth in it a single set of basic life forms in a single space-time, and gave that initial life a single commandment to multiply without limit. However, we may well ask, if that is the purpose of life forms—to serve God by dispersing throughout the emptiness of space-time—what is the purpose of mere life? If we grant that all of us—from bacteria and single-celled microorganisms to *Homo sapiens* and other hominids—share in brotherhood the natural and moral duty to reproduce, what purpose does the reproduction serve? Granting that the good of the creation is good for the creator, what good does it do God to fill his nothing with our created something?

Not only do we not know the answer to this question. We do not even know how to answer it. The scriptures tell us that to create life is a good, but it does not tell us why it is good or even what kind of good it is. All we know with reasonable certainty, at least from the perspective of the beginning of the twenty-first century, is that unrestricted reproduction is not good, neither for the human species nor for any other species on our planet.

### **The Breadth and Depth of the Universe**

Ignorance of physics results in inadequate views of the universe in a number of respects. The universe of humanists and other Jewish philosophers (a) is too small and too shallow (too small from the perspective of the cosmos and too shallow from the perspective of the microcosms), (b) can make no sense out of the notion of purpose in our purely mechanical/mathematical worldview, and (c) cannot account for all changes that occur within our universe.

Jewish philosophy, like Christian and Muslim philosophy, has understood reality primarily by focusing on its origin (creation) and end (redemption). Let us grant that classical Jewish philosophy, like Christian and Muslim philosophy, radically misunderstood the nature of the universe in between these

extremes. The question remains, how does this misunderstanding of the general nature of this world (cosmology) affect our understanding of its origin (cosmogony) and, more importantly for our purposes here, its end (eschatology)?

There are innumerable examples in Jewish and philosophical eschatology of the charge that the end of everything is to fill the void of darkness and non-being with the plenum of universal light.<sup>22</sup> However, even when we read these words—whether it be in the prophecies of Ezekiel and Isaiah, or in Franz Rosenzweig’s conception of God’s kingdom, or in Alfred North Whitehead’s vision of the consequent nature of God—the question of the value of the asserted final value remains an issue. In general, the answer has always been that light is better than dark and something is better than nothing, but it is far from obvious why that should be the case. Consider briefly Rosenzweig’s vision of the end of days as an all-pervading extension of light.

Basing his vision on the prophecies in the Hebrew scriptures in accord with their interpretation in classical works of Jewish mysticism and philosophy, in the end of days the divine light of the first day of creation will pervade all of the void that preceding creation, so that light will be everywhere for all time, while dark will no longer occupy any space or any time. However, as Rosenzweig admits, this vision of the end of the world is also a vision of the death of the universe. To stay with Rosenzweig’s metaphor, in the course of this world, from the fire of the Jewish people who follow the way of the Torah there spreads out rays of the Christian way that spreads through the darkness of the pagans who have no revelation. In the end the rays will be everywhere. Yet, if the rays are everywhere and no darkness remains, then not only has the dark (pagans) disappeared, so have the rays (Christianity), and so has the fire (Judaism), because each has a distinct identity only by not being the other two.

The vision of the end becomes somewhat more plausible if we understand it not as an actual state of the universe to be achieved but as an asymptote. In fact as an asymptote it makes more sense as a moral ideal than it does if it were an end that could be achieved in finite time and finite space.

In general, our human problem in understanding religious-moral visions of the end of the world is the narrowness of our perspectives. We think that the good envisioned in the Bible is a good for human beings, and hence we cannot make sense of what the Hebrew scriptures mean when they say that the reward for obedience is good and the punishment for disobedience is evil. We forget that the good that God promises is a good for the universe, and our role in the universe is simply to serve God as best we can in bringing about his good, not in pursuing our good. Understanding God’s good requires a much greater perspective than merely the narrowness of considering our-

selves, the Jewish people, humanity, or even life. The required perspective is a divine perspective. The promised good is God's good, not our good. God's good is the good of the creator; it is the humanly inconceivable good of the entire universe.

As we have difficulty as human beings thinking in terms of the good of the universe, so we have difficulty thinking in terms of goals that are no less universal. The end is not about expectations of promised ends for families or even for nations. The end promised is an end of everything. However, if we think of a universal end in the same way that we think about particular ends—our lives, the life of our planet, and even the life of our galaxies—then the term *end* becomes meaningless. Certainly the end of everything is not a finite end. There cannot be a time when everything ceases to be, for even then time will continue (for beyond every present moment is a moment at which our present is a past) and even a universe devoid of anything positive still is a universe. Rather, an end at this level is conceivable only as an asymptote—a limit that is real throughout the process is a final point of direction in the process, but an end that in principle can always be approximated but never realized. As such it is perpetually ideal and never actual. Only such an ideal can be applicable to a supreme being who is in every respect perfect. Only as such can the end of everything be imagined as the achievement of oneness with God.

### Transcending the Human

Our universe is too old and human existence is too brief for humanity to provide the reason for the existence of the universe. If we give up this humanist assumption, how can we understand why God created the universe?

While God may be the creator of the entire universe and, as its creator, sees all and judges all from this absolute perspective, we cannot in this respect imitate God. We are human beings whose perspective is biologically and sociologically limited to a human, earth-bound conception of reality. We should not expect it to be otherwise. Different species, even those limited to being carbon-based life forms,<sup>23</sup> have a radically different perspective. All of them, even though they are true, are true only relative to their perspective. Only God as the creator can assume a completely universal, absolutely realistic, point of view.

However, just as it is not realistic to expect me, an earth-bound life form, to assume (even to be sympathetic to) how God sees everything, the human perspective is too broad. I cannot see myself as just one of an infinite number of creatures whom God has and will create. Similarly, I am not just one

of an enormous number of human beings whom God has and will create. I see, and I am justified in seeing, reality through far narrower lenses, lenses that define not only who I am as a species, but also who I am as a particular entity.

I have a number of different perspectives through which I experience and understand everything, and it is the combination of these perspectives at least that makes me, for good or for bad, the human being that I am. I am a male and not a female. I was born and raised in Chicago, which means I was not born in some other nation-state. I was not raised in some region of this nation other than the Midwest, and I grew up in an urban rather than in a rural or wilderness environment. Furthermore, I was born in 1936, which means I grew up with a fear of the just ending world economic depression that made people of my generation distrust anything that had to do with money, but with the economic optimism of seemingly unlimited growth that the Second World War made possible for at least Americans. All of these factors are just a small part of who, possibly necessarily who, I am as a person. These factors are, so to speak, part of my nature.

However, of all of these factors, with possibly one set of exceptions,<sup>24</sup> none is more important than my identity as a Jew. I did not really grow up on the planet earth as a human being. That designation is just too shallow to say anything significant about who I am. Far more informative is that I grew up as an only child of immigrant Jews of eastern European origin in a Chicago neighborhood of children whose parents were immigrants either from Ireland or Germany. My earliest playmates were Irish, and therefore Roman Catholic, and I believe that largely because of that early childhood environment, I have always had (and still do have) a certain sympathy for the structure and beliefs of the Roman Catholic Church. However, most of my childhood and youth were spent with Jews who attended a Reform Temple, so that my maturing youth was deeply influenced by the structure and beliefs of Reform Judaism. Yet, as a young adult I was a Hillel director, and that career forced me to deal with all kinds of Jews, a contact that motivated me for many decades to learn progressively more about every aspect of Judaism, to a point that today I no longer think it makes sense to describe who I am and what I believe in terms of the limited conceptual framework of a single Jewish denomination. For the past decades I have had membership and/or actively participated in Reform, Conservative, and Modern Orthodox synagogues, I have taught at a Reform and a Reconstructionist rabbinical seminary, I have lectured at a Conservative rabbinical seminary, I have even served as a faculty advisor to a university Chabad center, and I feel equally at home and alienated from all of them. I feel at home because I can identify

personally and in many respects intellectually with the rabbis and members of each of these denominations. I feel alienated because I cannot identify totally with any of them, largely because I just know too much about all of Judaism to be totally satisfied with the teachings and structure of any one of them. In other words, I am a Reform Jew in my origins, but what I have become is just a Jew.

Can I or should I say the same thing about being human? Am I a Jew in my origins, but with knowledge and experience I should increasingly become just a human? I do not know what I *should* do and I do not think that *should* is an appropriate question. On one hand there is a definite analogy between moving from denominational Jew to generic Jew and moving from just a member of a religion or nation to being a member of the human race. Yet, on the other hand, this is only an analogy, and analogies are merely rhetorical devices; they are not proofs. The error of the *should* in the question is that how you see the world and how you see yourself is not a matter of choice. The factors that determine how you view reality are just that—determinations, which is to say causes—and not choices or preferences. They are not morally judgeable because they are not voluntary. They are social rather than biological conditions, but we no more choose where and when we are born than we choose the genes we inherit from our parents. At least at this time (the twenty-first century) and at this place (the planet earth) to see yourself primarily as a human being is not to achieve a higher, more divine point of view. (Dogs or cats who think they are human like their owners are very confused dogs and cats.) It is rather a symptom of people who either have no idea who they are or who are engaged in serious self-denial.

At the same time it is undeniable that certain perspectives are better suited to describe reality than other perspectives, and in general the more universal the perspective the better the judgments. A good example would be people who argue that the existence of unexplained evil to seemingly good people proves that God is not good, and since goodness expresses the very essence of God, inexplicable human evil constitutes a proof of God's nonexistence.<sup>25</sup> The argument for divine evil presupposes a deity who is not primarily the creator of the universe but the lover of humanity. Whether or not God loves humanity is a debatable question. Jews, Christians, and Muslims think so because all three claim special revelations from God. Clearly the doctrine of revelation expresses a relationship between God and humanity. However, how chosenness is an expression of divine love is a question of interpretation. Its meaning is not obvious, and whatever it means it is not the same for the creator of the universe in relationship to one set of God's creatures as it is for the interrelationship of human beings. Human beings can



love each other as human beings. That love is species specific. It is not the way dogs love each other; it is not the way amoebae love each other; it is not the way humans love dogs; and it certainly is not and cannot be the way that God loves humans. Yet all the arguments against God's existence based on the undeniable experience of human suffering in this world presuppose that what God does and who God is can be understood on analogy with what human beings do and who human beings are.

Still, the appropriate question remains, just who are human beings? Is there such a thing as human nature? If there is, is it something eternal? If it is not eternal, can or should it change? Finally, if it can change, how will it change, and how are we to judge the moral value of these expected changes? All of these are vital questions at this present moment in time and space. It is something that is yet to enter the consciousness of many Jewish thinkers, yet it is a critical time for the discussion.<sup>26</sup> At this time, at least four kinds of sciences are coming together, none of which matured until the second half of the twentieth century—genetics, robotics, information sciences, and nanotechnology (GRIN).<sup>27</sup> They are progressing at an exponentially rapid rate, a rate that is so fast that some students of technology predict that by the year 2030 humans will no longer have a useful role to play in society, as the then existing technology will, on its own, control the future progress of technology. At that point, based on neo-Darwinian evolution, the course of technological advancement will no longer be adaptation in the interest of the human species, but will be directed by self-perpetuated (and therefore living) self-interest in the nonhuman instruments of the technology themselves.<sup>28</sup> Now (we are told) human-invented, manufactured artifacts function with the prime intent of serving human interests; in possibly less than a quarter of a century the artifacts will have become so enhanced that they themselves will create new and improved versions of themselves that primarily serve the interest of the artifacts. As machines now serve human-perceived interests, people will then increasingly serve the self-determined interests of the machines.

Given that neither human beings nor other natural forces will destroy physical humanity in the next twenty-five years, technology can make human beings obsolete as agents of change on the planet earth or, technology will so change human nature that humans will cease to be recognizable as human.

Now of course this is not the first time that human nature has undergone extreme change. Insofar as we can tell from paleoanthropology, there were no *Homo sapiens* until 250,000 years ago, no hominids until 9 million years ago, and no primates until 85 million years ago. However, note how the time between periods of radical species change decreases as we move toward the pres-

ent. If the predictions of scholars of technology like Ray Kurzweil are correct, then the successor to the human being (i.e., to the *Homo sapiens*) is about to emerge in the next quarter of a century, either in the form of a non-carbon-based life organism or as a so radically enhanced carbon-based life form that we will no longer be able to claim that we and our prodigy have the same nature.

There are some speculators about the future who cheer on these developments. Many of them, like James Hughes, are politically active as members of a group who call themselves *transhumanists*. They do all that they can, both politically and culturally, to help bring on the predicted future.<sup>29</sup> Others, such as Francis Fukuyama,<sup>30</sup> are far more conservative about the prospect of changing human nature. They argue that the changes should be made cautiously, with full rational reflection on what are all the consequences of the proposed changes and (most important of all) how will they change human nature.

Fukuyama's conservatism about human enhancement is grounded in his firm belief that there is such a thing as human nature. His general source for what he thinks about human nature is the writings of Aristotle and the Aristotelians. However, can Aristotelian psychology and ethics be lifted out of the context of his thought about everything else, especially about physics and biology? If the answer is no, which clearly it seems to be, how can Aristotle serve as a source for developing a concept of human nature that is adequate for twenty-first-century judgments about the value or lack of value of engineering programs of human enhancement?

We will explore opinions about human nature in the next chapter that are organized around the traditional rabbinic foundational view of revelation as a relationship between God and humanity. However, before we turn to revelation, let us first complete the discussion of creation—the relationship between God and the world—with two concluding sections that focus on God as the creator. The first deals with why we need to assume a creator at all. The second deals with what a reasonable conception of the creator would, so to speak, look like.

### Why Believe in Creation

Especially in light of the principle of inertia, is there a good reason to posit a creator of the universe?

In the old physics of the Aristotelians, a physical object moves only if something moves it. Furthermore, in the old mathematics, the infinity that physics presupposed was understood to be a process without a limit. Furthermore, in the old Aristotelian rational psychology, to know something necessarily involved determining a limit, so that in principle whatever was determinate

could not be infinite and therefore was unknowable. Combining what was the best thinking in the old physics, rational psychology, and mathematics into a coherent conceptualization of the universe led inescapably to the conclusion that any reasonable person would believe that the universe had an origin, because it was generated by a generator, or, in the language of pre-modern science, it was necessarily moved by a first mover.

Yet none of these fundamental assumptions are accepted in modern natural philosophy. As for logic, the development of the conception of transfinite numbers out of set theory shows that infinity is perfectly intelligible to finite minds. As for mathematics, the study of infinite series in terms of limit principles demonstrates how even what extends indefinitely is intelligible in terms of numerable limits. Finally and most importantly, the principle of inertia, as Newton defined it, asserts that an object in motion will continue in that motion endlessly unless some external force acts upon it. This principle constitutes one of the most important ways that modern physics departed from Aristotelian physics. For pre-modern physics nothing moves without a cause; in contrast in Newtonian and even post-Newtonian physics<sup>31</sup> nothing changes its motion without a cause. Conversely, in pre-modern physics there may but need not be an external cause for something to cease to change, but in modern physics there may but need not be an external cause for something continuing to do what it is doing. Hence, the universe may be characterized by sets of motions in time and space that extend endlessly into the past with no need for any external force to initiate the motion. To say the same thing in the language of the Abrahamic religions, whereas the kind of universe in which pre-modern philosophers and scientists believed logically entailed the existence of some kind of creator deity, the kind of universe in which modern philosophers and scientists believe has no such requirement.

Aristotle developed a set of demonstrations to show that necessarily God exists. He thought those proofs were absolute, that is, they demonstrate that necessarily a creator deity exists as the cause of any universe, be it this one or any number of other possible universes. However, he was wrong, not because his logic was faulty but because he assumed that no matter how possible universes differ, they must all be subject to the same laws of nature and logic that the Aristotelians also formulated along side of their physics. We know that this assumption is not true. Newton showed us a way to understand the universe that is every bit as reasonable as Aristotle, and the former (contrary to what Newton himself believed) is perfectly intelligible with respect to logic and physics, without positing the reality of a universal creative force. Given the principle of inertia, an intelligent person may reply to the question why the universe exists by saying because it just does. It just does,

because motion and change require a reason to cease but do not require a reason to be.

How then is it possible for a believer in the existence of God as the creator to defend his belief? First let us clarify a little bit more what *defending* means.<sup>32</sup>

The kinds of claims asserted in declarative sentences can be very different, but their truth-value is the same kind. Religious truths, Jewish truths, American truths, human truths, and logical truths are all just truths. The adjectives do not modify the truth of the truth claims; they only suggest ways to categorize the claims themselves and/or the people making the claims, but not the truth, that is, the *epistemic value*, of the assertions.

The differences in truth-value between different propositions are infinite, ranging from 0 to 1. Similarly there are a great number of different ways to determine a proposition's truth-value. What counts as good evidence in a courtroom is not the same as what counts as good evidence in a math class, and the way to make a reasonable bet on a horse race is significantly different from the way to make a reasonable bet on the outcome of a physics experiment. Yet, there is only one kind of logic to all of these cases. Similarly, there are different standards for deciding whether or not a belief is *reasonable*, but the difference has to do with the nature of the question under consideration and not with the kind of logic appropriate to the case.

What is the logic involved in questions about the claims that the universe was created by a creator? Just what do creators need to be for belief in them to be reasonable? Let me suggest a strategy for deciding such a question. The kinds of events that require a creator are not necessarily true events<sup>33</sup> but neither are they purely accidental events. If they occur necessarily then their only causes are natural laws. Conversely, if they are purely accidental, they have no relevant sufficient cause whatsoever. A created event is an event that need not occur, but its occurrence solely by chance, while logically possible, is, without evidence to the contrary, improbable. A rational belief in this context is a most reasonable belief, and a belief is most reasonable if it is more probable than any of its alternatives. This is the logical framework underlying most attempts today to defend *theism* against both *atheism* (the belief that the universe exists either by necessity or by pure chance) and *agnosticism* (the belief that both theism and atheism are equally probable or improbable).

I will defend a strong belief in theism in this chapter, but before I begin the argument, let me briefly respond to one form of atheism that is of particular interest because it is rooted in classical Jewish philosophy and because it actually presents itself as a form of theism. It is Kenneth Seeskin's peculiar

(in my judgment) discussion of the nature of God in *Searching for a Distant God: The Legacy of Maimonides*.<sup>34</sup>

As we discussed earlier, Maimonides' specific version of negative theology is sufficiently radical that it in fact constitutes an argument against believing in the existence of God. It makes God so radically *other* that not only is it judged a logical mistake to believe that anything in the universe could be God but that any conceivable thought about God that has content could be true of God. Simply put, it is correct that a statement that is nonsense is not false, but neither is it true. In fact, a statement that it is false has at least the virtue of being intelligible. Declarative sentences that are neither true nor false are just unintelligible. Consider for example, the sentence, "xkclflkjg oxls tyslqr." On a careful, logically rigorous interpretation of Maimonides' own explanation in his *Guide of the Perplexed*, positive declarative sentences in which God is the subject, have the same logical value as "xkclflkjg oxls tyslqr." Now, what is unique about Seeskin's analysis of what Maimonides said is that he and (I believe) he alone believes that such an analysis of speech about God is intelligible. Of course it is if you really believe that there is no God and to claim there is a God is like affirming the existence of a non-explained-away chimera (like a round square or a wise fool).

Jean-Paul Sartre comes close to doing what Seeskin does in *Being And Nothingness* when he asserts that the conception of God brings together two utterly incompatible Husserlian claims, namely, that God is pure consciousness (*pour-soi*) and that God is pure being (*en-soi*). However, for Sartre this analysis of the nature of God is clearly, as it logically should be, an argument for atheism (namely, that the probability of the existence of God is 0). Others in the tradition of Jewish philosophy at least saw the claim of negative theology to be problematic, so much so that no one before Maimonides (from Aristotle to Abraham ibn Daud) posited God's equivocality in the extreme version presented by Maimonides, no one after Maimonides accepted the simple interpretation of Maimonides' view (especially not Gersonides, and not even Immanuel Kant and Hermann Cohen), and it is doubtful that even Maimonides believed what he said.<sup>35</sup>

It is not surprising to read Maimonides' theology the way that Seeskin does. Seeskin's interpretations as an intellectual historian are not especially new. What is new and innovative is Seeskin's defense of Maimonides' assumed theological views as a defensible modern Jewish theology. What is not clear in Seeskin's presentation is why he bothers at all with a conception of God. It is clear why other people like Kant and Cohen could have held such a position (although I seriously doubt that they did). They are living, after all, in times when so-called intelligentsia almost universally accepted belief

in some notion of God. However, these are not the times of a Kenneth Seeskin, a professor of philosophy in a secular North American university in the twenty-first century.

That is all I want to say about atheism in this section. Let me now return to my main concern here, which is contemporary use of physics to argue for theism as a rational belief.<sup>36</sup>

Modern astrophysicists have isolated at least five<sup>37</sup> very specific numbers that serve as conditions such that if these numbers were even slightly different, either no universe would exist, or if it did it would be a universe that cannot sustain human existence. What is critical is that these numbers seem to be arbitrary. Here *arbitrary* means that they just happen to be true; there is no reason why they are true. They identify, in other words in the language of Gersonides in pre-modern astronomy, utterly *contingent facts* that nothing knowable about the universe necessitates. These five astrophysical numbers are called *anthropic coincidences*.

The first are the specific masses of the electron (0.511 MeV), the neutron (939.565 MeV), and the proton (938.272 MeV). Since mass is critical to defining energy and velocity, these numbers determine the critical properties of the atomic building blocks of all atoms, which in turn determine the critical properties of all compounds of atoms, that is, all kinds of being, including life forms, in our universe. Because of these numbers, the simplest single proton is hydrogen-1, from which is constructed deuterium, or hydrogen-2 (composed from one proton and one neutron), di-proton (composed of 2 protons), and di-neutron (composed of 2 neutrons), from which is composed helium-4 (from 2 protons and 2 neutrons). Different masses would have resulted in a radically different composition of this particular universe, which happens to provide an environmentally supportive stage for the emergence of human life.

The second number is  $1/137$ , which is the fine structure constant. It defines one parameter that controls the strength of the electromagnetic force. It is one of four fundamental forces of nature that explain why particles are electrically charged (the electromagnetic force), why some particles are subject to radioactive decay (the weak force), why some particles attract or repel each other (the gravitational force), and why some particles bind together to form atomic nuclei (the strong force). If the strong force were slightly weaker, then no nuclei of atoms could be formed. Conversely, if this force were slightly stronger, all particles would collapse into their nuclei. In other words, a slight change in this seemingly arbitrary number would result in the nonexistence of this universe and or in a radically different universe that could not support the atomic compounds of this universe, including the existence of humanity.<sup>38</sup>

The third number is a constant, designated by the Greek letter nu ( $\nu$ ), which is a specific energy that is an equally important parameter to, but is different from, the second number for describing the particle physics of our perceived universe. Fourth is the so-called cosmological constant, which is a different specific energy that determines the gravitational pull of empty space. Finally, the fifth constant is the curvature of space one second after the Big Bang. It is sufficiently small that expansion is almost in a straight line in all directions. But it is not in a straight line, and that very small difference gives our universe the unique shape that it has, a shape without which life, if there would be life at all, would be radically different than the lives we are familiar with in our present universe.

All of these contingencies that constitute arbitrary but necessary conditions for human existence have been used rhetorically by some theologians to constitute proof of the existence of a creator deity who loves humanity enough to create it. Note that I call the argument rhetorical, because its logically legitimate intent is to persuade and not to prove. In fact these coincidences do not prove the existence of God. It could be the case that these constants can in time be shown to be necessary conditions for the existence of a universe, in which case no intervention of an act of will is required.<sup>39</sup> However, if these constants have no causes and they are simply inexplicable in principle, then two reasonable interpretations remain. The first is that this universe only seems to be arbitrary because if it didn't exist there would be no humans to ask these questions. There may have in fact been, as the early rabbis hypothesized, many different universes in the past, there will be many more different universes in the future, and even now there may exist many (possibly an infinite number of) universes in the present, each exhibiting a significantly different kind of physics, each of which having one or more different parameters whose numerical constants are more or less than the constants of this universe, in which case there are no human beings to ask any questions about a creator. In other words, if there are cosmic occasionalists who, like the evolutionary mutationists, believe that everything happens solely by chance and not by either necessity or willful rational intervention, then there is no demonstration of the existence of God. Note, however, that this argument for atheism necessitates the existence of an infinite number of other possible worlds. If, on the other hand, this universe is the only universe and the origin of this universe is not due to causal necessity, then, as the Jewish astronomer Levi Ben Gerson argued more than six hundred years ago, the most reasonable belief is that a creator whom we identify as God created our universe.

That is all I want to say here in defense of the belief in the existence of the creator. It does not say that God necessarily exists and only a fool would

deny it. What it claims is that with adequate reflection on the claims made in contemporary physical science about cosmogony and cosmology, it is more reasonable to believe that the universe was created than it is to believe either that the universe is eternal or that it just happened by chance to come into existence.

Even if we can now grant that we know enough as human beings to affirm a rational belief in the existence of a creator, that says nothing about the nature of this creator. How a scientifically informed Jew might believe in God is the subject of this last section of our chapter about the doctrine of creation.

### **Metaphysics, Whitehead, and Rosenzweig**

Jewish thinking needs to rethink ontological monism and negative theology. For guidance on how to rethink these subjects, models can be adapted from the metaphysics of both Alfred North Whitehead and Franz Rosenzweig.

The question of the existence of God is separate from the question of the nature of God. Given that the nature of the empirical universe is such that to believe in it having a creator is more reasonable than any of our imaginable alternatives, we can ask just what we can say about God. Maimonides, at least according to Kenneth Seeskin, suggested that we can say nothing positive about the creator, but we agree with the overwhelming voice of Jewish tradition, including Jewish philosophy, that this statement of negative theology is too extreme. The God of negative theology is certainly not the creator of this universe whom Jews (as well as Christians and Muslims) have worshipped for two thousand years.

If we take the Hebrew scriptures seriously as a witness to divine revelation, how can our knowledge of contemporary science, especially the physical sciences, fill in what we should mean when we affirm that God created the universe? I would suggest that in answering this question, we would be best to follow the theological models presented by the Anglo-American Christian natural philosopher Alfred North Whitehead and the German Jewish romantic theologian Franz Rosenzweig. Both addressed precisely our question in the first quarter of the twentieth century. Neither ever heard of the other. Both had radically different intellectual sources and technical languages of expression. Yet these two intellectual and spiritual giants offer what I would describe as a similar construction of the religious doctrine of creation in the light of twentieth-century science.

The scriptures divide creation into seven distinct units that it calls days. The first three days present the differentiation of the initial three regions of the space of the universe (the sphere of the earth at the center surrounded a



ring of water surrounded by a ring of sky) into two distinct domains or territories of space (the earth and the heavens). The next three days present the formation of the creatures that occupy these empty-but-still-real spaces (stars in the sky, and living things on the earth). The living things—be they birds that fly on the sky, or fish that swim in the seas, or animals that walk or crawl on the land—are all created through divine command by the earth itself.

How should we understand what these life forms are and what is the empty space that precedes them in creation? The Aristotelian pre-modern Jewish philosophers conceived them as objects, as substances, but that conception froze them, and the freezing made it difficult to understand what it means to say that things constantly move through space and time. Plato did better in one of his last works, *The Timaeus*, which tells a story (or, in his words, presents a myth) in which space is pictured as a large container on whose surface appears constantly changing reflections of deity. Plato's "Demiurge" or the Bible's "God" is not an object. It is not an Aristotelian substance that simply is what it is and never changes. If it can be described as an object at all, the kind of thing it is is fire. Fire is something but the something it is never stays the same. In fact it is not its shape that defines it; rather it is the light and heat it produces from itself that it exudes through the space of the universe. Reality, devoid of God, is darkness, and God is an unceasing light heat that penetrates the dark cold of space. That divine light, reflected on the spatial surface of the receptacle, is life—all life, from the smallest creeping creature to humanity to even the angels themselves.

In Whitehead's *Process and Reality* these living things are pictured as amoeba-like creatures who constantly move and expand into each other forming larger and more complex actual entities. In this motion Whitehead perceived an ideal limit that he identified with God. In Whitehead's imagination all living creatures, all quite distinct and individual in their origins out of the nothing of space, strive, some consciously but most unconsciously, to fill the emptiness of space with the light of their being, forming ever higher and more complex unities whose clear end is the unification of all light in the universe into a single ideal actual entity who is God in his consequent nature.

In the *Star of Redemption* Franz Rosenzweig presents a similar vision of the course of all creation, both natural and human, in which every individual is an original, unique nothing striving throughout his/her/its life to become a distinctive something that to the extent it succeeds in being something ceases to be individually uniquely anything. The individual in becoming something loses its uniqueness as it becomes subsumed under the universal categories that make it intelligible. Increasingly every one of the infinite

number of individuals cease to be themselves and become something greater than themselves, something that the philosopher Hegel called “the All.” But Rosenzweig doesn’t call it the All, because he sees in this philosophical description of the goal of history, the eschatological vision of the prophets of the Hebrew scriptures. Hence, Rosenzweig, quite correctly in my opinion, sees in this projected end of both human and natural history the anticipated redemption of the universe in what the biblical prophets’ called the *Kingdom of Heaven* (MALKHUT SHAMAYIM).

The Kingdom is an ideal space that defines God as he is now as the projected end of absolutely everything. As such God is ideal, because he represents the end toward which all of life moves, but he is also a real end, because he, being beyond time, exists now in all time. He is the cosmological first of everything, for everything that is something comes from him; he is the moral end of everything, because he is the *good* toward which all life moves, and he is present now phenomenally in each moment that connects a temporally infinite origin in creation to an ever anticipated infinite end in redemption.

Whereas Plato pictured God as a light that shines on a receptacle of space, Isaac Newton identified God in the present with the space itself. As with the Plato of the *Timaeus*, all that is is light (which Newton called energy) and space. Whereas for the pagan Plato the light is ontologically opposite to the space that defines this so-called plastic world in or on which we live as sensate beings, in Newton’s Christian, Kabbalistic influenced conception of reality, the space itself is part of God. He called space God’s *sensorum* and imagined it as the instrument through which God becomes conscious of absolutely everything. For us, following the models of both Whitehead and Rosenzweig, whose conceptions are themselves different traditions (one Christian and the other Jewish) of interpreting the shared eschatological visions of biblical prophets like Isaiah and Jeremiah, God is the light that penetrates all darkness. The darkness is the space and the light is the life that occupies the space. In this world, the light is separated into distinct lights by the darkness. From the divine perspective of absolute reality the lights are all the same; they are simply *light*. The darkness of space differentiates the light into material packets of light that have unique identity as living individuals, but in the end there will only be light.

This vision of universal, undifferentiated light is the dominant image in Judaism of the desired redemption of absolutely everything. Now the light is God and the light is reflected in every living thing. In the end there will only be light, but the light will not just be God. It will also be what all of life is becoming. Without the dark there is no way to separate enlightened entities from each other. Hence, in the so-called end of absolutely everything, there

will no longer be separate living things. Instead all will be one. In the words of one of the concluding prayers of Jewish liturgy (the Avenu), “on that day the Lord will be one and his name will be one.” *That day* is the final day of the creation of the universe, which is identical with the first day of the redemption of the universe. On that day, the day called *the Kingdom of Heaven*, heaven and earth will become the same. That on that day *his name will be one* means that at the time and in the space of redemption, all living things will become God and God will become all living things. All that will be, filling all of the space of the universe, is a single substance of burning light, a single, eternally no-longer-changing something/actual entity. How to interpret this vision of the end is the subject of the next chapter.

## Notes

1. Scholars were valued in much the same way that the janitors were valued, namely, as workers for the university and as servants to the students, who provided the setting for the students to achieve their ideal of moral character.

2. That is, post-enlightenment

3. Many contemporary scientists think that the atoms are quarks and leptons.

4. However, it is here noted that some distinguished physicists (e.g., David Bohm) still advocate a completely determinist conception of the physical universe.

5. For example, the sum of all the possible probabilities of any roll of the die is  $(6 \times 1/6) = 1$ , which is certainty.

6. Meaning, in the language of classical, pre-modern science, in so far as what they are and what happens to them is caused by their essential (i.e., by their self-defining) forms.

7. The question of confidence in the claimed epistemic authority of the Hebrew scriptures remains the single most difficult question in Jewish thinking. Hence we will put it off to the very end of the book as the final topic to be discussed.

8. Of course this problem is not distinctively Jewish. All three Abrahamic religions (i.e., Judaism, Christianity, and Islam) faced the same problem for the same reasons and offered very similar solutions. Hence what I say here in this book, whose scope is limited to Jewish religious thinking, applies equally to Christian and Muslim theology.

9. What I say here is based on my analysis of the Hebrew scriptures as well as traditional ways of understanding those scriptures, in two previously published books—*The First Seven Days: A Philosophical Commentary on the Creation of Genesis* (Atlanta, GA: Scholars Press, University of South Florida, 1992) and *Judaism and the Doctrine of Creation* (Cambridge, UK: Cambridge University Press, 1994).

10. Note that while the stars and the sea serpents are created in the plural, the fish and the bird, which are assigned to function (swarm or fly) in specific regions of space, are created singular. Note also that God creates them by commanding the earth (another entity referred to in the singular) to create them.

11. I intentionally avoid any judgment about the historicity of the myth itself. I leave that to the last chapter. Here all that I am asserting is that understood literally, the biblical narrative of the history of the world is not intended to be history. The goal is not to present a correct sequence of events in time and space. (I doubt that at the time the Hebrew scriptures were edited many people as of yet conceived of history in these modern terms.) Rather, the narrative is a tale meant to make intelligible the way the world is rather than to describe how the world got to be the way it is. As such the biblical narrative should be understood more as a conceptual paradigm than as a history, and it is more like a scientific explanation than it is like a humanistic account.

12. There are many possible examples of this point. Even what constitutes the Land of Israel only has a somewhat vague, general specification in the Bible. Similarly, it is not clear from the biblical text which specific mountain in the wilderness of Sinai is Mt. Sinai on which God transmitted the Torah to Moses. Similarly, where is the Garden of Eden and where do the two identified rivers in the Garden enter and flow through the earth?

13. See Brian Cantwell Smith, *On the Origin of Objects* (Cambridge, MA: MIT Press, 1996).

14. A paradigmatic example of a Platonic interpretation of the soul in the daily prayer book is the prayer that begins "ELOHAY NeSHAMA SHENATATA BIY." It is recited each morning after awakening. It begins, "My God, the soul which you put in me is pure. You created it (and) you formed it; you breathed it into me; and you intend to take it from me in order to return it to me in the time to come." The "time to come" is the messianic age, when the soul of the eventually to be dead individual will be resurrected for the final judgment. Between death in This World and resurrection in the World-to-Come that soul continues to exist just as it does each night in independent existence from the body while the body is asleep. In fact this prayer suggests (erroneously in this case) that sleeping and dying are the same kind of thing. The difference between them is only a matter of the temporal length of the separation of the spiritual soul from the material body.

15. See Norbert M. Samuelson, *A User's Guide to Franz Rosenzweig's Star of Redemption* (Richmond, UK: Curzon, 1999).

16. In Rosenzweig's formal logic, God is defined as " $A = A$ ," where " $=$ " is a process of movement from an origin (the left-hand term) to an end (the right-hand term), and " $A$ ," meaning "Allgemeine," is a plenum of being something.

17. In Rosenzweig's formal logic, the world is defined as " $B = A$ " and " $B$ " means "Besondere," which is something so individual that nothing can be said about it descriptively other than it is something *other*, that is, other than something else that is. It is Rosenzweig's term for particularity (as opposed to the universal generality of *Allgemeine*). In Aristotelian language, the  $A$  is what is *actual* and the  $B$  is what is *potential*. On this interpretation what Rosenzweig is describing is the universal movement of all created things from their origins in being pure, unrestricted potentiality to becoming at their ends totally determined actualities.

18. In Rosenzweig's formal logic, the human is defined as "B = B."

19. A conservative estimate of the size of the observable universe—that is, a sphere defined by the movement of all light from the original Big Bang of our cosmic origin to the horizon that sets the limit beyond which the original light has not had enough time to travel—as a sphere (since we assume that the light of the initial Big Bang spread equally in all directions) with a diameter conservatively estimated at about 93 billion light years, that is, a distance that unimpeded light can travel in a vacuum in 93 billion years where the speed of light is about  $3 \times 10^8$  m/s. There are at least 80 billion galaxies within our observable universe and the observable universe need not be the only universe that exists. Each galaxy in turn is made up of billions of star systems. Our own Milky Way galaxy is known to contain at least 200 billion stars. Again, except for a single planet in a single galaxy there has been to date very little exploration of the universe.

20. Why God chose to become human is no less paradoxical than, as the saying goes, "how odd of God to choose the Jews." See Archibald Macleish, "J. B.: A Play in Verse" (Boston: Houghton Mifflin, 1986).

21. According to the Tanya—Schneur Zalman of Liadi (1745–1812), whose *lessons* are the basis for all Chabad theology—at birth individual living things receive a soul. All animals, including human beings, receive an animal soul, but Jews, like the angels, receive a divine soul. As the soul defines the creature, so the quality and level of the soul determines the quality and level of the creature. Classical Jewish philosophers shared a similar view of the moral hierarchy of life, distinguishing plants from animals from humans from celestial beings.

22. For example, see Isa 9:1–2 and Isa 45:3–7. Also directly relevant to these particular biblical texts is Ps 139:11–12.

23. There is at least the possibility that carbon is only one of any number of chemical bases for life. Some people think that silicon can be a base.

24. The other set of factors is my genetic makeup. See Steven Pinker, *The Blank Slate: The Modern Denial of Human Nature* (New York: Penguin Books, 2002). Pinker offers a strong argument against the modernist, liberal political claim that our talents, vices, and personality are more determined by environment than by biological nature. He claims that the more evolutionary psychology informs us of our genetic inheritance, the less is left to be explained by precisely the factors I am highlighting in this section—the accident of the time and place of birth (as opposed to the accident of biological parental coupling).

25. See Michael S. Valle, "Divine abandonment and the evidential argument from evil." Unpublished Ph.D. dissertation in philosophy at Arizona State University, 2004.

26. See Joel Garreau, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—What It Means to Be Human* (New York: Broadway Books, 2005).

27. The synthesis of the four as a single field of technology is commonly referred to by the acronym, GRIN technologies.

28. See Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (London: Penguin Books, 2000).

29. See James Hughes, *Citizen Cyborg: How Democratic Societies Must Respond to the Redesigned Human of the Future* (Cambridge, MA: Westview Press, 2004).

30. See Francis Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution* (New York: Picador, 2002).

31. Post-Newtonian physics includes relativity theory, quantum mechanics, and even string theory.

32. What follows is based largely on William P. Alston, *Perceiving God: The Epistemology of Religious Experience* (Ithaca, NY: Cornell University Press, 1991). My view is explained with considerably more detail in *Revelation and the God of Israel* (Cambridge, UK: Cambridge University Press, 2002), in chapter 7, “The Challenges of Modern Philosophy—Rethinking God.”

33. Levi ben Gerson (Gersonides, 1288–1344) settled this question in his *Wars of the Lord*. There his argument rests primarily on claims that the observed facts about the heavens may but need not be true. (In his language, that the universe was created follows from the reasoned judgment that the heavens are contingent and not necessary.)

34. Kenneth Seeskin, *Searching for a Distant God: The Legacy of Maimonides* (Oxford: Oxford University Press, 2000).

35. I am not here claiming that Maimonides was lying or that he was hiding some secret view. Rather, I am saying that everything else that Maimonides says about God in the *Guide* and his other writings makes it clear that Maimonides believed that there is some sense in which there can be legitimate affirmative declarative sentences in which “God” is the subject of the sentence. Herbert Davidson among other contemporary intellectual historians of Jewish philosophical texts have shown that Maimonides tended to write fast and that he was not always as careful a philosopher in his formulations as modern analytic philosophers would like him to have been, so it should not be surprising that on occasion Maimonides changes what he said without the change constituting a change of intended meaning. Maimonides’ discomfort with his claim about negative theology is apparent even in the chapter of the *Guide* where the claim is introduced in his discussion of the human moral implications of so-called God-talk.

36. What follows is drawn primarily from Stephen M. Barr, *Modern Physics and Ancient Faith* (Notre Dame, IN: University of Notre Dame Press, 2003).

37. Barr lists six anthropomorphic coincidences. The sixth is the claim that the space of the universe is three dimensional. However, there is at least the possibility that some form of string theory is true, in which case the space of the universe occupies many more than three dimensions.

38. If this force were stronger, protons and neutrons would coalesce to form heavier nuclei, so that light nuclei such as carbon and hydrogen could not exist. Without hydrogen there would be no stars; without stars no carbon; and without carbon no life.

39. For example, Richard Dawkins insists, in *The Blind Watchmaker* (Harmondsworth: Penquin, 1991, chapter 11 “Doomed Rivals,” pp. 287–320, especially pp. 304–316), that natural selection is a causal principle and not, as the mutationists argue, just a statement of the purely chance events that led to our particular kind of universe. This claim is critical to his argument for atheism over a William Paley-type theological argument from design.



## CHAPTER SEVEN



# Interpreting Redemption: The World, Humanity, and the Human Sciences

The doctrine of creation describes the relationship between God and the world from the perspective of its origin; the doctrine of redemption describes the relationship between God and the world from the perspective of its end.<sup>1</sup> Traditional rabbinic Jewish thought conceived of the end of all days in two significantly different ways. One was a historical vision of the foundation of a never-ending kingdom on the planet earth whose capital is to be Jerusalem and whose government is directed by God himself and administered by the descendants of the priestly clan of Levi. Two was a cosmological vision of a monolithic never-ending state of everything in unity as pure light. Chapter 6 concluded with a discussion of the cosmological vision of redemption from the perspective of astrophysics in conversation with traditional rabbinic liturgy. This chapter will focus on the first part of the rabbinic eschatology—the vision of the anticipated earthly Jewish state to be created in partnership between God, the Jewish people, and the rest of humanity in what is commonly called the messianic age (YeMOT HA-MOSHIACH).

In the course of discussing the inadequacies of the understanding of redemption in past Jewish philosophy we isolated ten critical issues for setting the agenda for a future study of redemption within Judaism. These are following:

1. The challenge of standard neo-Darwinism to claim that reality/nature exhibits purpose and design.
2. The need to move beyond the dogma that seeing is believing, to a new affirmation of the reality of God.



3. The need to move beyond mind-body dualism to a new monism.
4. The need to move beyond mechanistic science to a philosophy of the soul in terms of grounds for analysis of objective morality and of redemption.
5. The need to move beyond life and death absolutes to redefine humanity in terms of a conception of an asymptotic end of worshipping God.
6. The need to rethink the commitment to preserving human nature and restricting moral responsibility exclusively to human life forms.
7. Understanding Halachah more in the modes of Eastern religions as a way and less in the modes of Western religions as a *law*.<sup>2</sup>
8. When and how does life begin and end?
9. What does it mean to be *human*? When do chemical reactions become living things? When do living things become human beings?
10. What role does and should capitalism play in decisions about living and dying?

### The Challenge of Neo-Darwinism

#### The challenge of standard neo-Darwinism to claim that reality/nature exhibits purpose and design

The modern physical sciences led us to rethink how we understand what Jewish tradition says it means in affirming creation. Similarly modern life sciences should lead us to rethink how we understand what Jewish tradition asserts to be its anticipation of redemption. Among these sciences no voice is more prominent than the challenges that are suggested by contemporary accounts of Neo-Darwinian evolution.<sup>3</sup>

The rabbinical doctrine of redemption asserts that nature has a purpose that is detectable through human reason and sensation without any appeal to revelation or any kind of nonnatural divine intervention. In general, in the past the rabbinic doctrine of redemption presupposed a naturalist understanding of ours as a universe that exhibits purpose, and built upon that science the specifically revealed-in-the-scriptures vision of the establishment of the “city of God” in the earthly Jerusalem in the very last days of history. However, modern sciences undercut that presupposed scientific foundation of rabbinic messianism by claiming that, both in principle and in fact, nature *qua* nature exhibits no purpose. Yet, Darwinian evolution seems at least superficially to go against this mechanistic dogmatic characterization of modern science. Evolution certainly is exemplary of modern science yet evolution seems clearly to affirm purpose built into at least the biological nature of

life forms in this physical universe. The geological record of fossils clearly suggests that natural species change, namely, they evolve in a constant chain from one kind of species to another kind of species, and the progression of these changes seems in general to exhibit a pattern that is purposeful, namely, the species that survive change are better fitted to survive in nature than the species that do not survive. In fact the purposeful pattern that the evolutionary empirical record suggests is that some kind of *selection* is taking place in nature where those most fit to survive tend to persist over those least fit. Nature seems not to be indifferent to life, for it seems constantly to prefer those variants who have, so to speak, survivability over those species who lack this specific talent for survival, and this talent, genetically programmed into nature, seems to suggest that in at least this universe, the history of species evolution is guided by purpose (a principle of the survival of the fittest) and not by sheer chance.

Most geneticists would insist that this interpretation of evolution is a distortion that does not fit how biologists understand the principle of the survival of the fittest, and no biologist is more articulate than Oxford's Richard Dawkins in expressing their disagreement.<sup>4</sup> On Dawkins' understanding of evolution, species continuously change and the change is driven by scientific principles—notably by natural selection and by the survival of the fittest—but these principles are materialistic and mechanical. Nothing in evolution suggests either intelligence or purpose. Yet Dawkins' way is not the only way that the data of evolution can be understood. No less in keeping with the facts of biology would be an interpretation, commonly called *mutationism* that conceives of gradual evolution by natural selection as purely a matter of chance.

Every act of sexual reproduction involves a coupling of an enormous number of genes from the donors, so many in fact that in each act of reproduction there are bound to be a significant number of mistakes or accidents. These mistakes are the key to the mechanics of evolution. Many of these chance errors constitute a small change in the species that, should the offspring survive and go on to reproduce themselves, will be perpetuated in many subsequent generations. Most of these changes do not affect the ability of a life form to survive in its environment, but some will actually work against survival while others will promote survival. Note that the environment is not something fixed. Living things are born into an environment; it is never a matter of choice, and a characteristic that might support survivability at one particular time and place might be a deterrent to survivability at another time and place. So the members of a species will evolve toward greater survival at a given time and place, but since the environment can undergo drastic change outside the control of the species itself, what promotes

a species numerical growth at one time in one place can become the cause of the species decline at another time in another place. From the perspective of the species itself all of this change lacks both necessity (contrary to some atheists like Dawkins) and purpose (contrary to some theists like the pre-modern Jewish philosophers).

In other words, what the tools of the biological sciences exhibit is a world in which almost nothing occurs by necessity and almost everything occurs by chance. Now for necessary events the notion of purposeful activity is unintelligible, since purpose involves preference among alternatives, but there are no alternatives to a necessary chain of events. Hence, to the extent that the events of the world are, from a mechanical perspective, chance events, the door is open to finding purpose and the world of life forms is completely open to the inference of purpose.

Purpose of course need not be intelligent design. Randomly selected numbers, for example, may by accident exhibit a pattern and that pattern may suggest purpose independent of any action by an intelligent agent. However, belief in a world-creating deity is confirmed (even if it is not proven) by exhibitions of the divine in nature. Simply put, order suggests divine intention toward creation. Hence, traditional Jewish philosophers interpreted observed laws in nature to be expressions of commandments by the creator, and nature itself (by extension) was seen to be a source of divine revelation.<sup>5</sup>

The biblical text suggests that one of the purposes for the creation of human beings is to govern the earth, and the ever-growing extent to which all of nature on this planet is dependent on human control suggests some truth to the biblical notion of stewardship. However, it is only in relatively recent times (barely yesterday by astronomical measurements of time) that humans have been an influence upon the earth and in all likelihood in the not too distant future (in astronomical terms) the planet earth will again free itself from all life forms, including human life forms. I say in all likelihood because my prediction depends on human beings remaining pretty much what they are today (carbon-based life forms governed somewhat imperfectly by rational decision-making processes) in an environment that will not be radically changed from what it is now. However, these assumptions need not be true, and at least one group of thinkers, notably the transhumanists, are convinced that my assumptions about human nature will not be true for very much longer. In fact the expectation is that by the year 2030 the measured exponential growth of human technology will be such that in one way or another human beings will no longer be what they are.<sup>6</sup> In a word, humanity will undergo a radical degree of evolutionary change in an astoundingly short period of time due to human technology. What has in the past taken millions

of years to occur by natural selection, will now only take decades to occur by human artifact selection.

My personal tendency is to be very conservative about accepting hype about dramatic discoveries in the sciences that will invoke revolutionary changes in human life. Yet, judging from the past I know that some new innovations (like the automobile) will radically change human life in the future in totally indeterminate, seemingly chance ways (like the disappearance of the extended family and human society of the neighborhood into radical family unit individuality in suburban bedroom communities). Whatever they will be, all of them can be understood as part of a Jewish vision of messianism in which human beings move in the direction of being angelic (transhuman) in fulfillment of their mission to be partners with God in establishing his kingdom at the end of the days of this material world.

What human beings are today is radically different from what they were in the past. *Homo sapiens* as a species is only about a quarter of a million years old, and our particular variety of primates only began to stand erect one and a half million years before that. Primates themselves only emerged on earth some 8.5 million years ago, and the first life forms emerged slightly less than 4.5 billion years ago. It is reasonable to believe that our solar system will exist for at least another 4 billion years, and if it does and we human beings continue to generate offspring, undoubtedly our descendants will differ from us as a species as radically if not more so than we differ as a species from the first microscopic barely more-than-chemistry life forms from which we have developed. What is radical about the claims of the transhumanists is not that the future humans will be radically different from present humans. What is radical is the claim that modern human technology will speed up the rate of change such that what happened in the past by nature without significant intervention from human artifacts in billions or at least millions of years will in the future, with the intervention of human technology, occur in mere decades. Projections about that future are the scientific data for religious speculation about the anticipated end of the days and the beginning of the messianic age.

At this point it may no longer be clear what distinguishes a Jewish religious perspective on the end of days from secular, purely scientific and technological speculations about the long distance future for humanity, the earth, and the universe. From my perspective growing out of my knowledge of the history of Jewish philosophy I would see two primary differences. One, biology is not nature. Two, there must be in the universe some form of intelligent design.

Much of what I have said could be interpreted as implying that biology determines nature, and at least in the case of human beings that need not be

so. At least humans (and probably other species as well) have a natural ability to behave unnaturally, and to that extent a human being may decide to defy his natural tendencies. If the Darwinian evolutionists are correct, the direction that DNA determines promotes every unique DNA prescribed combination of potential traits to reproduce themselves to generate more similar kinds of DNA. If we can speak of DNA as having a goal, even though that goal is unintentional (since DNA itself seems to have no consciousness), it is to perpetuate itself and not to perpetuate its human hosts. From the perspective of DNA, a human being is no more than an instrument through which the DNA is passed on to subsequent generations. From its perspective that is humanity's sole purpose. Obviously the interests of human beings themselves in survival and prosperity are not the same as the interests of individual DNA. For example, that DNA programs female *Homo sapiens* to have special talents with language and socialization to enable them to remain home and raise their prematurely born infants, does not mean that women cannot choose instead to build careers other than being housewives. Similarly that DNA programs male *Homo sapiens* to desire to impregnate as many females of their species as often as they can does not mean that male human beings cannot decide to live their lives monogamously and radically limit the number of offspring they sire. Because humans need not live natural lives, they have the power to choose not to be natural. Hence, human beings are responsible for all of their actions irrespective of genetically determined natural tendencies. Indeed, much of Judaism, like other world religions, is about conditioning human beings to behave in unnatural ways (such as observing the Sabbath as a day of rest and eating only kosher food) because to so behave is judged to be morally better than to behave in a biologically more natural way. To be sure, to violate our biological nature is never easy and to do so probably requires significant sacrifice, but that does not mean that we cannot do so and that we should not do so. From this perspective, it is important to point out that for the most part (even though there are notable exceptions to this generalization), Jewish ethics is based on social or communal law and is not based on directions from biological nature.

Second, whether modern science requires (as it did in the pre-modern sciences of the Platonists and Aristotelians) or prohibits (as it does in some forms of neo-Darwinian evolution theory in the life sciences) the existence of a creator who directs the development of the entire universe through a form of consciousness that is seen to be in some sense volitional and based on intelligence, this doctrine is a fundamental claim in most forms of Judaism. In classical terms, the belief in one God who created the universe through an act of will is now no less than it was in the past a fundamental as-

sumption of Judaism. If that means that all Jews to the extent that they are Jews believe in the so-called intelligent design, so be it. Because some educators believe that no respectable science can accept any form of intelligent design does not mean that thinking Jews should accept their dogmatic judgment that science qua science cannot accept any claim about purposeful causation in the universe. The opponents of intelligent design may claim that in truth the methodology of contemporary science does not recognize purpose in its description of the universe. This description of modern science has been seen to be true of modern science at least since William Whewell used his studies of Francis Bacon to propose the now almost universally accepted definition of a scientist in his *The History of the Inductive Sciences* (1837) and *The Philosophy of the Inductive Sciences, Founded upon their History* (1840). However, this is not how most so-called scientists (including people like Robert Boyle and Isaac Newton) defined science before Whewell, and there is no reason for them to continue to accept this limitation on scientific inquiry if it should in fact turn out to be the case that the omission of conscious purposeful intent as a causal principle of explanation of human experience of the universe is an unnecessary and a harmful omission.

It is not my intention to tell scientists what they should and should not believe as scientists. If their work contains nothing to suggest the existence of a creator of the universe, then so be it. However, Jewish thinking about everything does not require a stamp of approval from card-carrying scientists. Nor does it require scientists as scientists to prove the claims of Judaism about any and all aspects of reality. However, it does presume that since God created the universe and the subject matter of the study of science is the nature of the universe, there should not, in principle, be a conflict between the claims of theology and the claims of either the physical or the biological sciences. If there is a conflict then in principle an error has been made either in theology or in science. In this particular case the error seems to reside in the thinking of some scientists who extend the limits of their methodology to make judgments beyond science out of a dogmatic empiricism about modern science. (We may call this logical error of unjustified expansion *scientivism*.)

### Transcending Empiricism

**The need to move beyond the dogma that seeing is believing to a new affirmation of the reality of God**

In the previous section, I argued that the claim that science may not admit purposeful causes into its description of empirical reality is a meta-scientific claim that itself is not scientific and need not be true. In this section we

will look at a comparable modern, so-called scientific dogma, and argue not merely that it need not be true, but that it is most reasonable to believe that it is not true. In this case the doctrine is that the composite picture that is formed by a synthesis of the reports of all of our senses is reality and there is no other reality. Let us call this dogma *simple empiricism*. It is *empiricism* because it claims that the foundation for judgments about reality is the reports of human sensation. It is *simple* empiricism because it claims that these reports and these reports alone are sufficient to make reasonably correct judgments about reality.

Personally, I have heard some people make this kind of claim in order to defend the epistemic authority of science. But I know of no people with a somewhat sophisticated education in science and philosophy who would make this simplistic claim. It is more likely that they would advocate some kind of *critical realism* of the sort that the contemporary philosopher of science Hilary Putnam defended.<sup>7</sup>

With almost no exception, the Jewish thinkers whom I have read are all in some sense *critical realists*, that is, people who base their beliefs about reality on sense experience but who do not equate what they experience with reality. The most notable exception to this generalization is Mordecai Kaplan, but his knowledge of either philosophy or science was very rudimentary.

What makes it possible for me to make such a broad sweeping generalization is the vagueness of the definitions of both empiricism and of critical realism themselves. What it means to base belief on experience can mean many things. For example, some philosophers such as Judah Halevi claimed that prophets have special sensual sensitivity that enables them to experience prophecy as we have standard sense perception. As some animals can hear sounds outside of the range of normal human hearing so can some people experience communication from God. They hear the voice of God as we hear human voices. Hence, such people, as well as those who believe in what these prophets claim, can call themselves empiricists and critical realists. Even most mystics and idealists can make this claim. The mystics believe that sense experience of the plastic world hints at a deeper, higher level of reality beyond the world experienced through the senses, but it is through sensation that mystics come to experience the truth, for sensation provides the content with which their imaginations play. Similarly even for idealists such as Pythagoreans, while true reality is not sensed but is conceived through the intellect, learning to judge sense experience is the first step in education to become sensitive or alert to superior forms of communication—rational intuitions in the case of philosophers such as Spinoza or special imaginative readings of sacred texts in the case of Kabbalists.

What is distinctive about those philosophers who professed a strong faith in God is not that they were or were not realists in the sense described here. It is that they firmly believed that, whatever is the reality of the world reported by the senses, there is at least one other world beyond sensation, which is intellectually and spiritually superior in that it underlies or grounds the sensate world. It is this realm, whatever it is, that is judged to be the place of God, and it is connection to the divine in this realm that constitutes the object of all forms of religious devotion.

My intention is not to deny the reality or even the moral and religious importance of this empirical world. First, this world is a creation of God and it is within this world that we primarily reside as joined mental and physical entities. This is the world in which we were created to dwell, at least for a very short while, and hence dwelling here is itself a fulfillment of divine will. To live on earth is thus a commandment and as such even this life is something to be cherished. Second, it is in this world and only in this world that Jews and other human beings are able to fulfill the commandments they received from God through the chain of the historical memory of their people. These commandments, as we shall discuss, should be understood as a way to achieve the goal of constant connection to God. It is this connection that constitutes the ultimate good of human existence, both collectively and individually, and at least the greater majority of those commandments can be observed only by embodied entities in this world of space and time.

However, no adequate view of Judaism can limit reality solely to the domain of the empirical. Not only is this narrow view bad philosophy; it is also bad Judaism. This mistaken conception entails (1) that the lives of individual Jews can be valued exclusively in terms of their relations to the world and to other life forms, and (2) that the conditions for understanding the fate of the Jewish people through history—past, present, and future—consists solely of factors in the physical environment and in the socio-political dynamics of nations (both Israel and its neighbors). An adequate view of Judaism will relate what it knows about life in this material world to a more fundamental, more spiritual world of the Kingdom of God. Redemption no less than creation is a limit on the extent of time and space that defines this empirical world in both domains (time and space) as finite. To know anything in this world, including the world itself, including the Jewish people, requires knowledge of both their origin and their end, both of which lie beyond this world as it is experienced empirically from within this world.

Yet, to claim that this empirical world is defined by a spiritual world does not mean necessarily that there are two distinctive realms of reality, one that is physical or material and the other that is mental or immaterial. Certainly



this is the judgment that most classical Jewish philosophers made. But it is not the judgment of the authors of the Hebrew scriptures when they are read independent of their rabbinic interpreters. And it is not the view that is most compatible with the implied worldview of modern sciences. Certainly there is a distinction between “This World” and the “World-to-Come,” and both worlds are present in all of time at every place, but the distinction between body and mind is not the only way to understand the distinction of the “World-to-Come” from “This World.”

That Jewish philosophers have been in the past Platonic-Aristotelian-Stoics is not an argument for Jewish philosophers to continue to be so defined in the future. There were, so to speak, no Platonists nor Aristotelians nor Stoics at Sinai. This was the mistaken assumption of the tradition of Jewish philosophy that we are now burying. Hermann Cohen founded modern Jewish philosophy by reflecting on the (in general) religious and (in particular) Jewish meaning of modern science. The problem is that Cohen’s *schema* for interpretation came from a philosophy (Kantian philosophy) no less surpassed in modern thought than Platonism and Aristotelianism. We are proposing a re-doing of Cohen’s reconstruction not in terms of past modern philosophy (continental or analytic) but in terms of thinking about modern science more in its own terms, reflecting directly on the findings of speculation about the significance of contemporary research, especially in the physical and the life sciences. In this case the attempt is to move beyond existing forms of philosophy, even though what in the second part of the book is being proposed is closer to Alfred North Whitehead and Franz Rosenzweig than it is to any other philosophers. However, the point of this book is not to recommend either Whitehead or Rosenzweig. Rather it is to promote the methodological faith of both Whitehead and Rosenzweig’s teacher Hermann Cohen, that a coherent conception of reality can be discovered through this kind of dialogue between Jewish intellectual history and modern science. My most fundamental working assumption in this book is that there is a way to understand the claims of both the sciences and rabbinic Judaism that is faithful to the integrity of both, and that enables the formation of a single, coherent picture of all of reality, fully recognizing that both Judaism and science are subject to intellectual history, so that no single set of views formed at any single time and place in the flux of history will remain true for every place at every time.

## Transcending Mind-Body Dualism

### The need to move beyond mind-body dualism to a new monism

That we as human beings are embodied material entities does not entail that we must be committed to some form of what is commonly called *Carte-*

*sian dualism*, that makes a radical ontological separation between souls and bodies, the former being substances that occupy a dimensionless universe commonly called the spiritual and the latter being objects located in a space that has at least three dimensions. We are single entities living in a single dimensionally complex space where what we are and where we live may be identified and reflected upon in unity. Each of us is a single entity and not a mere set of (spiritual and physical, micro and macro) component parts.

Clearly the rabbis have believed, from the very beginnings of Rabbinic Judaism in the Judea of the Greco-Roman empires through the development of Reform Judaism in twentieth-century nation-states deeply influenced by Germanic culture (*Bildung*), that the soul is a spiritual substance from a spiritual realm whose existence preceded and can succeed the existence of the body with which it is intimately associated in the physical realm. However, this belief, although almost universal in Jewish intellectual history, is not part of the Hebrew scriptures themselves. Rather it is part of the conceptual schemata by which Jewish thinkers have interpreted the meaning of the words of the Bible. That interpretation has been so successful for so long that it seems as if the schema itself is part of the Hebrew scriptures rather than merely part of an intellectual structure for interpreting these scriptures. Its value, beyond familiarity, is that it *fits* the words of the scriptures fairly (although not perfectly) well. However, its virtue of fit recommends itself only to the extent that the schema itself is true. To use an intellectually discredited way of reading scriptures does not contribute anything useful for interpreting the scriptures as Judaism intends them to be interpreted, as a guide for the attainment of virtue—intellectual (as true beliefs) no less than moral (as good practices).

While modern sciences, including physics and psychology, cannot prove the traditional Jewish view is wrong, its success in interpreting all kinds of physical motion (in physics) and all kinds of mental states (in psychology), while far from complete, suggests that not only does the notion of the two distinct realms of mind and body not contribute any useful ways to better understand what we experience, they actually raise conceptual problems (at least) that in themselves introduce (to paraphrase Aristotle) knots (*aporia*) that tie up the flow of adequate thinking. The area in which clear thinking becomes especially (and in my opinion, insolvably) blocked is in understanding voluntary motion.

The issue is not merely a philosophical puzzle. Involuntary acts ought not to be judged morally, so that if there are no real voluntary acts, then morality is irrelevant to judgments about reality, including judgments about life. Furthermore, if morality plays no justified role in living life in the universe, then the *way* (HALACHAH) in which Judaism professes commitment is in

principle unjustified. The objection to Halachah is twofold. First, practically, if no actions or beliefs can be called *better* than any other actions or beliefs, then the Torah is not really a guide to anything. Second, theoretically, if no set of actions or beliefs are better (especially morally better) than any other set of actions, then there is no justification (morally or pragmatically) for the creator to associate reward with the seemingly (but not really) judged good set and punishment with the seemingly (but not really) judged bad set. Hence, any belief in divine justice in his governance of the universe would be fatally undercut. If all actions and beliefs are involuntary, then no one can be held responsible, both for what they believe or do, and without responsibility for action, reward and punishment (divine as well as human) become arbitrary. Governors, who rule their subjects arbitrarily are bad governors, be they human or divine. Such rulers are not entitled to obedience, which would entail that the Torah, even accepted as an expression of divine will, can in no legitimate sense be morally (or intellectually) compelling.

The source of the modern conceptual problem underlying this understanding of the relationship between minds and bodies is *Cartesianism*. Descartes conceptualized both the mind and the body as so radically different that all attempts to establish a link between them—an essential move if we want to understand the nature of voluntary behavior in a way that does not deny its reality—become impossible. On Descartes' analysis, physical objects can only be moved by other physical objects and thoughts can only be moved by other thoughts, and Descartes failed to suggest how a thought can cause a physical change or a body can move a new thought. The attempt to solve this problem philosophically has taken three directions.

First is *idealism*, which affirms that only the mental is real and it proceeds to reduce all material phenomena to mental acts. In this respect no idealist practiced *reductionism* with greater rigor than Georg Wilhelm Friedrich Hegel. It is also possible to interpret many Kabbalists this way, especially Chabad Hasidism, but I will grant that this latter claim is more controversial.<sup>8</sup>

Second is *materialism*, which affirms that only the physical is real and proceeds to reduce all mental phenomena to material events. It is this approach that dominates most modern science, especially in physics and psychology. Many scientists would claim that they are only materialists in practice but not in principle. They say that as scientists they are committed to a functional materialism because science in principle can only deal with material causes, but at least in principle there can be more to reality than what falls under the domain of science.<sup>9</sup>

Third is an approach that rejects both idealism and materialism in favor of a position that I will call *monism*, which affirms that there is a single kind

of reality that can be interpreted either mentally or physically. Paradigm examples of philosophers whose study of science led them to this kind of outlook are the process philosopher Alfred North Whitehead and the pragmatist William James. In his *Principles of Psychology*,<sup>10</sup> James conceives of reality as a stream or current-directed flow in which an act of consciousness is likened to riding at the peak of a wave where some members of the wave (drops of water in this metaphor) can see beyond the flow of the wave and can discern its direction. Similarly, Whitehead in *Process and Reality*,<sup>11</sup> defines the mental and the physical as different perspectives on the single reality that is an actual entity. In my opinion, monism would also fit the two (otherwise very different) modern Jewish thinkers, Baruch Spinoza and Franz Rosenzweig. For Spinoza in *The Ethics*,<sup>12</sup> reality is ultimately a single entity that he calls *substance*. In principle substance can be known in an infinite number of ways or *modes*, only two of which are accessible to human beings—thought (i.e., mind) and extension (i.e., body). For Rosenzweig, reality is composed of an infinite number of asymptotic motions from an origin as nothing in creation to a something that they only fully become when in death they return to being nothing. The mental and the physical are for Rosenzweig only secondary ways of viewing the single reality of these never-ending processes which collectively constitute the flowing history of the universe, from its initial creation out of nothing in an infinitely remote past to its final completion as an absolute something in an infinitely distant future. Any of these monisms offer a better interpretation than their alternatives of the implicit ontology in the narratives of the Hebrew scriptures, where *soul* functions as a principle of life in materials that arise briefly out of nothing before returning again to nothing in the current of this world where the initial darkness of creation moves toward the final full light of redemption.

### Transcending Mechanistic Science

**The need to move beyond mechanistic science to a philosophy of the soul in terms of grounds for analysis of objective morality and of redemption**

The subject matter of this chapter is redemption—the fundamental Jewish religious doctrine that there is an end to the entire universe at every level in which all of the purposeful motions that constitute change and motion in this sensate universe of minerals, animals, and human beings reaches fulfillment. All this change is to be understood as directed motion from an origin behind our finite world in the darkness of creation to an end beyond our finite world in the light of the “World-to-Come.” Since both the origin and the end of the universe are beyond the universe, there can be no knowledge

of either. Certainly there can be no scientific knowledge in any conventionally accepted standard for truth judgments as they operate within modern science, especially within the cluster of disciplines that we vaguely call physics and psychology. However, there is room for rational beliefs about both the beginning and the end of everything which, while not in any narrow sense can be called scientific, are nonetheless grounded in science, coherent with science, and possibly the most reasonable belief options at this particular time and place of cosmic speculation.

No matter how the reality underlying the narrative of the Hebrew scriptures is to be interpreted, it seems to me that the interpretation will necessarily exhibit two features mentioned at the end of the last section of this book. First, its conception of causation will not be limited to mechanics. Second, it will see reality not in terms of substances or fixed things, but as processes whose origins and ends are both asymptotes. Let us deal first with my reasons for rejecting mechanical causation as sufficient and then turn in the next section to the affirmation of asymptotes.

Aristotle spoke of four causes that are reducible to two. There is a material cause that accounts for actual existence in our physical world. In itself it is not something intelligible. It does not explain why something is what it is. Rather it only accounts for the fact that a certain general kind of thing is which means that it occupies a specific place in space at a specific moment in time. Why that fact is the case requires a different principle. In addition to this so-called material cause there is also something known as a *formal cause*. The formal cause consists in stating the intelligible form of a thing that answers the question what, that is, what is it. More accurately, the *form* of a thing is not what it is actually but what it is in and of itself potentially, for the statement of a thing's form more defines the limits of what a thing can become than a statement of what it is actually. As such the statement of a formal cause functions within Aristotelian science as an ideal purpose toward which a thing left to its own devices, without interference from anything external to itself, will by nature strive to become. Hence, the form of a thing really states the inherent purpose of a thing, which, in the universe described by Aristotelian physics, states a primary cause for why a thing acts as it does insofar as its actions are self-caused. According to the Aristotelian world and life view, everything that exists has a form; hence, purpose is a primary category of causation in the old, now obsolete, physical sciences whose expression provided the dominant schema by which Jews as well as Christians and Muslims explained the doctrines they inherited from their interpretations of the Hebrew scriptures.

As early as the sixteenth century, the intellectual directions were in place that would lead to the conceptual victory of modern science over the older,

then more established Aristotelian science.<sup>13</sup> In fact the so-called new science was not so much new as it was a nonstandard, equally old Greco-Roman alternative natural philosophy, namely, the material atomism of the Stoics, the Epicureans, and the Skeptics. What was a natural philosophy introduced into Europe out of interest in recovering the believed-to-be-lost wisdom of an ancient world served first to bolster Roman Catholic responses to Protestant Christian challenges to Church epistemic authority, provided a worldview that supported the natural philosophy of the modern thinkers (such as Boyle, Descartes, and Newton) whose speculations produced what we, at least since the middle of the nineteenth century, have called *science*. The presumed atomism posited a universe filled with an endless number of identical somethings (called atoms) that occupied through time an endless number of identical nothings (called the void). In this view of the universe, all that distinguishes one thing from another is the accident of the specific space an atom happens to occupy at any specific time. However, the specific spatial-temporal location of origin of an atom is an *accident*, which means that there is no reason and no cause for it being where and when it is, since all somethings are in themselves identical. This initial location determines everything else that subsequently is true of it solely by chance, that is, the accident of being where it was when it was when it first came into existence. Hence, in this very specific kind of a universe everything that is true of anything can only be explained by mechanical causes and nothing can be explained by formal causes.

It is natural for human beings to ask about practically anything, “why is that so,” and the answer to the why question, given this kind of radical material atomist worldview, must be, “for no good reason whatsoever.” Hence, for very deep historical reasons which first operated in a civilization dominated by Christian religious conflict, modern science adopted a strongly secular commitment to a world and life view that substituted a commitment to chance over any religious attempt to ascribe purpose to the origins of absolutely everything. It is beyond the question of origins that material mechanical causation can function. Something is the way it is through physical contact with some other things that already existed, who became the way they were through physical contact with earlier comparable physical objects, and so forth, all the way back to an origin of the universe that always was or was solely by chance. In either case there is no *reason*, that is, no intelligible purposeful cause, for anything being the way it comes to be, because in principle everything is (in political language) *equal*, that is, the same.

Why then, assuming that this account of the history of modern science is more or less correct, should we either reject or accept any of its presuppositions?

These assumptions about the nature of reality were made because of political and cultural factors that were dominant in Western European civilization more than three hundred years ago. Those factors, even where still present, lack the power to assert influence (for good and for bad) that they had in the past. Why should thoughtful people continue to accept them? The answer, it seems to me, is obvious. They should be accepted, irrespective of their initial motives, because they enable people to pursue better science, where *science* here simply means systematic investigation of truths about the universe (both psychological [internally] and physiological [externally]). For me the answer that seems most reasonable is for precisely these stated reasons to reject the dogma that science as science can only entertain efficient material principles of causation.

It is not my purpose in this brief section to prove my belief. I present it here merely as a statement of personal and (I hope) reasonable belief and to suggest a way to examine this question of the sufficiency or insufficiency of mechanical causation. On aesthetic grounds it is not unreasonable to say (contrary to Rube Goldberg) that simple explanations of phenomena are preferable to complex explanations, and a universe that can be explained solely in terms of material principles of causal connection is simpler than an explanation in terms of a complex set of material or physical, and mental or spiritual principles. However, materialism's advance in this respect is not superior to idealism's. Yet I would opt, as I argued in an earlier section, for a different kind of relatively simple mode of causal explanation that transcends the seemingly irresolvable conflict between mental and material causal principles without opting for a more complex and seemingly inexplicable so-called realistic worldview in which reality is constituted by separate, even though interrelated, principles of mind and body.

At a very superficial level the reasons for not wanting to accept any form of reductionist schema, where the mental is in reality physical and the purposeful is in reality mechanical, is obvious. First, on purely secular grounds, materialist accounts of mental acts do not seem to be sufficient to account for the experiences of mental life and the reality assigned to the mental does not seem to make adequate sense out of our experiences of the mental having real causal effect on the material. Furthermore, reality as we experience it includes values (moral, religious, and aesthetic) and materialistic accounts of value rarely seem adequate to capture the vigor of value even in living material lives. Second, on religious grounds, no exclusively materialist account of the universe seems sufficient to explain experiences of both revelation and worship. There really are experiences of God, these experiences certainly seem to be epistemically reliable, and there does not seem to be a simple mechanistic account that does full justice to what religious people experience. Furthermore, the schemata that make intelligible most of human ex-

perience, from the account of the full history (from origin to end) of humanity, are essential to any recognizable form of rich religious or spiritual life. The same can be said for views of the cosmos themselves, namely, the course or direction of all of existence and not just of humanity, and not just of life, from its origin no matter how remote to its end, no matter how different.

The claim is not that the history of Judaism and the Jewish people cannot be interpreted in purely mechanical and materialistic terms. Rather the claim is twofold. First, there is no good reason—historical, scientific, or philosophical—to limit conception to the realm of the physical and causation to mechanical principles. Second, such limitation greatly weakens the vigor of a Jewish faith to face the material and conceptual problems of the twenty-first century with anything like the intellectual power with which our pre-modern rabbinic predecessors faced no less difficult material and conceptual problems in the twelfth century. So far our leadership seems less equipped than were our intellectual ancestors to face the significantly different conceptual-spiritual challenges that face every generation of Jewish people living within the material, human world. The suggestion of this book is that at least one major source of our collective lack of success is our failure for the past three hundred years to confront the challenges of the kind of thinking that reflects human speculation about the nature of reality at its highest conceptual levels.

So far in this chapter I have suggested that a strategy for an adequate thinking about reality must draw its data from the physical and psychological sciences but that it cannot accept without qualification all of the methodological assumptions of these sciences. The three critical points of contention identified so far are radical empiricism, ontological dualism, and mechanistic explanation. Reality consists of more than material objects extended in space-time. The division of reality into dimensions of the physical and the mental is a crude way to account for this trans-empirical reality, but there are better monistic ways that have already been suggested and explained by earlier philosophers, notably Whitehead's metaphysics and Rosenzweig's metatheology. What is critical in both philosophies is the recognition that the universe and its members move with purpose and the understanding of this purpose is a critical element in thinking about morality. The next section of this chapter on redemption explores this last sentence in slightly greater detail.

### **Asymptotes and Moral Thinking**

**The need to move beyond life and death absolutes to redefine humanity in terms of a conception of an asymptotic end of worshipping God**

Our goal is to find a coherent set of reasonable beliefs about the nature of reality as we experience it. The set has to meet two primary criteria.



One, it should be consistent with a commitment to the sciences as the best tool available to us as human beings to understand the sensate world. Two, it should also be consistent with commitment to the Hebrew scriptures as interpreted within the tradition of the rabbis as the best tool available to us as Jews to understand the entire cosmos. What we have advocated so far is that reality, in general as well as every single component of it, is best understood not as stationary, static substances, but as ever-changing, dynamic actions. The mind can take this universal complex of interrelated motions and understand them as substances. This mental action transforms the experienced ephemeral change into something comprehensible and determinate, that is, something adapted to the nature of our minds to be knowable. To be sure, the transformation does not yield knowledge, especially scientific knowledge, for knowledge can be achieved only by distorting the reality. Reality (at least in principle) is knowable as such, but nonetheless the reality as known is always a distortion of reality. What is in constant flux is frozen by the intellect as something static; what is essentially alive becomes something dead. But reality is in reality not as it is known (as something fixed [permanent, eternal] and unliving) and not what it is (something ever changing and alive). The sciences transform lived reality into something knowable that as such enables what some call *technology*, namely, the ability to adapt nature into artifacts through which we can manipulate and possibly even enhance reality. Religions like Judaism do something radically different. They transform lived reality into something believable through something called *faith* that as such enables what Jews and other religious people call *piety*, namely, the ability of human beings to adapt themselves into worshippers of God in whose service they strive to enhance the movement of all of creation in the direction of unity with God. Put in simpler language, while the sciences strive with technology to make reality more hospitable to human will, faiths such as Judaism strive through worship to make reality more in harmony with divine will. Through science, the world becomes increasingly human friendly; through faith the world becomes increasingly divine friendly.

The doctrine of redemption as it is being articulated here rests on faith that there is an end or goal to these two processes, technology and piety, and it is from the perspective of that end that both science and religion can be seen to be harmonious. From the perspective of life at this point of space-time, situated between the beginning in creation and the end in redemption, there are radical distinctions between Jews, other human beings (separated into different nationalist, ideological, ethnic, and religious social collectives), other living things (separated by their genetic programming into dif-

ferent biological species), and other creatures (separated by their chemistry into different classes of physical objects). However, all of them share a common origin in the single act of creation out of the absolute darkness of the universe, and all of them share a common end in the single state of cosmic unity of absolute light that completes the universe. Objects and movements require absence of light to enable distinguishing enlightened beings. In the anticipated end, where there no longer remains any dark, all become a single undifferentiated entity.

This anticipated end, an end that is largely determinative of the intelligibility of the process of being and living in the flow of creation, this end is believed to be real. However, its reality is believed to be an asymptote. It is a remote limit or goal toward which all of nature (both physical and mental) is directed in motion, and it is an end that will never be realized in space or reached in time. It is a real end, but its realization is infinitely remote.

The faith assertion of the asymptote into speculation about the end of everything is a consequence not so much of science (for eschatology is a topic far beyond the scope of what the sciences at least for now consider themselves to be epistemically equipped to judge) but a consequence of centuries of reflection on the nature of idolatry.<sup>14</sup> While the term has been used in a variety of different ways throughout history, there are some common themes that unite its usages under a single set of meanings despite the differences. The differences are due primarily to the different philosophical views about theology, physics, and ethics that discussions of idolatry necessarily presuppose. However, despite these differences all (or at least most) interpretations of idolatry involve the worship of something misidentified as the one true object of worship. *Worship* varies, depending on what is called God. However, what all forms of worship share in common is that they constitute a discipline of action and thought considered to be the only way to succeed in attaining happiness, which in turn is understood to be the only way or ways to establish the best form of relationship with God.

The deity whom the Hebrew scriptures identify as the creator and redeemer of the universe, whom the Jewish people recognize as the deity of their nation, cannot in any real sense have limits. What he is he is in absolute terms, and what he does he does absolutely. The lack of all limitations is a consequence of his being identified as the creator of absolutely everything. This absolute lack of limitation, otherwise metaphorically called *infinity*, is a consequence of three distinct lines of thinking about God—thinking about God (1) with respect to creation whose divinely originating action is the sole cause of the origin of the universe, (2) with respect to revelation

whose divinely revealing action is the ultimate first and final cause of all knowledge, and (3) with respect to redemption whose divinely ending action is the sole standard or measure by which value is calculated. God so conceived entails a distinctive kind of ontology and a correlated distinctive kind of ethics. The ontology allows for value to be exhibited in the universe irrespective of an act within the world by any creature. The ethics in turn is absolutistic, for it affirms the reality of a standard by comparison with which all value and disvalue judgments are formed. The *value* is determined by comparative judgments about the way that whatever is in fact contributes to bringing about the conditions under which everything can become a single something identified with light. The *disvalue* is measured by the degree of diversity in the universe, where the diversity is associated with cosmic darkness.

*Idolatry* consists in affirming some state of the created universe as the end when the real end of everything remains remote. Now, because non-idolatry is an absolute state of total light with total lack of difference, no state in which the universe as such continues to exist can be the final standard. It is possible that the end of everything anticipated by modern physical cosmology is at least close to a religious conception of the state of the universe at the end of days, so then there will no longer be a way (at least for us) to distinguish between entities/creatures. However, even the end predicted by modern cosmology is not really the end of everything and therefore cannot really be the beginning of the Kingdom of God.

On the scenario of the end of days that some astrophysicists project, the smallest particles from which our positive universe is constructed have, since its origin, been constantly moving further apart. As they distance themselves from each other what is in the universe becomes increasingly less dense, so that forces holding particles together become increasingly weaker. In the end basic particles will be so remote from each other that each particle will be its own universe in a vast sea of empty space, lacking everything including light.

However, in fact the physics upon which this prediction is based does not say that the anticipated end will ever be something actual. Assume, for example, that some kind of thinking, conscious creature existed at the very early history of the universe, when basic energy forms were so closely compacted with other energy forms that the density of the positive universe was as enormous as was the intensity of the heat of the universe. From the perspective of a conscious entity able to live under those conditions of the early universe, life in this present universe (some 93 billion years later) would seem to be nothing at all. Things would be comparatively so remote from each other that it would seem that there is nothing at all; forces would be so relatively weak that they would seem not to exist at all, and the light in the

universe now would be so dim comparatively as to not be light at all. Yet it is obvious to us as beings evolved to be conscious in precisely this universe that the existing world still contains significant density with impressive force in a well-enlightened environment. The same is true if we speculate about the state of everything in another 93 billion years or any multiple of 93 billion years. The density of the universe will be considerably less in an immensely cold and dark universe that is so cold and so dark that no entity could exist that we today could imagine as a viable, surviving form of life. Yet, this judgment only means that in the future the universe will be an unimaginatively different place from our universe. It does not mean that there will be an actual end to everything any more than there was an actual beginning of everything. Both this origin and this end are asymptotic, which is an idea that the rabbis themselves captured in the language system of the old science when philosophers such as Gersonides affirmed that God also created time, so that in principle the divine act of creation cannot exist in time. Now creation and redemption are both acts that describe what God does, and since God is not subject to change, neither are creation and redemption. The best way to understand what this statement means is to think of divine actions as processes in the universe that must be understood asymptotically to be expressions of ideal ends. These ideals are never actually achieved. Still, they function as goals for every existent creature with every created natural function.

Traditional rabbinic theology, as reflected in the writings of both philosophers, such as Maimonides, and Kabbalists, such as the authors of the *Zohar*, affirms that this world is a universe in which a line of darkness separates God from all of his creatures and the shared goal of all creatures is to overcome that separation. Worship is a form of theological technology. It is the development and employment of human tools to work toward realizing unity with God. Furthermore, there are many different forms of worship, or at least as many forms of worship as there are distinct kinds of creatures. From this perspective the universe consists of innumerable movements, all with unique spatial-temporal locations, all directed toward a shared goal—to overcome the separation from God that defines everything's individuality, and to achieve a unity with God that unites all of reality into a single entity. However, this end functions both now and forever only as an ideal, for any end that can be actualized in time and space is necessarily a false end. More than false, it is a dangerous idea that lies at the heart of most extreme human evil in the world. Its intellectual source is the necessary judgment that, solely because it is something that can be actualized in space and time, it is only one thing among many things and not the unity of everything. In principle what

is actual in this world can never become God in space and time precisely because space and time are part of God. Hence, as Kant learned from reading his religious sources, especially from Maimonides' *Guide of the Perplexed*,<sup>15</sup> the concept of "God" functions as a regulative principle in ethics whose ontological status as ideal is nonetheless real, perhaps supremely real, but as such is never actual. On at least this reading, a reading with which I agree, idolatry is always evil, and its main conceptual characteristic is that it confuses the actual (that is to say, anything actual—past, present, or future) with the ideal.

Stated as a theological principle, this analysis of ethics in Judaism affirms that unity with the creator is the ultimate goal of all action by all creatures, and that as a goal it always is actual as a principle and only as a principle. Idolatry consists in confusing any concrete state in the process of universal life from creation to redemption with the achievement of redemption. It is with this principle in mind that all claims about human achievements are to be judged, including the efforts of scientists to enhance humanity in order to transcend humanity.

## Transcending Humanity

### **The need to rethink the commitment to preserving human nature and restricting moral responsibility exclusively to human life forms**

In the year that Adolph Hitler was elected the leader of Germany, the science-enthusiast H. G. Wells published a novel, *The Shape of Things to Come*,<sup>16</sup> in which he prophesied the events of the coming century. There would be a global war conducted by the militaristic governments that would end with the destruction of all civilization. The world would return to the state it was in during the Dark Ages before the Enlightenment and the rise of modern science and technology. In the old world, and again in the anticipated new world, humanity would live only slightly beyond the level of animals under dictatorships of barbaric warlords in almost total ignorance of the knowledge that made modern civilization possible—the tools of reading and arithmetic that made possible the acquisition of scientific knowledge and engineering skill. In Wells' vision of the future, the engineers of the world would unite into a global fraternity of craftsmen who would use their skill to take over the world from the feigned democratic rule of the military, and they would initiate a new age of scientific and technological enlightenment. With universal peace enforced by the technological superiority of the engineers and with the education or training of a truly new and improved human species, the enhanced humanity—guided by their superior rationality and emotional maturity—would inevitably build rockets to take them be-

yond the confines of the earth into the stars. Clearly the *stars* are not merely continuously exploding gases, although Wells certainly knew enough astronomy and physics to know that. The cosmos was seen in secularized Christian terms as the *heavens* where the newly improved human beings, guided by their scientific knowledge and their engineered enhanced moral virtues, would become what the ancient Greeks called *gods*, the Jews and the Christians call *angels*, and the German philosophers in Wells' day were calling *supermen* (Übermenschen).

Wells' vision is alive and prospering some seventy years later in British and American speculations about the future that science can bring about for humanity if humanity will only have sufficient intelligence to leave the scientists alone to do their science and grant to the engineers sufficient funds to make materially real what the scientists, as scientists, can only imagine.<sup>17</sup> There are, today, engineers harvesting the knowledge of the physical sciences to shape what has come to be called a *transhuman* future for the descendants of contemporary humanity. With the support of different private and government institutions and especially with the support of the defense department,<sup>18</sup> experiments are being conducted to enable human thought to move remote objects as easily as our minds move our bodies, or developing metabolic ways to fine-tune ordinary soldiers to perform their physical tasks at the level of Olympic athletes, or to function without any need for food for days at a time by improving their muscles to extract available energy already stored in their bodies with greater efficiency, or developing an artificial exoskeleton<sup>19</sup> to protect nanotechnically constructed future warriors, or altering the human natural exoskeleton to be as responsive to brain commands as it now is responsive to muscle commands, or learning how to train dolphins and whales who never need to sleep in order to learn how to train human beings to function as soldiers (or workers) twenty-four hours a day, seven days a week. Similarly other, nondirectly related to the military, companies<sup>20</sup> are developing vaccines for human beings against pain, or developing cures for all human diseases, from Alzheimer's to strokes and brain damage, as well as cures for all kinds of infectious diseases, including anthrax, smallpox, malaria, and even the common cold. The end product of all this research is expected to be a perfect human being—physically, emotionally, and mentally healthy with previously unimaginable excellences for unlimited periods of time.

All of these developments and many more have been predicted by the inventor, Ray Kurzweil.<sup>21</sup> Furthermore, he has determined that the rate of growth of new technologies since at least 1793<sup>22</sup> is exponential, so that it can be anticipated that by 2029 human life will have been transformed beyond current human recognition. In other words, this gifted inventor—a son of Viennese

Jews, raised in the Jackson Heights section of Queens, New York, religiously educated in a Reform Temple, but more recently attracted to the group of Americans known as *JuBues*<sup>23</sup>—has predicted the coming of the messianic age in 2029, and many intelligent people are paying attention to him.

The vision of Kurzweil and others of a transhuman near future is clearly, to those familiar with rabbinic thought, a prophecy of the beginning of the days of the messiah (YeMOT HA-MASHIACH) without a person messiah, that is, a vision that classical Reform Judaism called the messianic age, where the individual messiah has been replaced by a class of people known as scientific technicians. The key event that marks this contemporary onset of messianism is the convergence of four new scientific technologies that did not exist before the twentieth century: genetics, robotics, information technology, and nanotechnology.<sup>24</sup> Through the astounding rapid growth of the technology in all four scientific disciplines, with an exponentially accelerating rate of growth (both numerically in terms of new technologies and qualitatively in terms of improvements to existing technologies), human engineers will be able to change future humanity into something called a *MOSH*,<sup>25</sup> a life form so radically enhanced beyond present *Homo sapiens* that our soon-to-be-created post-human offspring will no longer be recognizable by any carbon-based humanoid in the twentieth century as a human being.

There are a number of possible responses to this anticipated scenario for an imminent messianic age. One is the welcoming attitude of Kurzweil and others like him who call themselves transhumanists. They see the future with the hopeful expectation of H. G. Wells and hence are committed politically as citizens of the world<sup>26</sup> to encourage and support the employment of the new promised technologies to realize their aspirations “speedily in our day.”<sup>27</sup>

Then there are those like the ethicist Francis Fukuyama who, while not desiring to inhibit progress in the study of the new sciences, urges extreme caution in the engineering implementation of the new technologies. What Fukuyama fears most is genetic engineering. Other kinds of enhancements are in principle reversible if they turn out to lead to unexpected catastrophes. However, there is far less room for correcting mistakes with artificially provoked changes in the human gene line. Fukuyama strongly believes that there is something called human nature, and that it should not be altered unless we know all the consequences of our action. The fact that we are not (at least not yet) certain just what that nature for Fukuyama is, is just further reason for caution and restraint in engineering social-biological changes.

Finally there is a third response<sup>28</sup> by those who are somewhat skeptical of the claims of the first group of optimists and the second group of pessimists,

and suspect that both scenarios are in all likelihood exaggerated. Yet, like the optimists who grant to the scientists and engineers messianic capabilities, this third group believes that human nature as it now exists is far from ideal, and it would encourage many proposed changes in humanity by humanity to be both morally and practically desirable. After all at the present moment I live quite contently in the middle of a desert in central Arizona, something that would have been impossible just a century ago before we had functional central home air conditioning, and relatively cheap and efficient means to deliver water from surrounding rivers and beneath the surface of the earth to provide water to drink, to bathe in, and even to play in.<sup>29</sup>

However I and those like me recognize that if these scientific technologies are the key to the blessing of life in the desert (something else that biblical texts prophesy), we also know that the population growth stimulated by water and electricity accessibility threatens to dry up the water supply and make Arizona and its neighbors<sup>30</sup> a truly barren land devoid of all life in the not too remote future. Furthermore, it also threatens to contribute to the deterioration of our global atmosphere. Our natural environment has already declined beyond anything predictable even in most pessimistic scenarios some seventy to eighty years ago when American engineers set about taming the rivers of the southwest United States through a chain of constructed dams.

Another and more personal kind of example of how radically engineered changes for the good can bring on irreversible unanticipated evils that may be far more threatening to human well-being than the achieved goods is the development of the automobile and its affect on family life. The cheap, assembly-line built automobile made it possible for my upper, lower working-class parents to take drives into the farmland of the western suburbs of Chicago on Sundays as well as to drive annually to Winnipeg, Manitoba, in Canada to visit my maternal aunt, which made it possible for me to get to know her children (my first cousins) with whom I remain friendly to this day. However, I cannot say that I am close to any of them because the times we visit each other are very rare. One cousin spends her leisure time touring and working in China, another cousin spends his summers playing golf in Texas, and I travel all over Europe to see art and study history. We travel but we rarely see each other. The freedom that the human manufactured tools of transportation have given us to “see the world” has been purchased at the price of family, and it hardly seems “natural” (at least in the eyes of many human beings) to live in a world where you have a spouse, neighbors, and colleagues from work, but no aunts, uncles, cousins, and often not even children once they become adults.

There are many causes of the disintegration of the family, but one of the major reasons is that nuclear families no longer live sufficiently close to their



extended families for extended families to have a sense of familial identity. In all too many marriages a husband or a wife is only a *playmate*, that is, someone with whom you share your amusements (be they politics, religion, books, etc., or just sports and other games), and as such is easily dispensable if the connection no longer produces *pleasure*. But that is not what a family is. A family is a society of people with whom you grew up and remain connected throughout life because their presence has always been an essential element in your life and consequently a part of who you are. In this sense of family, today there are very few families. Children remain connected only through their physical and economic dependency in childhood, and then they are gone on their own. This transcendence of dependency has been made possible by the constant improvement of means of transportation. The unintentional price paid for this freedom is the increasing trend toward the disappearance of the family altogether. Its decline certainly seems to be unnatural as well as undesirable.

It is unintended developments such as this one that make some reflective scholars cautious about promises of human enhancement. However, caution does not mean opposition. After all, as it is said, human nature is not all that it is cracked up to be. It does not seem desirable, given the fullness of human history, for human beings not to change into something morally better than what at present seems to be realistically possible. Who could not want a *Homo sapiens* to be transformed, now that we no longer need to hunt for food, into a less aggressive, less warlike species, for it often seems that we, as a species, practice cruelty solely for the pleasure of cruelty.<sup>31</sup> Certainly most transformations of human beings into a more generous and gracious species would seem to be desirable.

Furthermore, should we change as a species in some of the predicted ways, which in itself is not, contrary to Fukuyama, something new? Human nature has not in the past been something fixed, so there is no reason why it should remain so in the future. Not too many thousands of years ago we were relatively unintelligent, unimaginative, small-brained apes unable to stand erect for long periods of time. We had short life spans that are only matched by the minuteness of our intelligence and emotional maturity. Certainly, if we manage to survive that long as a species, we will become equally as different in the future from *Homo sapiens* in the twentieth century as hominids became from *Australopithecus* 2.5 million years ago. What is unnatural is not becoming unnatural. What is unnatural is how fast future changes will take place; thanks to the exponentially increasing curve of technological advancement made possible by new scientific technologies like GRIN.

So, the problem is not, contrary to Fukuyama, how to prevent essential change in humanity. The problem is how to decide whether or not the change is good or bad. That decision cannot be based on either science or technology alone as it is currently conceived. The value judgments will have to be rooted at least in the teachings of humanities like history and philosophy and even in (if not primarily in) the study of the teachings of world religions such as Judaism.

Our question now becomes, can Judaism make a contribution to understanding the cosmic as well as the moral significance of the new age that modern science and technology is introducing in our present world? The question is not only what resources Judaism has as Judaism to contribute to the discussion: the question is do Jewish philosophers and religious leaders such as rabbis know enough about science to use their knowledge of traditional sources to make an intelligent and useful contribution to society's reflection on the newly and rapidly emerging future of the universe? The question is especially relevant to reflection within the various liberal religious denominations of Judaism, all of whom claim a balanced commitment to the life and values of both traditional Judaism and modern society.

### **Transcending Liberal Judaism: Halachah as a Way**

**Understanding Halachah more in the modes of Eastern religions as a way and less in the modes of Western religions as a law. Beyond all the confusion of the mostly unintelligible rhetoric of Jewish theologians, this distinction is the bottom line difference between liberal and traditional Judaism**

There are some people who still believe in a radical separation between the sciences and religions where the sciences are given independent authority over the determination of so-called facts and the religions are given independent authority over the determination of so-called values. Of course it should be obvious that such a rigid separation cannot be enforced. At its simplest level all meaningful statements about facts inevitably involve some kind of value judgments simply because they are meaningful statements. Meaningful statements, including scientific ones, are never merely the kinds of statements you find in family chronicles (A begot B who begot C....), to the extent that the statements are richer than chronologies they inescapably involve assertions of values, and many such value statements involve moral valuations. Similarly many religious statements are declarative claims about truth. Statements such as God created the world in seven days, Jacob went to Egypt and brought his extended family with him, Moses led the children

of Israel into Canaan, and David built a great Jewish kingdom in Israel are truth-valued claims about history that have major religious significance for Jews. The same is true of biological statements that priests (COHANIM) are priests because of a line of blood descent through their fathers or most Jews can trace their biological origins to the descendants of Abraham and Sarah, or affirmations about physical reality such as souls survive their separation from bodies, the earth was created about 5,800 years ago, the Garden of Eden has a physical location somewhere in the Middle East, and there is a mountain in Sinai on which Moses received the Torah. The point of these examples is not to claim that Jewish tradition has much difficulty in reconciling its claims with contemporary science. In principle it can and always has been able to interpret scripture and Jewish tradition to avoid any obvious incoherencies between the two epistemic domains. My point is only that in principle a strict separation of religions into the domain of values and sciences into the domain of facts is in principle impossible. To mechanically or legally impose such a wall does injustice to the integrity and history of both domains of truth claims.

The most obvious area of overlap between the Judeo-Christian religions and the modern physical and biological sciences is the question of the origin or creation of the universe. Chapter 6 dealt with that foundational Jewish principle in relation to the claims of modern physical sciences. This chapter deals with the related issues of the end of days and the salvation of the universe as a single topic called *redemption*. Redemption means, as we have already seen, not just the redemption of humanity, but the redemption of the entire universe with everything in it. We focused on a specifically secularized interpretation of human salvation, transhumanism, based on the convergence of genetics, robotics, information technologies, and nanotechnology. In this section we will focus on how transhumanism correlates and/or conflicts with traditional rabbinic views of the messianic ideal of human perfection.

Moses Maimonides' formulation of thirteen foundational principles of rabbinic Judaism in his commentary on the Mishnah has assumed, in subsequent periods of Jewish religious life, a role very close to if not identical with the role of dogma in traditional forms of Christianity. Jews are commanded to do what is good and believe what is true. The action commandments found in the Torah assert the standard by which good and bad actions are to be judged, and the belief statements found there affirm the standard by which true and false beliefs are to be judged. Of course these standards of action and belief are to be applied not merely to the words of the scriptures, but also to their true meaning, and in and of themselves all of those words, imperatives, and sentences are ambiguous. Hence, it is not sufficient to just have the

words of the scriptures. You must read them armed with their correct interpretations, and it is fundamental to traditional rabbinic Judaism that this system of meaning is provided through a chain of rabbinic commentaries that begins with the Mishnah and the midrash in the time of the *tannaim*,<sup>32</sup> runs through the various letters about and codes of Jewish law in the Middle Ages,<sup>33</sup> on into the present.

In principle, the written text of the Hebrew scriptures together with all of its rabbinic interpretations, from its initial codification in Jewish spiritual-political life on through the present, together constitutes what is called the Torah, and it is this Torah that defines Judaism as a faith community. However, not all religious Jews have agreed about what Jewish books should and should not be included in this expanded notion of the Torah. At the end of the biblical period itself, some Jews accepted the authority of the entire Pentateuch with the collections of prophetic books and miscellaneous literature that eventually was included by the editors in the written Torah. But other Jews, notably Samaritans, did not accept the written Pentateuch in its present form. Other, slightly later Jews, notably Christians, accepted what we now recognize as the standard edition of the Pentateuch, published an edition of the scriptures with some differences about books to be included and excluded. Furthermore, the Christians initiated an oral tradition of interpretation of the Hebrew scriptures that differs significantly from the tradition of the rabbis. Possibly the first, and certainly the most important, of these nascent Christian interpretations of the scriptures is the New Testament.

In general what became the standard rabbinic Jewish community both in the lands north of the Mediterranean Sea (the ASHKENAZIM) and south of the Mediterranean Sea (the SEPHARDIM) accepted that the Torah consists of this entire ongoing tradition. However, modern nineteenth- and twentieth-century Jews make a distinction within the tradition of the Torah of what should or should not count as Torah. Some Jews, notably Chabad Hasidim, draw a line at Joseph Karo's SHULCHAN ARUKH in the sixteenth century. Other Jews, notably Conservative Jews, draw a line at the publication of the Babylonian Talmud in the sixth century. And still other Jews, notably classical Reform Jews, draw a line at the codification of the Hebrew scriptures, some time before the first century.

What is at stake in this apparent conflict over history is really a conflict over theology. Functionally what the Torah is, is the collection of texts that define the content of revelation. In rabbinic terms, the Torah is what God revealed to Moses at Mount Sinai as that revelation is recorded in the five books attributed to the prophet Moses. The question is, what do these books contain? According to classical Reform, only the written words. According

to Conservative Judaism, the interpretations of those words passed on through the earliest rabbis through the completion of the Talmud. Hence for the Conservative, the Mishnah, the standard collections of midrash, and the two Talmuds are no less divine revelation transmitted through Moses at Sinai than are the Hebrew scriptures themselves. Similarly, for Chabad, the list of books to be considered as the “Torah from Sinai” are the writings of subsequent commentators in the Middle East, North Africa, and Andalusia through the writings of Joseph Karo.

My claim is that all of these modern traditions are distortions of how rabbinic Judaism has understood the nature of Jewish revelation, and I take as my authority for my nonstandard interpretation the discussions by the pre-modern, classical Jewish philosophers of the doctrine of revelation. My focus here will (for the sake of simplicity) be solely on Maimonides’ *Mishneh Torah*, but I am not attributing here anything to Maimonides that is unique to his thought. I choose him over other authors of traditional codes primarily because of his training in logical thinking that made his *Mishneh Torah* the most thoroughly comprehensive and rigorously organized in logical categories of all of the no less authoritative traditional codes (and therefore summaries) of Jewish law. Based on my reading of the *Mishneh Torah*, the various contemporary branches of religious Judaism misrepresent how the pre-modern rabbis understood the Torah in two critical ways. First, they all draw a line in history between periods where rabbinic statements are considered revelation and periods where rabbinic statements are just rabbinic statements. As we have already noted, the classical periods of Jewish philosophy understood the period of divine revelation to Israel to be continuous. And so it must be in principle. It is a consequence of God’s oneness that what God is he always is, what God does is who he is, what he is is simple, so that every act of God must be understood from a divine perspective to be only a single act, and God’s act is identical with God. Furthermore, God in principle cannot change, so that what he is, which is that single act he performs, is eternal. It never began; it will never end; and it will never change.

It is a theological consequence of God’s unity that creation must be understood as a single, variant act through all of time. The same must be said for revelation.<sup>34</sup> As such, revelation can never begin and never end. Consequently all lines that try to distinguish periods of revelation from periods of human interpretation are theologically arbitrary, and implicitly deny God’s perfection. What God reveals to Israel he always reveals. The Torah originates at the origin of everything and it will only end at the end of everything. It has this cosmic origin and end only because what the Torah expresses is the relationship between God and the world. When there is no world there

is no relationship. Hence, from its created origin in creation to its anticipated end in redemption the Torah remains one and the same, a continuous ongoing relationship between God and Israel and through Israel between God and the cosmos.

The second objection to how all contemporary forms of Judaism distort the tradition of classical rabbinic philosophy is that they treat the Torah as if it is primarily about law. As I interpret Maimonides, who certainly does not deny that the Torah contains a complete legal code, the Torah is not best understood as law. Maimonides' code does consist overwhelmingly of what look like judgments of law, and we usually call such judgments *Halachah*. In fact to understand it in this way makes no positive contribution to understanding the primary goal, certainly of the *Mishneh Torah*, but of the rabbinic tradition of interpreting the Torah as well. To say the same thing in a single sentence in another way, *Halachah* is not law; it is a *way*. In this sense the Torah is better compared to a book of discipline or training for spiritual perfection, more or less like the *Dharma* in Buddhism, than it is like a book of national law, like any of the five constitutions of the five French republics or the one federal Constitution of the United States.

The law model fails to be true to at least the spirit of traditional rabbinic *Halachah* in at least two ways (1) First and foremost, constitutions are the foundations for legal systems by which the citizens of nation-states are governed, and the Jewish people have not lived in such a state since the destruction of the second temple. In the modern world, in both the state of Israel and in the Diaspora, any submission by a Jew to the legal authority of a rabbi is a voluntary act. Rabbis can act as judges over Jews only if the Jews want them to, and their failure to subject to a rabbinic ruling nowhere in the modern world jeopardizes their citizenship. Hence, whatever authority *Halachah* has over individual Jews, it is very different than the authority that a national constitution has over a citizen of that nation. (2) The source of authority for a constitution is political power, but the source of authority for the Torah must be moral persuasion. Citizens of a nation will be obligated to obey national laws of which they disapprove because the price paid for disobedience is too high. First, because behind the authority of the law is the police power of the state to enforce the law. Hence, it makes no sense for citizens to disobey a law only because they do not agree with it. The price paid for disobedience is too high to pay unless the disobedience is principled. A moral citizen will accept punishment in defense of a moral principle. In such cases, opposition is based on civil disobedience that is in principle a moral stance. Second, because disobedience of the law generalized for all but the most important moral reasons will contribute to the breakdown of the civil

order, which will in the end lead to the breakdown of the state. However, in the case of Halachah, there is no police force to enforce a rabbinic decision, and Judaism is not a political state.

The clearest and (in my judgment) most sensible explanation of the purpose of the Torah is presented by Maimonides first book of his *Mishneh Torah*.<sup>35</sup> It consists of five sets of laws under the general title *The Book of Knowledge* (SEFER HA-MADDA'). The first two sets of laws are "the basic beliefs or foundational principles of the Torah" (YESODEI HA-TORAH), and "virtues" (DE'OT).<sup>36</sup>

The *Mishneh Torah* itself assumes that the Torah contains 613 explicit commandments, 248 of which are positive and 365 are negative.<sup>37</sup> These laws are organized by Maimonides for commentary in fourteen *orders* (SEDARIM) that contain 83 distinct sets of *ways* (HALACHOT).<sup>38</sup> The first set of ways discussed, which function as an introduction to the work as a whole, are the "ways of the foundational principles of the Torah." He also calls them "the pillar ('AMMUD) of the pillars." These principles are two: First is knowledge (and, by implication, not mere belief) that there is a "first existent" (MATSUY RISHON), and second is knowledge that this first existent "causes the existence of every other existent" (NIMTSA).<sup>39</sup> The entire system of 613 commandments as interpreted by the rabbis through 83 distinct set of ways was revealed by God in the "Torah at Sinai" first and foremost to teach those who walk in this way that there exists one and only one creator of the universe. Hence, revelation serves the primary purpose for establishing a discipline by which those who walk in the way will come to know (more than just believe) that there exists a single deity who created the entire universe.

The question is how can you come to know rather than merely believe in the dogma of creation by a divine creator? Maimonides' answer is, through the study of physics. However not everyone is capable of understanding physics, to which Maimonides responds with the second set of laws, the laws of virtues (DE'OT). The topics of this collection of ways are a listing of what constitute, in Aristotelian terms, the chief moral virtues and vices, and a discussion of how individuals can be conditioned to acquire the virtues and avoid the vices. Maimonides acknowledges that there are a great many different levels of human aptitude for virtue. He says "Every individual human being has many characteristics (DE'OT), each different from the other, and (their range) is most distant (URCHOTAH MIMENU BeYOTER)."<sup>40</sup> However, he insists that despite these natural differences, all who adopt the ways of the Torah, by which he means at least the entire Jewish people, can attain the level of character needed to know the physics needed to know creation. He says:

The right direction (HA-DEREKH HA-Ye'SHARAH) is a mean measure (MIDAH BEYNONIYM) between every one of the characteristics . . . This direction is the direction of the wise. Every man whose characteristics are characteristics are mean and balanced characteristics (DE'OT BEYNONIYOT, MeMUTS'OT) is called wise (CHAKHAM).<sup>41</sup>

What it is that Maimonides wrote in the *Mishneh Torah* is a systematization of the entire corpus of Judaism as a complete moral system. In presenting that system he used the schema for ethics (both political and individual) of the corpus of Aristotle's ethics. The Aristotelians maintained that there is a single end that functions as the standard by which individual citizens of a state and states themselves are to be judged. Aristotle assumed from his physics a dynamic conception of the universe in which everything at every level exhibits purposeful motion toward an end. The end is determined by his physics, and his ethics determines the best means toward the end and the logic for making moral judgments about these means. In contrast, modern science proposes a view of the universe, based upon the revival of Roman skepticism in the sixteenth century, where the only real physical causes are mechanical and no determinations of purpose are natural. The transhumanists accept, at least in principle, a materialist, atomist worldview. Hence they tend to define human perfection in purely hedonist terms. However, I at least—as I have argued previously—believe that nature is purposeful and that at least philosophically the best way to interpret the mathematical claims of the modern physical sciences in common (nonmathematical) language is in keeping with the worldviews of Heraclitus in the ancient world and Whitehead in the modern world rather than following the suggestions of the ancient Pyrrhonian skepticism of Sextus Empiricus.<sup>42</sup>

Transhumanism presupposes, in silence, an ethic of purposeless hedonism in proposing in writing and speech a technology for advancing the ethic. It claims that with the aid of modern scientific engineering it will be possible for humans to transform their natures into something closer to their ideals. My personal argument is not with these claims even if they are exaggerated. My objection is to the ethics implied. If happiness is to be understood as a life of balance in which pleasure exceeds pain, then I do not share with the transhumanists their goal. Rather, more in keeping with Maimonides' adaptation of Aristotelianism to rabbinic Judaism, I believe that the goal of living is to serve God. It is this service that constitutes the ideal measure for a happy life, that is, for a life that approximates communion with the Creator as far as it is possible for any creatures whose fate was to be born when and where they were born.<sup>43</sup>



I believe that, at least in principle, there is no inherent reason to doubt that modern science can contribute technologies for human beings to enhance their life-long quest to become more than human, and to become transformed into servants of the Lord. However, I think that this goal cannot, even in principle, be achieved by creatures in this sensible world of extension in time and space. I do believe that there is no practical limit in the degree to which we may approximate in life enhancement toward this goal. However, in absolute terms there is at least one major limit to the attainment of perfection. It is death. It is life that enables us to pursue that goal, and it is death that makes its attainment impossible. In this context it is important to note that both the utopianism of modern science as expressed in the writings of transhumanists and the messianism of rabbinic Judaism as expressed in its formal prayers for redemption together hold out an ultimate hope for human perfection in overcoming death.

## Life and Death

### When and how does life begin and end?

The Hebrew scriptures explicitly and consistently affirm that every creature in the universe can be morally judged and the standard for judgment is the will of God as that will is expressed through commandments. The laws of nature are to be understood within this framework. The laws of nature express the rules that govern existence in this world. We learn them through observation and experience. They are judged to be expressions of divine will because we believe that much if not everything in this observed world is contingent, including the laws by which it is governed, so that they operate as they do not from necessity but by divine fiat. That these laws within this universe tend more or less to apply consistently means that at least in some sense divine will is rational, namely, it is consistent and it is coherent even to lowly creatures such as us who rely on certain kinds of senses and a certain kind of reasoning to deduce from experience what reality is like. However, our sensations are specific to our senses; different senses would lead to different experiences; and our reasoning is specific to our minds; different kinds of minds could interpret the meaning of our experiences in different ways. We know that neither our senses nor our reasoning are entirely reliable, but we as natural creatures are engineered to be curious about the nature of reality, and we trust that our creator is sufficiently moral in the way that we are moral not to have so designed us as a joke. We trust that God values what we call truth and that the tools he gave us were designed to enable us to glimpse, eventually at least, what is and is not real. This trust, of course, is not knowledge;

what it is is a minimal methodological assumption for claiming any kind of knowledge whatsoever.

As religious Jews we also believe that there are other sources for knowledge than human sense experience. As human beings what we know is not only based on what we personally experience, but on what we learn from the experience and reasoning of others. In law this kind of evidence is called *testimony*, and it is an important epistemic source for all kinds of knowledge besides legal judgments. In fact we human beings know relatively little of what we know through firsthand experience. Most of what we know we learn through the reports of others. We call these reports *knowledge* when we examine the logic of the reports, the reporters' claim for supportive evidence, and (possibly what is most important) the character of the reporters. It is judgments about the characters of the reporters that play a prominent role in human judgments of all kinds—certainly in moral judgments, but not exclusively so. Trust plays an important, if not sufficiently (as of yet) analyzed, role in epistemic judgments.<sup>44</sup>

In addition to *tradition*—hearsay of the more direct experience of other people—revelation and revealed scriptures are judged by religious people of all kinds to be a source of human knowledge. Jews have traditionally trusted that the books of the Hebrew scriptures, at least, are trustworthy reports of what some trustworthy people (prophets) have experienced as direct communication with God. Revelation has been, throughout history, a foundational claim for Judaism, and it seems to me that it must continue to be so even with our modernist assumptions about the relative epistemic reliability of the lessons of modern science. However, at least one science, namely, ancient historical studies, raises serious objections to granting trust to any revealed texts whatsoever, especially to the Hebrew scriptures. The skeptical claims implied even methodologically by modern biblical studies is, so to speak, the “elephant in the room” that has been present, but not addressed in all we have said so far. Implicitly at least it has been obvious that every claim about Judaism in some way refers back to interpretations of the Hebrew scriptures and the assumption that what the scriptures say, when interpreted in the light of the ongoing tradition of rabbinic commentaries, has epistemic authority at least for self-proclaimed religious Jews. We reserve serious reflection on this critical assumption for the final chapter of this book. For now we will set aside this challenge—the challenge of the dogma of revelation—in order to conclude our reflections on the challenges from modern science to belief in redemption, and we will continue, at least for now, to maintain that the Hebrew scriptures as interpreted in the ongoing tradition of rabbinic commentaries on the texts is a valid source for at least raising the challenges

to belief posed by modern science. Of those issues, none is more important than the question of life and death.

According to the Genesis account of creation God first makes the occupants of the sky and then the inhabitants of the planet earth, the first of whom is a SHERETZ NEFESH CHAYYAH (Gen 1:20). The usual translation of this three-noun conjunction is “swarms of living creatures” (Jewish Publication Society, English translation). It is as good as any other translation and probably the words do mean something like that, but the meaning is not obvious. First, there is no verb in the expression, and second the three terms are all singular nouns. NEFESH literally means breath, CHAYYAH means a living something (usually an animal or a wild beast), and SHERETZ means a thing that swarms, that is, a breathing live swarming thing. Next (Gen 1:24) the earth brings forth a NEFESH CHAYYAH that is a domestic animal and living thing of the earth (CHAYeTO-ERETZ), which is usually translated as a “wild animal.” Then, having created all the other occupants of space, God creates the human (Gen 1:26–27). The human is not called a living thing and the text does not say that he/she (who has not as yet been sexually differentiated) breathes, but presumably he/she does and that there is some intimate connection between breathing and being alive, but the connection is not explained in the literal text any further other than to say that killing a human has to do with taking away its blood. For example, after Cain kills Abel (how we are not told) God says “your brother’s blood cries out to me from the ground” (Gen 4:12), and God commands all the descendants of Noah not to commit murder with the words “He who sheds the blood of a man, by man shall his blood be shed” (Gen 9:7). Hence, the way to kill someone (i.e., to take away his/her life) is to shed his blood. The reason given for this command is that “in God’s image he (i.e., God) made the human” (Gen 9:6). By implication, life and breath are located in the blood and it is this life breathing blood that is the image of God.

Based on rabbinic interpretations of these biblical texts and others like them, no act is considered by the rabbis to be more important morally for a Jew than to save the life of a fellow Jew, and no act is considered to be more heinous than taking the life of a fellow Jew. On a literal reading of the biblical text, the importance of these complementary commandments (the first positive and the second negative) is clear. A physical entity and its life are not the same, and it is the entity’s life and only its life that (first) is an imitation of what God is, and (second) is the personal property of God only given on loan temporarily to the life’s associated body. Hence, humans are not granted the legal or moral authority to make decisions about life and death. These decisions properly and factually are within God’s exclusive domain.

The biblical account of how and why entities are alive and dead is problematic, no less as a moral commandment than it is as a factual description. What is most troubling about this biblical account, even as it was interpreted by the traditional rabbinical commentaries, is that it presupposes that a clear line can be drawn between being alive and being dead, when there is nothing like a clear line dividing them.

At the heart of the problem is the discrepancy discussed previously in connection with creation. The universe is made up of continuous processes that the intellect freezes into discrete entities for the sake of understanding. The intellect will look at a stream, ask of what it is composed, and will conclude that these entities are very tiny drops of water. Now a river usually can be thought of as a collection of water drops, but no mere collection will constitute the river. A collection of drops has no origin, no end, no course, and no direction. It simply is. But the river in this sense is not—that is, it is not any *thing*. What it is, is a moving flow of living (i.e., moving) water from an origin in the direction of an end.

The same can be said for a life. It is something that begins with birth and ends with death, but any point determined to be either the beginning or the end will be contrived. Any point immediately before life begins can equally be considered within the life and any point immediately after the life ends can equally be considered within the life, for to be alive is a continuous process from remote beginning to remote end. Decisions to make origins or ends clear, precise dividing lines are often only necessities of the conventions of human law that, precisely because of these necessities, always are distortions of reality.<sup>45</sup> Consider, for example, how we in modern post-Protestant nations today decide whether or not it is legal to terminate or assist in terminating an individual human life.<sup>46</sup>

Traditional Roman Catholics, among others, say that life begins at the moment of conception. The advantage of this position is that it seems to draw a clear line at the moment where the development of organic parts becomes the beginning of a new life. That moment is procreation. However, there is no clear moment at which this event occurs. The female egg consists of a soupy fluid in which is imbedded a pronucleus that contains her genetic material. After a male sperm enters the egg, procreation has begun but it is not yet complete. Upon entry the sperm's tail disappears and what remains is the male pronucleus. It is another twenty-two hours before the two pronuclei merge, in an act that is called *syngamy*, and it is only with syngamy that the act of procreation can be said to have been accomplished. In brief, conception is not a single act at a single time. Rather it is a set of continuous events that extend almost over a full day.

In 1973, the United States Supreme Court in the case of *Roe v. Wade* drew a different line for the initiation of human life. It asserted that life begins at the moment of what the Court calls *viability*, which initiates the state at which a fetus can be judged capable to survive outside of a body. The Court determined that on average the period of pregnancy (from conception to birth) consists of thirty-nine weeks, which it divided into three thirteen week periods called *trimesters*. The Court ruled that the moment of viability is the end of the second trimester. However, technology now exists to allow for *ectogenesis*, that is, the construction by medical engineers of an artificial womb that will nurture an embryo at any stage of development, no matter how early.

Some German bioethicists, following the lead of Hans-Martin Sass, have proposed a third line for distinguishing between the living and the nonliving in the case of human beings. Sass suggests that just as brain death is the line beyond which we now declare someone dead, so the beginning of brain activity should mark the moment of the beginning of human life. However, brain life is no less a process and not a clear moment than is any other proposed natural criterion. In general, the first brain stem activity can be observed about fifty-four days after conception, depending on when conception is said to have occurred. However, at this stage there is no brain activity that could be measured on an EEG (an electroencephalograph). This higher degree of brain activity does not become continuous until the thirty-second week of pregnancy. Hence, brain activity no less than any other standard for legal judgment is a process, in this case one that extends over some 174 days or more than twenty-four weeks.

The issue is both legal and moral. Almost no one objects to disposing of organic material simply because it is organic material. The objection is to disposing of a living person. The question is, when does something become a living thing and, which amounts to the same question, when does someone cease to be a living thing? For both moral and legal reasons this line must be clear. However, in reality it is not clear, and it is not clear for good philosophical reasons. Life and death are continuous processes, not discrete (and therefore not static) states, and whatever is continuous cannot be divided accurately into distinct parts or periods.

In principle, we could try to solve the problem of life as distinct from non-life by focusing on its opposite, death as distinct from non-death. However, when someone is dead is no more precise than when someone is alive. A standard definition of death in the Anglo-American legal tradition is the "cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereupon, such as respiration, pulsation, etc."<sup>47</sup> Here

the terms *life* and *existence* are used as synonyms, which is not accurate since a corpse exists, but is not alive. However, otherwise the definition seems to fit common usage, especially as it functions in traditional Jewish life. We have already seen that the Hebrew scriptures tend to associate life with both blood circulation and with respiration, even though these two bodily systems are distinct, for respiration depends on more systems of the body than just the circulation of blood.

In any case, irrespective of the physical misjudgment of identifying respiration and blood circulation as a single system, it does not provide a very clear marker for separating the living from the dead. People's hearts stop and they continue to live; similarly people stop breathing and they continue to live. And both events today, thanks to modern medical technology, occur so frequently that mere heart stoppage and mere cessation of breath even for an extended period of time can no longer be used by any judge—rabbinic or civil—as sufficient proof of death. Hence today, brain death has become the standard for this legal judgment almost everywhere.

“Almost everywhere,” however, is not everywhere. As of 1986, Japanese neurosurgeons ceased to accept brain death as death, once it was discovered that “brain death” means that the brain ceases to produce a specific antidiuretic hormone that can be provided artificially.<sup>48</sup> It is this hormone that causes blood vessels to constrict and it is this constriction that pumps blood through the veins and arteries. Now that it is possible to supply a constant drip of this hormone to the body, brain cessation need no longer be treated as any more terminal than the cessation of the heartbeat. In other words, thanks to modern technology, there is no more reason for using brain death as a standard for judging a hard and fast line between life and non-life than there is for using the more traditional criteria of pulse and heartbeat.

Still others argue that brain death does not mean that the entire brain ceases to function. The brain can be divided into two distinct regions, an upper brain and a lower brain. Most of the brain's functions occur in the lower hemisphere, which is called the brain stem. The case for using antidiuretic hormones assumes that as long as the brain stem continues to operate the individual remains alive. However, it is argued that life requires more than this for a living entity to be a living human being. The upper region of the human brain consists of two cerebral hemispheres, and it is with the functioning of these two hemispheres that consciousness is associated.

Again, it is not clear what constitutes death for a human being. The human at birth is a living organism but it barely has a functional cortex. In time it develops a fully functional brain, but at first what develops is the brain stem. A human being who has no brain development beyond this

level is said to have *anencephaly*. Such an individual clearly is alive, but the question remains if this living being is or is not a human being. Some people will agree with Dr. Robert Truog (director of the multidisciplinary intensive care unit at Harvard Medical School at the end of the twentieth century) that such an individual should be declared *cortical dead*. Dead here does not mean dead, for Truog recognizes that both life and death are processes that cannot be sharply distinguished. What Truog means is that persons at this stage are sufficiently dead that people can responsibly choose to declare the unfortunate individuals dead. Dead here means (by implication) that those making this choice agree with the ancient tradition of Plato and Aristotle that defined rationality as the distinguishing characteristic that differentiates human beings from other members of the animal species. Dead here in other words means that this living entity no longer is a human being, and (by inference) to not be human is sufficient reason to not be kept alive.

The criteria for this decision are rarely stated explicitly. As of 1994, there were between 14,000 and 35,000 human beings in the United States who were in a persistent vegetative state, which means that they showed no signs of human consciousness.<sup>49</sup> Similarly in the United States alone some 1.5 million abortions occur legally every year. The morality of these two events is dependent on the same reasoning. First, what distinguishes a human being from other living things is conscious reflection, that is, with the ability to *reason*, and human reasoning is not possible without the upper hemispheres of the brain. It is factually the case that any entity with the anatomy of an animal cannot be conscious without the cortex. However, it is not a factual judgment that any animal lacking this ability is not a human being. That is a truth determined solely by language use, for reasoning is not the only standard by which *Homo sapiens* can be differentiated from other species. Second, an entity that cannot reason has no special right to life over other entities. Presumably merely to live is not of sufficient value that all factors being equal to live without consciousness is not better than not to live at all. However, this second judgment seems to have no basis whatsoever. It would seem to me that the ability to be alive at all is such a rare event in the universe that life qua life is to be valued and treasured irrespective of its quality.

It is not difficult to think of arguments against this extreme judgment of the value of life. Consider, for example, not life without conscious, but life lived with constant consciousness of unrelieved pain. It certainly can be argued that such a life with such an extreme level of suffering is to be valued less than no life at all.

I do not want for now to follow this direction any further. I want to limit the focus for this discussion not to life in general, but solely to human life, for those who advocate cortical death as the line for separating human life from human non-life assume that being human has special moral value over and above all other forms of life, so special that to cease to be human is sufficient reason for a human being to chose not to be at all. The name given to this moral position by its opponents (such as Singer) is *speciesism*. The position asserts that morality is species specific, so that rules of moral behavior that govern relations between human beings are not applicable to other beings, and it is this judgment that lies behind much of human cruelty to animals.<sup>50</sup>

Prima facie rabbinic Judaism is guilty of speciesism, for it proudly proclaims in ethics as in law, that being human is sufficiently special that the laws of morality for humans is inherently different than the moral laws covering the treatment of animals. I want to consider this moral position next, specifically as it relates to the question, at the end of days, who will be redeemed.

## Life and Humanity

**What does it mean to be human? When do chemical reactions become living things? When do living things become human beings?**

The traditional rabbinic conception of redemption focuses on two significantly different visions of the end of the process of creation. First there is the end of natural and human history itself that is generally expressed as a utopian vision of the final stage of humanity. From the perspective of rabbinic thinking, this human end is primarily a story of the Jewish people re-establishing a particular vision of a Kingdom of God. However, this kingdom only ends human history; it is not the end of days. In the Kingdom of God the diverse motions of the nations of the earth come together in unity with God as one earth with one people in harmony for the first time with their creator. However, there remains the separation of space and time from the human beings who are related to it. At the absolute end the diverse motions that individuate space-time also come together, where the original division of everything into regions of light and dark are themselves overcome, and a final cosmic unity of everything is achieved. Beyond the separation of the Jewish people and the other nations of the earth there is the separation of humans from other living animals and beyond the separation of all living things is the separation of the living from the non-living, of the organic from the inorganic.



The previous section of this chapter dealt with understanding why the separation of life from non-life is not a real separation, that life and death are not opposites but are rather to be understood as part of a single set of processes whose arbitrary point of beginning is birth and whose arbitrary point of ending is death. This penultimate section on redemption will take a closer look at the presumed clear separation between humans and other forms of life. However, first I want to add a final note on the previous critique of the division between life and non-life.

According to *The New Columbia Encyclopedia*<sup>51</sup> there are six biological functions that differentiate the living from the non-living. The first and minimal function is that living things exhibit *organization* where, in terms of biology, a minimal unit of life is the *cell* in whose space resides a complex set of chemical reactions called *protoplasm*. It is the protoplasm of the cell that makes possible the second defining activity of life. Whatever is alive is involved in an opposing pair of activities called *metabolism*. One member of the set is the conversion of non-living, (which is to say) nonorganic material into living material (which is to say) protoplasm, and the other, opposing member of the set of activities is the decomposition of protoplasm into nonorganic materials. The constructive action is called *synthesis* and the destructive action is called *catalysis*. In other words anything is alive whose motion is an organic process of metabolism. Note that both critical terms in defining life, organism and metabolism, express processes that are chemical, but express nothing else, which leaves open the question: Is or is not all of life reducible to sets of chemical transactions? As of now there seems to be no way that any sciences, including chemistry, can settle the question. The third defining activity of the living is growth, which occurs when the rate of synthesis is higher than catalysis. However, the final three functions cannot simply be reduced in the same way as the first three. The fourth and fifth are the basic ways that a living thing responds beyond itself to its external environment. The fourth is *irritability*, which simply means response to stimuli. At one of its more complex levels, irritability is sensation and experience of the world. The fifth, *adaptation* to the environment, is just an extension of the fourth. The difference between these last two forms of organic activity is solely the difference between passive (irritability) and active (adaptation) response. But the last activity, *reproduction*, is something qualitatively different. It is an activity that brings together all the other five into a single process. Reproduction is the way that decomposing life forms generate synthesis not so much in themselves as in their species, and, as such, what they create is a unique and profound new process of growth through response to stimuli which constitutes the

central way that biological creatures adapt, survive, and prosper. It is from the perspective of biology, the essential act of every living being. It is this significance that is captured in the Hebrew scriptures when in its very first chapter it asserts that the commandment that unites all living things in shared service to God is to be fruitful and multiply.

The process of created life observing its imperative to generate more life on the planet earth began some 2 billion years ago as a chemical reaction within a relatively enclosed space filled with amino acids in an atmosphere of water vapor that absorbed a series of powerful electrical discharges from space.<sup>52</sup> A great many years later, only 12 million years ago, after a wide diversity of life forms were already established on this planet, Africa divided into two distinct regions, separating West and East African apes from each other. Some 5 million years later, or 7 million years ago, the East African apes adapted in such a way to their new environment that reproduction between these relatives ceased to be possible, so that the East African apes became something other than just apes. Clearly the two groups of African apes were both apes, but now they belonged to different species, that is, they had become so different that they could no longer share the sixth defining function of being alive—they could no longer reproduce with each other.<sup>53</sup> As of 7 million years ago, the new species could stand upright or erect, and its front paws developed sufficient dexterity that they could more appropriately be called hands than paws.<sup>54</sup> By 4 million years later, just 3 million years ago, these East African descendants of apes had developed considerably more functional abilities beyond their West African cousins. Stating these skills in no special order, our bipeds had developed (1) enhanced vision both to judge depth of field and to distinguish colors, (2) learned to use tools, (3) became social animals and made collective function differentiations based on factors of gender, (4) became more social with members of their own species, (5) began to consume meat to supplement and eventually replace their fruit diet, and (6) grew larger brains with expanded mental capacities that enabled them to handle all the other functions as well as (7) to speak and develop language.

There is no intended order in listing these seven distinctive functions because there is no clear fossil record of a temporal order to their development. You might think, for example, that before there could be language, brains would have to grow larger. However, there is no such clear connection between brain size and walking erect or brain size and developing the kind of facial features necessary to make the wide range of different kinds of sounds upon which language develops. In other words, the particular kind of mammal evolution on which we are focusing now shows

no signs of simple linear development, and this lack of linearity proved difficult for paleoanthropologists to accept. As Stephen Jay Gould would emphasize, a time line graph of the evolution of a species looks more like a chaotic bush with multiple roots than a tall tree with many branches growing out of a single trunk.

The question is, why did paleoanthropologists hope to find the route of species development more linear, and the answer is that their motivating interest was more anthropology than paleontology. They were definitely interested in finding the early ancestors of all forms of earthly life, but they were especially interested in finding their own ancestors, the ancestors of the human race. *Homonids* is the name given to the line of humans (called *Homo sapiens*) from which humans arose. They hoped for a linear development of erect apes to dexterous apes, to meat eaters, to bearers of large brains, to tool users, to social animals who make social distinctions based on gender, and who speak language. However, there is no such clear development, and hence it is not really possible to trace with clarity which bones of the many bones that archeologists find belong to human ancestors.

The distinguished paleoanthropologist Ian Tattersall has called this whole enterprise of searching for human ancestors bad science. With specific reference to disputes in the 1940s and 1950s over classifications of fossils from Sterkontien, South Africa, Tattersall commented that no “energy need have been wasted on this empty argument if the various protagonists had taken a moment to consider how great a stumbling block the vagueness of the concept of ‘human’ is to the understanding of evolutionary history.”<sup>55</sup> Similarly, when Tattersall was asked to decide which characteristic is most distinctively humanoid; bi-pedalism, a large brain, the reduction of face and teeth, or tool-making ability, Tattersall said, “The term ‘human’ had been deprived of any hope of precise definition as soon as it was realized that people have an evolutionary history.”<sup>56</sup>

I would like to generalize Tattersall’s judgment beyond paleoanthropology to science in general. The term *human* is just too inherently fuzzy to be useful in making most distinctions. Humans are not clearly a separate species, and this is especially true when we speak in terms of ethics. For ethics, or so it seems to me, what matters (as John Locke argued) are *persons* and not *humans*. According to Locke a *person* is a “thinking intelligent being that has reason and reflection and can consider itself as itself the same thinking thing, in different times and places,”<sup>57</sup> and, as Singer comments, “not all members of the species *Homo sapiens* are persons, and not all persons are members of the species *Homo sapiens*.” (p. 206)

## The Economics of Living, Dying, and Being Human

**What role does and should capitalism play in decisions about living and dying?**

In 1939 the so-called civilized world, which meant primarily Western Europe and its imitations in the Atlantic and the Pacific Oceans, was already engaged in a world war which nationalist ideologues described as a battle over the future of civilization and at least some of the combatants described as a conceptual struggle over the values of humanism and enlightenment.<sup>58</sup> Notable on one side of the conflict were German philosophers and creative writers who survived their experience of the dehumanizing power of modern technology on the battlefields of World War I. They assimilated together in their reflections of both dominant twentieth-century claimants to be the inheritors of the modernist ideals of the French Revolution—the democratic republic of the United States and the communist utopia of the Soviet Union—and judged their true end to be the trenches separating the allies of the French from the axis of the Germans. They struggled conceptually and politically to create a different model for the future from the warrior-workers of enlightened capitalism, and what they came up with was a romantic post-humanist vision that (at least) supported (if it did not contribute to creating) Adolph Hitler's Third Reich, where the new political model that replaced the trenches of republican capitalism exhibited itself as the death camps of the Nazis. What all of these mid-twentieth-century political regimes shared in common is a primary focus on politics in the collective, considerable regard for the saving power of scientific technology, and an almost total disregard for individual human beings.

My paradigm example of the link between scientific technological utopianism and dehumanization is the 1939 World's Fair in New York City.<sup>59</sup> I choose it because it draws a picture of the relationship between modern technology and spiritual utopianism that is apolitical, commercial, and remains to this day descriptive of American and European society, especially (although in no way uniquely) applicable to what the publicity office at my home institution calls "the new American university."

The 1939–1940 New York World's Fair was one of the last of a series of fairs—going back to the Columbian Exposition in Chicago of 1894—intended to attract visitors from all over the world to the United States to celebrate the growth and prosperity of specific cities as well as the entire nation. The New York fair was distinctive in at least three ways. First, it was held in an atmosphere of extreme collective concern for, if not depression over, the future. The fairs associated with the beginning of the twentieth century had great optimism over the prospects of what science, technology, and American "common sense"

could do to improve the so-called old world. However, since then Americans had seen the devastating first world war that more than adequately exhibited the ability of technology to both destroy and degrade its inventors, followed by a worldwide economic depression that, as of 1939, showed little sign of ending despite the economic reforms instituted by Franklin Delano Roosevelt, followed by real threat of anarchist and communist revolts in the world's most civilized nations.<sup>60</sup> Second, the leadership roles for organizing, building, and funding the fair passed decisively from involvement of governments to involvement of major (at least potentially global) private business corporations—to pavilions by companies such as AT&T, Borden, General Electric, Firestone, Chrysler, and B. F. Goodrich. Third, attempts to educate the public about world culture and modern science faded into the background to attempts to entertain the public with tricks of technology used to *sell* belief in the future that science united with business could bring about. The new vision was utopian. Science and science alone has the potential to produce the kind of technology which, as sponsored, developed, and marketed by modern global capitalism, can bring about the religious dream of human fulfillment promised by Judeo-Christian religion, all with only minimal involvement from government and generally free of politics, *free* that is if governments at every level will leave businessmen alone with their expertise in marketing to sponsor and develop the work of scientists.

The exhibits given central location in the organization of the fair were the corporate exhibits. They received the most publicity, occupied the largest pavilions, and attracted the most visitors. In contrast the traditional cultural exhibitions that held center stage in earlier World Fairs were given less publicity, had smaller pavilions, were located in periphery space, and had lower attendance. The traditional and cultural exhibits included information-oriented programs in world religion and culture. General Electric's exhibit featured a seven-foot robot named "Elektro." Westinghouse exhibited a one-ton so-called electric brain named "Nimitron." Raymond Lowy designed a "Transportation Section" in the Chrysler pavilion that featured globe-encircling airplanes and rocketships.<sup>61</sup> Norman Bel Geddes designed the "Hiways and Horizons" landscape in General Motors Futurama on a fourteen lane expressway through a pastoral landscape free from "pollution, poverty, unemployment, minority problems, and war."<sup>62</sup> At a more general level what this model landscape omitted were real, individual human beings. There were some human figurines, but they lacked facial features and any kind of social-ethnic-national identity. In Geddes' image of the future, human beings were not participants; they were only "paying spectators."<sup>63</sup>

The utopian vision we have discussed in the previous nine sections of this chapter on the contrasting visions of redemption in rabbinic Judaism and

modern science is no less humanless than the commercial utopia American industry marketed in the middle of the twentieth century. However, there is a difference. The corporate model pictures a utopia in which human beings are reduced to non-differentiated consumers of corporate products. Here people serve capital rather than capital functioning as a tool to serve the needs of people, for here capital is not an instrument for people to acquire what they think they need and want; rather capital serves a program of capitalism itself to train people to need and want what is in the interest of capital. In contrast, the rabbinic model for the Kingdom of God has no place for capital, not because it ignores it (as transhumanists tend to do in describing their vision of the future) but because it describes a world where people have learned to transcend the kinds of material needs that capital serves and all living beings have ascended to a level of unity through themselves and the world with God in which capital can no longer serve a useful function.

However, this vision of the messianic end is a utopian vision that, as such, is asymptotic. It is a goal to strive for with endlessly increasing increments but an end that will never be actualized in real time. In the meantime, we must strive for our knowledge of everything in a world where finances are a real limit on success. This limitation in one form or another has always existed, for even before the invention of money (which is only a symbol used in virtual reality to enable a wide range of exchanges between commodities that are in quantitative terms incomparable), people needed to make exchanges of goods and services in order to better achieve whatever it was that they wanted to achieve. Furthermore, this need for social tools to facilitate exchanges undoubtedly will continue into the future, for it is unlikely before the end of days that everything that people value can be in sufficient supply that everyone can partake in it without some social mechanism to facilitate and regulate exchanges with justice.

The most obvious example of the need for a realistic assessment of capital in order to discuss unavoidable issues of justice is in the case of medical ethics. The examples of the problem are almost endless, but let me in the conclusion of this chapter give only one.

A thirty-eight-year-old working woman in Austin, Texas, with a working husband and several children, has diabetes and does not earn enough money to carry medical insurance. Because of her lack of money she is forced to try to self-manage her intake of insulin, which results, on a fairly regular monthly basis, in her admission to a hospital intensive care unit because of her mismanagement of her needed insulin injection. The insulin could be better regulated if she had either less expensive access to a hospital's services or, what the hospital has, access to an insulin pump that, as of 2006, cost around \$3,200. Instead she spends, almost on a monthly basis, extensive time recovering in an emergency room for which she is charged, without any way

to make payment, a bill of \$191,000. The article adds that as of 2005 there were 46.6 million uninsured people.<sup>64</sup>

Insulin control for diabetes is a relatively cheap expense when compared to medical procedures for replacing hearts, kidneys, and other body organs. Providing machines for patients to regulate their own insulin is relatively cheap as compared with what will undoubtedly be the cause for replacing most organs of the body as the convergence of the technologies of genetics, robotics, information sciences, and molecular biology enables human enhancement. Furthermore, behind all these potential wonders are endless potential horrors of struggles over functional principles of distributive justice that always lie at the heart of issues of economics.

These issues of economics and justice lie outside issues that arise from physical sciences such as physics and biology. I would suggest that if physics deals with creation and biology deals with redemption, then the disciplines to which we turn for solutions to problems of distributive justice—certainly economics and sociology but also history and law—deal with revelation. Revelation in connection with these social sciences will be our topic in the next and final chapter of this book.

## Notes

1. Readers who are familiar with the philosophy of Rosenzweig will certainly recognize, as I acknowledge, that much of what I say about the Jewish doctrine of creation is influenced by *The Star of Redemption*. The influence is less straightforward with the Jewish doctrine of redemption. My separation from Rosenzweig is glaring in this second sentence of my proposed reconstruction of redemption. In Rosenzweig's philosophy humanity is the active agent in bringing about the salvation of this world. My understanding differs at this most general level in two primary respects. First, the object of redemption is the domain of the entire universe and not just the narrow domain occupied by humanity. Second, the agent of redemption is both human and divine and not just human.

2. Beyond all the confusion of the mostly unintelligible rhetoric of Jewish theologians, this distinction is the bottom-line difference between liberal and traditional Judaism.

3. By neo-Darwinian evolution, I mean a synthesis of Darwin's theory of gradual continuous evolution guided by some interpretation of natural selection by what he called "the survival of the fittest," both of which are explained in terms of principles of genetics first introduced by Gregor Mendel and adapted to describe reproduction at the micro as well as the macro level of living things. There are many ways to interpret this thesis about biology. We will focus on the standard interpretation that most practitioners of the life sciences accept, including Richard Dawkins, in contrast to more deviant accounts of evolution such as *punctuated equilibrium* and *mutationism*.

4. Dawkins claims that natural selection is a mechanical causal principle. As such it is neither a random process (contrary to the claims of the mutationists), and it is not a teleological cause (contrary to the defenders of intelligent design). To explain his claim he uses a computer game model (*The Blind Watchmaker* [Harmondsworth: Penguin Books, 1986], chapter 3, pp. 43–74). Note especially on page 65 where he says about the animals his computer game generates that “I didn’t plan the animals that evolved, and I was totally surprised by them when I first saw their precursors.” It is a confusing passage. Apparently the sense in which Dawkins’ computer model lacks purpose is that the outcomes are unknown to the program’s creator. However, Dawkins is not God and presumably God would have more complete knowledge of what his invention could do. Yet, this is not an important point. Most theists also believe that the created universe is contingent and intentionally so created to leave room in the world for viable human choice. The important point, which Dawkins seems to miss, is that he, through intelligence, created a computer game purposefully intended to be open ended. Hence, Dawkins seems confused about what a claim of purpose to creation entails. Simply put he has, in at least this case, chosen a very bad example to make his point.

5. There is a cartoon that shows a climber falling through the sky next to an angel of judgment sitting on a cloud next to a sign that reads “Laws of Gravity are strictly enforced.” (Non Sequitur, 8/27) online cartoon, obtained via the *New York Times* online ([www.nytimes.com](http://www.nytimes.com)), July 27, 2008).

6. See Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Viking, 2005).

7. See Hilary Putnam, *The Many Faces of Realism* (Chicago: Open Court, 1987).

8. It is clear that most Hasidim do not believe that they are idealists, but their denial may simply be a result of their limited rigor in philosophy.

9. Personally I do not believe that this claim about scientific methodology is correct, but I will discuss this claim in more detail in the next chapter of this book.

10. William James, *Principles of Psychology* (Bristol, UK: Thoemmes Press, 1998).

11. Alfred North Whitehead, *Process and Reality* (New York: Free Press, 1978).

12. See *The Ethics and Selected Letters*. Translated by Samuel Shirley (Indianapolis, IN: Hackett, 1982).

13. What follows is drawn primarily from Richard H. Popkin, *The History Of Scepticism, from Erasmus to Spinoza* (Berkeley: University of California Press, 1979).

14. What follows is influenced primarily by the discussions of idolatry by the following two books: (1) Moshe Halberthal and Avishai Margali, *Idolatry*, Translated by Naomi Goldblum (Cambridge, MA: Harvard University Press, 1992). (2) Paul Tillich, *Systematic Theology* (Chicago: University of Chicago Press, 1967), especially volume 1.

15. In this assertion I follow and accept the tradition of the neo-Kantian, Hermann Cohen in interpreting Maimonides. See Almut (Shoshana) Bruckstein, Hermann Cohen’s “*Charakteristik der Ethik Maimunis*”: *A Reconstructive Reading of Maimonides’ Ethics*” (Ph.D. dissertation for Temple University. Ann Arbor, MI: U.M.I. University Microfilms International, 1992).



16. Herbert George Wells, *The Shape of Things to Come* (New York: The Macmillan Company, 1933). Wells transforms the novel into a screenplay in 1935 for the 1936 film *Things to Come*, by William Cameron Menzies. The discussion that follows makes no separation between Wells' novel and screenplay.

17. What follows draws significantly from Francis Fukuyama, *Our Posthuman Future: The Consequences of the Biotechnology Revolution* (New York: Farrar, Straus and Giroux, 2002); Joel Garreau, *Radical Evolution: The Promise and Peril of Enhancing our Minds, Our Bodies—And What It Means to be Human* (New York: Doubleday, 2005); James Hughes, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future* (Cambridge, MA: Westview Press Books, 2004); and Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Viking, 2005).

18. For example, through the Defense Sciences office of DARPA (the U.S. Defense Advanced Research Projects Agency).

19. Namely, an external anatomical structure to support and protect warriors.

20. For example, the Rinat Neuroscience company in the Silcone Valley, California.

21. Kurzweil himself invented three major technologies — the first practical flatbed scanner, the first character recognition device that can read typeface, and the first full text-to-speech synthesizer.

22. In 1793, a waterfall in Wellesley, Massachusetts, powered North America's first textile mill. This event is commonly marked as the beginning of the Industrial Revolution in the New World.

23. A “JuBu” is a Jew who is a Buddhist.

24. Known by the acronym GRIN.

25. A “mostly original substrate human.” [Namely, being human]

26. Wells prophesied that international associations of technicians (e.g., the Union Aeronautique Internationale) will eventually establish a “Modern State Movement” which will create a “New World State.”

27. On Saturday evenings at the end of the Sabbath—which traditional Jews see to be a foretaste of the messianic age imposed into this world on the Sabbath, that is, on the final day of the week—Jews sing a song invoking the coming of Elijah the prophet (in a role familiar to Christians in the gospel activity of John the Baptist). The song ends with the words “may he come speedily in our days” (YAVO ELEYNU BIM'HERAH BeYAMENU).

28. It is with this group that I personally identify.

29. In this instance I'm thinking of swimming pools and golf courses, which are as numerous in Arizona as churches used to be in New England.

30. Texas, New Mexico, Utah, Nevada, and California.

31. I remember with a certain amount of shame playing with young friends capturing bugs and pulling off their legs or with butterflies and pulling off their wings solely for the playful pleasure of inflicting pain, precisely in the way that cats will torture captured mice before killing them.

32. The class of early rabbis quoted in the paragraphs of the Mishna, roughly between 200 BCE and 200 CE.

33. Joseph Karo's code, *The Schulchan Arukh*, separates these rabbis into two groups—the early rabbis (RISHONIM) and the later rabbis (ACHARONIM).

34. We will say more about this in chapter 8.

35. Moses Maimonides, *Mishneh Torah*, translation and commentary by Elijah Touger (Jerusalem: Moznaim, 1989). Henceforth referred to as "MT."

36. The topics of the completing three books of *The Book of Knowledge* are the books of torah study (TALMUD TORAH), against idolatry (AVODAH ZARAH), and of repentance (TESHUVAH).

37. MT 1, pp. 38–91.

38. MT 1, pp. 98–133.

39. MT 1, pp. 138–39.

40. MT 2, 1:1, pp. 12–13.

41. MT 2, 1:4, pp. 18–23.

42. See Richard Popkin, *The History of Scepticism from Savonarola to Bayle* (Oxford: Oxford University Press, 2003).

43. I have heard that Ray Kurzweil was raised as a Reform Jew and became a Buddhist. I have not yet met Kurzweil, but, if this report of his religious biography is correct, I find it hard to imagine that his conception of what it means to be "happy" differs significantly from mine. If what I suspect is in fact true, then I find it difficult to understand how he could judge the moral value of a life in terms of a scale that quantitatively balances experiences of pleasure and pain.

44. For example, a critical problem about the history of early rabbinic Judaism is that we have only one primary witness to it, Josephus, and we have sufficient reason to doubt his moral character enough as to have little or no confidence that what he reports is true.

45. There are many good books that deal with the complexity of determinations of moral judgments concerning medical ethics from the perspective of Jewish laws. One of the most useful—both because of its comprehension and because of the author's clarity—is Elliot N. Dorff's, *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics* (Philadelphia: Jewish Publication Society, 2003).

46. What follows is drawn largely from Peter Singer's *Rethinking Life and Death: The Collapse of Our Traditional Ethics* (New York: St. Martin's Griffin, 1994).

47. Quoted by Marcus Singer from *Black's Law Dictionary* (4th edition) (St. Paul, MN: West Publishing Co., 1951), p. 21.

48. See Singer, p. 36.

49. Singer, p. 59.

50. Discussions of Jewish ethics by some Jewish thinkers often assume the legitimacy of such a distinction in applying moral rules in general to Jews and non-Jews. To make such a distinction is unquestionably supported by rabbinic texts, and this fact in itself is another challenge to the viability of Jewish philosophy, especially ethics, in its modern form.

51. William H. Harris and Judith S. Levey, eds. *The New Columbia Encyclopedia* (New York: Columbia University Press, 1975), p. 1579.

52. The discussion that follows draws extensively from the following books: Richard Leakey, *The Origin of Humankind* (New York: Basic Books, 1994); Steven Pinker, *How the Mind Works* (New York: W. W. Norton & Co., 1997); Norbert Samuelson, *Revelation and the God of Israel* (Cambridge: Cambridge University Press, 2002), pp. 143–58; Ian Tattersall, *The Fossil Trail: How We Know What We Think We Know about Human Evolutions* (Oxford: Oxford University Press, 1995).

53. It is in the light of this biological story of human evolution that I would interpret the biblical text (Gen 2:20) “And the human called the names of every wild animal, bird, and domestic animal, but the man found no fitting helper.”

54. Richard Leakey speculates that bi-pedalism results from centuries of swinging from trees through forests in search of fruit to eat.

55. Tattersall, *The Fossil Trail*, pp. 74–75.

56. Tattersall, *The Fossil Trail*, p. 114.

57. John Locke, *An Essay on Human Understanding*. Book II, Chapter 9, Paragraph 29. Quoted by Singer, *Black's Law Dictionary*, on p. 162.

58. What follows draws significantly from Michael E. Zimmerman's *Heidegger's Confrontation with Modernity: Technology, Politics, Art* (Indianapolis: Indiana University Press, 1990).

59. What follows draws significantly on David E. Nye's *American Technological Sublime* (Cambridge, MA: MIT Press, 1994), Chapter 8, “Synthesis: The 1939 New York World's Fair,” pp. 199–224.

60. England, France, Italy, Germany, and the United States. Insufficient respect was granted to the equally real threat of reversal from cultural progress in the direction of technologically modern warfare, as much a potential threat to most Americans' expectations for the future as the threat of Mussolini's Italy and Hitler's Germany.

61. The script for the planes and the rocketships made minimal reference to their military use.

62. David E. Nye, *American Technological Sublime* (Cambridge, MA: MIT Press, 1994), p. 219.

63. Nye, *American Technological Sublime*, p. 222.

64. This example is taken from an article by Erik Eckholm in the *New York Times* edition of October 25, 2006, under the headline “Hospitals Try Free Basic Care for Uninsured.”

## CHAPTER EIGHT



# Interpreting Revelation: Humanity, God, and Jewish History

### Rewriting Jewish History

That everything is constantly changing has been a continuous theme underlying every discussion in this book. More specifically, philosophy and religion are an inherent part of any culture, culture changes as frequently as people and their environment change, and each of these general categories are mutually causative. The Hebrew scriptures reflect the life of the Hebrew people living in a shared Mediterranean civilization in which the political life of the Israelite theocracy (from its birth to its death) constitutes a minority theme in a more dominant history of unending conflict first between empires along the Nile, Tigris, and Euphrates rivers and second between these southeastern Mediterranean empires and the Macedonian, Greek, and Roman empires of the northeastern end of the great sea. The complete editing of these scriptures by a ruling class of rabbis in Judea marks the end of the so-called biblical period of Jewish civilization, but this periodization is only a fiction for a number of reasons. First, it gives the impression that the life of the people was concentrated in a single territory called the Land of Israel, when more accurately Hebrews and then Israelites and then Judeans were always distributed throughout the civilized world bordering the Mediterranean Sea. Second there is no clear-cut separation between the period of life in the state discussed in the Bible and the people's second life under the rule of rabbis. There is a long transition period of at least five hundred years from when the Greeks first conquer Judea in the fourth century BCE to the establishment of

the rabbinical academy of Pumpeditha in Babylonia in the third century CE. At the beginning of this transition period Israelite people generally recognize the authority of the cast of priests of YHWH in Jerusalem, although the process of undermining their authority and both their political and cultural decline undoubtedly has long precedence before this designated beginning. Similarly, at the end of this transition period the Jewish people generally recognize the authority of a class of rabbis whose source of authority is a tradition of interpretation of the Torah under a loose central political body located in Babylonia, although their readings of the Hebrew scriptures are not the only readings that Jews know, Jewish life in the land of Israel never totally comes to an end, and Holy Land rabbis never completely lose authority to the rabbinate established in the *galut* (the *exile*, which means the lands outside the very loose borders of the Holy Land). In this as in every other case, change is continuous and not discrete, so that to speak of a period of biblical Judaism, followed by an early period of rabbinic Judaism is a slight fiction. The same can be said for every subsequent change.

In this book I have defined the political and cultural stages of transition primarily by books. The Hebrew scriptures define biblical Judaism. Early rabbinic Judaism is defined by the Mishnah, early collections of works of midrash, and finally the editing of the two Talmuds. I have used the term *classical Judaism* to designate the next stage because it is in this period that what we today recognize as traditional Judaism is defined in every political and conceptual detail. Its major literary products are commentaries on the Hebrew scriptures and the Babylonian Talmud, the formalization of Jewish communal and private worship practices into a fixed order (SIDDUR), and the writing of philosophical books in defense of Judaism against Moslems and subsequently against Christians. This period begins with the writings of the Gaon of Sura, Saadia, in the tenth century and ends with the writings of Baruch (Benedict) Spinoza in Western Europe in the seventeenth century. However, once again, the beginning and the end are somewhat arbitrary. For example, Philo in Egypt in the first century CE belongs to this period, as do many traditional rabbis in the twentieth century CE. The period of classical Judaism is followed by *modern Judaism*, and modern Judaism is distinguished by two movements. First, the religious movement to reinterpret classical Judaism in accord with the liberal values introduced into European political life through the British, American, and French revolutions at the end of the eighteenth century. Second, the cultural movement to reinterpret the Jewish people in accord with the nationalist values introduced (once again) into European political life through the British, American, and French revolutions.

Of equal importance to understanding the history of Judaism is the continuous process of change in what the Jews and their neighbors believed about the Jewish people imbedded in a world populated by other life forms, situated in a physical universe. Jews defined themselves as a species of human beings who were a species of animals whose nature is the subject matter of the life sciences. Similarly, the Jewish people believed themselves to be a special creation by a deity who also created every other animal to live in a universal physical space that he also created whose nature is the subject of the physical sciences. As long as the Jewish people defined themselves through commentaries on the Hebrew scriptures, they defined themselves through their collective and individual relationship with God, and God was first and foremost identified as the creator—not just of the Jewish people and not just of the planet earth, but of the entire universe.

These continuously changing networks of beliefs about human beings, living things, and physical things in general are philosophy, and Jewish philosophy is a subset of general philosophy. Jewish philosophy's specific difference is the importance it attaches to Judaism, the Jewish people, and the God of Israel. That difference has produced a distinct tradition of texts, sufficiently extensive and rich in distinctive content, that Jewish philosophy can be called a distinctive branch of philosophy. Yet, beyond its difference, what makes Jewish philosophy *philosophy*, is what it shares in common with the philosophy of Israel's non-Jewish neighbors. Hence, as philosophy changes, so does Jewish philosophy, and that change too is continuous.

Philosophy in the biblical period was concerned primarily by the pursuit of wisdom. It was, as the name suggests, the defining activity of people who were "lovers of wisdom" (*sofia*). Certainly a major part of their pursuit of wisdom involved gaining information about the physical universe and its occupying life forms. But this information was never the end of the activity. Rather the information was a means to a moral end. The end was to achieve fulfillment, which they called *happiness*. Happiness was believed to consist in union with the single deity who created the universe, whose unique mode of being made him the paradigm example or end of every other recognized legitimate form of the human pursuit of happiness—the good who defines morality, the beautiful who defines art, and (most importantly) the true who defines the pursuit of knowledge.

In the early modern period<sup>1</sup> philosophers began to call what they do *natural philosophy*. The new modernist understanding of philosophy differed from the older model of classical philosophy in two distinct ways. First, knowledge became increasingly separate from ethics, and with this separation, philosophy ceased to be the love of *wisdom* (*sofia*) and became instead the pursuit of *knowledge* (*scientia*). Second, by calling philosophy *natural* its

practitioners separated themselves from the classical philosophers who pursued *revealed* philosophy.

What philosophers do is draw reasonable inferences from premises. In fact what their special talent is as philosophers is that they are skilled at making rational inferences. However, they may not be (although often they are) skilled in forming the premises from which the inferences are drawn. Premises are drawn from intuitions, and intuitions are aroused from two potential sources—human sense experience and divine revelation. Those early modern philosophers who said that what they did is natural meant that their intuitions were aroused exclusively from human sense experience, and in so limiting themselves they separated themselves from the dreaded raging wars between Christians and Muslims and between Christians and Christians, so that they could posit a universal ideal in which rational reflection on all sources of knowledge could be universalized as something humane that transcended the particularized, nonuniversal claims rooted in confessions of access to divine revelation.

By the middle of the nineteenth century, after more than a century of the pursuit of natural philosophy, some philosophers began to claim a special status for a form of positivist (i.e., empirically based) thinking that, following the model of some early modernist humanists, they projected from their study of ancient Skeptics. They adopted a mechanist model of explanation in what they assumed to be functionally, a materialist universe. In so arguing they adopted a methodology for understanding all truth claims whose sources they believed to be in post-revolutionary French scholars who used perceived Cartesian principles of explanation to reformulate Isaac Newton's distinctly nonpositivist, non-mechanistic *Principia Mathematica*. With Newtonian physics understood to be the near perfect model for doing natural philosophy, these philosophers—notably William Whewell—called their specific kind of philosophy *science* and referred to people such as themselves as *scientists*. By calling themselves scientists they intended to separate themselves from every other kind of philosopher in that these scientist philosophers were committed to the exclusive use of empirically derived sources of intuition to derive inferences of knowledge within the (at least methodological) assumption of a purely mechanical, purely materialist universe. These scientists were sufficiently successful in their enterprise in acquiring knowledge that today most people consider only the claims of scientists doing science to deserve the designation knowledge.

### Judaism is a Philosophy

Judaism, as it was conceived by all of the pre-modern Jewish philosophers, is a philosophy. The early rabbis were not philosophers in a modern sense, but they were philosophers as the term was used in the Roman Empire. In

fact the rabbi's discussion of philosophical themes exhibits marked resemblance to Stoicism. They preached a general and universal conception of the universe and humanity in a rhetorical, speech-act logic whose intent was to inform a general public of their followers of the good in their collective and individual lives. They understood the universe to consist of some four elements, two active (fire and air) and two passive (earth and water), created by a deity who was purely active. They understood themselves to be wise men (CHAKHAMIM) whose opponents were called EPIKORSIM, namely, skeptics called "Epicureans," and what they taught was a divinely revealed teaching (Torah) which, if obeyed, led to both collective and individual perfection or happiness (SHeLEMUT), the latter term naming what the former term means.

It is in what I call the classical period of Jewish philosophy that this understanding of Judaism is formalized as a philosophy whose end is universal happiness for everyone and everything. A paradigm example of its formalization is Maimonides' *Mishneh Torah*.

The first major classification of the categories of rabbinic moral instruction was the *Mishna*. There Judah I distinguished six orders of rules<sup>2</sup> which the Talmuds differentiate into sixty-three distinct tractates. By Maimonides' time all of these moral pronouncements were understood to express 613 commandments stated in the accepted text of the Torah which were handed down to the people of Israel through a tradition that begins at Mt Sinai with the divine revelation to Moses, who was to be considered not only as the greatest prophet, but also as the greatest philosopher and the paradigm of humanity. Maimonides' *Mishneh Torah* is a philosophically systematic explanation of all of the laws in the Torah.

The *Mishneh Torah* explains Judaism as the paradigm philosophy. The 613 rules of the Torah are systematized into eighty-three distinct topics of judgments or *ways* (HALACHOT) of living, subsumed under fourteen general categories (called books) presented in a logical order where issues of knowledge (MADA) are presented first as conditions for developing a proper mental attitude of love (AHAVA) toward God. From these most general proposals for mental attitude follow distinct sets of kinds of behavior, individual and collective, concerning worship set at fixed times (ZEMANIM), laws specifically applicable to women (NASHIM), ways to govern sacrificial acts of holy things (KEDUSHA), oaths and other kinds of public statements (HAFLA'AH), ways to practice agriculture (ZERA'IM), temple worship (AVODAH), sacrifices (KORBANOT), and purity (TOHORAH), ways to settle communal issues over damages (NIZIKIM), and property acquisition (KINYAN), and issues of government involving judicial (MISHPATIM), and executive (SHOFTIM) legislation.



What Maimonides seems to be presenting in the name of the Torah and its tradition of rabbinic interpretation is a legal system, but it is not a legal system that could be practiced since the destruction of the second temple<sup>3</sup> and it is doubtful that it ever was practiced before then.<sup>4</sup> Rather it ought to be understood more as a very detailed political theory of an ideal rather than an actual Jewish polity, very much composed in the spirit of philosophical texts such as Plato's *Republic* and his *Timaeus*, where Timaeus complements Plato's picture of an ideal human political state with a picture of a hypothetical actual cosmos as a polity. In effect, when the *Republic* and the *Timaeus* are read together, Plato is presenting a microcosm-macrocosm picture of the universe that itself is a model for our understanding how the rabbis understood the microcosm-macrocosm picture of the two temples in the two Jerusalems, one on earth and the other in the heavens, the upper celestial one functioning as the Kingdom of God and the lower imagined terrestrial one functioning as the ideal kingdom of Israel intended to exist at the end of human history.

In this context, the most telling book of the *Mishneh Torah* for understanding this work as a philosophical presentation is the first book on the content of human knowledge that is a precondition for developing adequate practices to love God. The Book on Knowledge contains five distinct collections of ways. The first is a listing and brief explanation of the underlying principles upon which the Torah is based (HILCHOT YESODEI HA-TORAH). Presented here are the beliefs that the practice of rabbinic Judaism is intended to teach and to reinforce. This collection is followed by a discussion of rules to develop the right kind of character (HILCHOT DE'OT), strengthening appropriate virtues and weakening inappropriate vices, to be able to become a proper believer, that is, a *wise* person. The third collection deals with the mechanics of public education for the virtues of wisdom (HILCHOT TALMUD TORAH), followed by rules for avoiding idolatry (HILCHOT AVODOT KOCHAVIM V'CHUKKOT HA-AKUM), and appropriate disciplines for returning to the correct path (HILCHOT TESHUVAH) which, human nature being what it is, is always necessary.

In effect the fifth collection acknowledges that the eighty-three collections of ways to achieve perfection are idealized and not actual. They represent goals to be approximated, but not ends that can, in practice, be achieved, simply because we are spatially, temporally located particulars and not idealized spirits. In other words, a utopian (i.e., messianic) political theory (which is what the *Mishneh Torah* is) can in no way be considered practical if it does not propose a method of training (i.e., education) for bringing humanity from where it is to the necessarily remote desired state at the end,

and does not propose a program for dealing with the inevitable failure of many (if not most) people to follow the program of education with success. It is a poor conception of human perfection that fails to come to terms with the inescapable fact of humanity's (or Israel's) imperfection.

What the fifth collection says is that a moral system that does not make room for moral failure is not an adequate moral system, which the rabbis believed that the Torah presents. As such the *Mishneh Torah* represents rabbinic Judaism as a moral program for collective and individual human self-improvement that correlates a picture of ideal ends with a prescribed set of means for dealing with the inevitable failure to realize before the end of days the desired goals. In this context it is important to note what Maimonides argues in his first book of the *Mishneh Torah*.<sup>5</sup> He argues that only with an adequate understanding of what we today call physics and astronomy is it possible to understand, both intellectually and emotionally, what it means to love and fear God. Anything less perfect is unacceptable, even dangerous, even contemptible, for to love and fear a deity who is in any sense less than or different from the true creator of the universe is to be guilty (however inadvertently) of the greatest of sins, the sin of idolatry.

Classical rabbinic Judaism so conceived presents life as a training program where success leads to proper worship of the true creator of everything, and failure condemns the individual and the community to idolatry. Knowledge of the true God is the only human happiness, that happiness is dependent on participation in a community of worshippers who understand what the Hebrew scriptures really mean, and that true understanding of the scriptures depends on the students' equally dedicated mastery of the works of creation as they are revealed through what we today would call a wedding of the human sciences to a nonatomist, nonmaterialist understanding of reality.

Note that this understanding of Judaism rests on the assumption that the Hebrew scriptures, and especially the Torah, are the word of God. No assumption is more critical (even foundational) for affirming that Judaism is emotively and intellectually a reasonable philosophy of life. Yet, no other assumption is more doubtful in the light of the past century of findings in the academic field of Western history that calls itself biblical studies.

The time has finally come to face the elephant in the room.

## **How to Read the Hebrew Scriptures: Faith and Biblical Critics**

### **The Charge that the Bible is a Pious Fraud**

In 1805, the German Christian Bible scholar W. M. L. Wette claimed that the Book of Deuteronomy is a "pious fraud" composed by the Jerusalem priest

Hilkiah to support King Josiah's attempt to disenfranchise the many sanctuaries spread throughout the two lands occupied by the nation Israel and to centralize all worship of Israel's deity in the capital of the kingdom of Judah. Wette's introduction of the adjective "pious" was meant to soften the heresy (both Jewish and Christian) in arguing that the most ancient statement of the laws imposed upon Israel by God at Sinai not only was not accurate historically, but it was consciously composed by this Jerusalem priest in full knowledge that the reported events in the narrative never occurred. In other words, Deuteronomy is a lie. However, it was, so Wette claimed, a well-intentioned lie. Hilkiah and Josiah personally believed that the law they introduced was an expression of God's will for Israel. They told this lie not in order to serve their own political ambitions, but to serve the true will of Israel's deity. However, Wette gave no reason why this fraud, if that was what it was, should be considered pious and not vicious, for the lie serves the political self-interest of both the king and the priest.

The purported fraudulent account extends far beyond just the claim that the accepted sacrificial cult practiced throughout the kingdoms of Israel and Judah should be restricted just to the capital of Judah under the regulation of a single priesthood serving a single monarch. The rest of the Hebrew scriptures make the same political-theological claim with relatively minor differences about the specifics of the legislation and the details of the history surrounding the initiation of this code. If Deuteronomy is a lie of the magnitude that Wette suggests, then the entirety of the Hebrew scriptures is a lie.

Furthermore, since the political and moral authority of the Hebrew scriptures in its entirety rests on the veracity of the historicity of the account in Deuteronomy, if Deuteronomy is a fraud, then the entire Hebrew scriptures is a lie, in consequence of which the centuries of rabbinic interpretation of the scriptures is an exercise in futility. If no law code such as the one that Deuteronomy describes ever was given by God to the Jewish people, then, even if the rabbis' interpretation of the Torah is conceptually correct, the entire system of HALAKHAH is not authoritative either epistemically or morally. Since the Torah cannot be said to reflect the true intent of Israel's deity for his chosen people, there is no good reason whatsoever—be it political or historical or moral—for the Jewish people to feel in any legitimate sense obligated to observe and follow its precepts. This negative assessment is all the more true in the modern world, since the people no longer live in a political entity whose legal code depends on the foundation of the Torah. The Torah has no legal authority, because no Jew today lives in a polity that has adopted the Torah as its constitution.<sup>6</sup> And it has no moral authority, because the text itself is a consequence of an immoral act—an intentional lie

promulgated by one political entity (the Jerusalem ruling priesthood and monarch) to justify its own political power. No legitimate moral obligation can be based on such a lie.

The claim of piety is intended to be a defense against these political-moral implications of the claims of nineteenth-century academic biblical science. In fact, throughout the twentieth century the main purpose of academic critical biblical studies has been to show that the essential claims of the biblical narrative are in fact true, while academic biblical theologians have argued that the general precepts of the Torah are morally good. For now let us set aside the question of the goodness of the sacred text and focus solely on its veracity, especially with reference to its claim to state both honest and factually true history.<sup>7</sup>

If the narrative surrounding the law codes in the Pentateuch are in some general sense reliable accounts of history, then the Hebrew peoples called “Israelites” were among many peoples who settled in the Holy Land during the Bronze Age<sup>8</sup> (3500–1550 BCE) and eventually unified into a single monarchy in the Iron Age<sup>9</sup> (1550–586 BCE), from the reign of Saul through the reign of Solomon. If the Israelites had ever been a people in Egypt, then that would have had to occur after the time that Egypt, ruled by the Hyksos (1670–1570 BCE), conquered the Holy Land, and Israel’s exodus from Egypt to a forty-year wandering in the Sinai peninsula before entering the Holy Land began around 1440 BCE near the end of the Bronze Age. However, based primarily on archeological findings in the area, there is no hard evidence of either Bronze or Iron Age artifacts that can be attributed to the Hebrew people. The judgment is that if Israelites were in Canaan at this period there would have survived some material (bronze or iron) evidence of their existence. The lack of evidence independent of the biblical text itself suggests that this is just a story that was composed in the seventh century BCE during the reign of Josiah. In fact, the scholars believe that the Israelites are clans of Canaanites who are settled in the highlands whose unique distinction is that they do not eat pork. Archeological evidence suggests that there were only some five thousand such peoples scattered in some twenty small villages, and that these mountain people only achieved political significance to the region, not in the so-called golden age of the reigns of David and Solomon in a united kingdom of Israel and Judah, but only a century later during the Judean highland dynasty of Omri.

In other words, not only is the Bible’s account of the origin of the universe and the settlement of human beings throughout the world in different language-speaking families only a story, but so is the account of the origin of what will become the Jewish people as a distinct polity composed of Hebrews

who at the time of the patriarchs became an extended family of Israelites. Furthermore, not only are the nation's founding patriarchs mythological figures, but so are Moses, Aaron, the judges, Saul, David, and Solomon only mythic heroes. There was no more initial united kingdom governing the land of Judah and Israel from the late Bronze Age into the early Iron Age than there lived in Britain a king named Arthur with a Queen Guinevere caught in a *ménage à trois* with a knight Lancelot in a place called Camelot.

If, as the Hebrew scriptures state, there was a mighty Israelite kingdom in ancient times, then Saul would have reigned in 1025–1005 BCE, David in about 1005–970 BCE, and Solomon in about 970–931 BCE. However, there should exist some archeological evidence of these regionally powerful, impressive palace- and temple-building Iron Age kingdoms, and none can be found. There were ruins unearthed in Mesha, Dan, Samaria, Hazor, Jezreel, Megido, and Gezer that formerly were believed to be the remains of Israelite settlements during the reign of Solomon. However, now the archeologists are convinced that the dating was off by at least a century and these ruins are evidence of significant Israelite (not Judean) settlements during the dynasty of Omri.<sup>10</sup>

The story that leads to the creation of the central myth of the Hebrew scriptures begins with religious reforms introduced during the reign of Hezekiah in Judah (727–698 BCE), which are reversed when Sennacherib and Assyria conquer Judah and kill Hezekiah. The reform policy is not reinstated until the reign of Josiah (639–609 BCE), at which time the basic story of the Torah, stated in a fairly short (and probably very early) version in Deuteronomy, is constructed and succeeds to win followers, despite young Josiah's death in battle against Egypt and Pharaoh Necho.

Standard scholarly dating of biblical history marks the period of Israelite settlement in the land leading up to the establishment of the united kingdoms between 1200 and 922 BCE during the Iron Age. The nation decays into two separate kingdoms between 922 and 722 BCE. During this period, two independent priestly oral traditions about the history of the people Israel are developed: The so-called J source of Aaronide priests in Jerusalem who claim a direct line of descent from Zadok and reign over the sanctuaries of the nation's south, and the so-called E source of the Mushites in Shilo who claim direct descent from Abiathar and reign in the nation's north. The northern nation of Israel was destroyed by the Assyrians in 722 BCE and the southern nation of Judah was destroyed by the Babylonians in 587 BCE. During this 135-year period of decline toward political extinction the so-called D source is written. D is believed by contemporary scholars to have been written by the prophet-priest Jeremiah and his scribe-priest Baruch ben Neriyah, who were Moshite priests at the time of the reign of Josiah.

A second Jewish polity in the land was created by Israelite exiles living in Babylonia in 587 BCE. In 458 BCE, 129 years later, an Aaronide priest named Ezra becomes the governing priest of the surviving Israelites, now known as Judeans, under the political and cultural hegemony of the Persian Empire. Ezra reforms the state into a *constitutional theocratic oligarchy*—an *oligarchy* because the rulers are members of a single class within the populace, *theocratic* because the ruling class consists exclusively of Aaronide priests, and *constitutional* because the ruling class is governed by and subject to a written document that functions as the nation's constitution. That document is the Torah of Moses. According to what the scriptures claim Israel (now called Judah) became a people through a covenant in ancient times when Israel was an as yet unformed collection of Semite slaves escaped from Egypt under the leadership of an Israelite-born, adopted son of the reigning monarch (pharaoh) of the most powerful nation on earth. This nobleman by adoption leads the slaves into the Sinai for forty years where they are transformed as a people into a polity, whose direct ruler is their ever-present deity (who turns out, incidentally, to be the one true deity in the universe) whose name is something like *YHWH*. The Torah is the written record of the agreement written by God, with some modification by Moses on behalf of the nation, with the nation. God speaks it to Moses, Moses records it, then Moses reports it in detail to the entire nation, and the nation accepts this agreement by acclaim with great enthusiasm, responding to its words in unison, “we will do it and we will listen to it.”<sup>11</sup>

In contrast, if the scholarly consensus is correct, this Torah of Moses is a third fraud built upon two preceding frauds. The first is the D text composed by the Aaronide priest Jeremiah during the late first commonwealth reign of Josiah. The second is a claimed sacred text, called P, that was composed by a school of Aaronide priests living during the reign of Hezekiah at the very end of the first commonwealth. Finally, the third is the creative synthesis of these two earlier written so-called sacred texts with the two pre-statehood oral traditions of national origin, J and E, into a single text called the Torah, which consists of what we today call the Pentateuch or “the five books of Moses.”

### Some Reflections on the Charge

As doubts can be raised about the veracity of the narrative of the Hebrew scriptures, so doubts can be raised about the logical force of the arguments of the modern academic biblical critics. However, let us set aside that question for now and look carefully at the logic of the consequences that these scholars draw from their reconstruction of late biblical history. First, if the Bible is

based on a fraud (or, more accurately on at least three independent frauds by three different generations of ruling Judean priests), why should it be considered pious? Clearly if the claimed history of the origin of the written Torah is correct, its perpetrators were anything but pious. Second, regardless of whether the fraud was virtuous or vicious, why need it be considered a fraud? Can the archeological data (or, in this case lack of data) be given a less malevolent interpretation? Finally third, what logical weight can be given to the conclusions of biblical scholars about the authorship of the Hebrew scriptures based primarily on archeological evidence?

*Are the Hebrew Scriptures Pious?*

Beyond the authority of historical tradition I cannot think of any good moral reason to excuse what seems clearly to be the conscious, intentional fabrication of a false document whose primary purpose is to support the political claims of one set of kings and one family of priests for political power over an entire nation over the equally legitimate claims of other claimants to the throne and another families of priests. The act is intentional because the authors of the hoax cannot help but know that they are forging what for them is a new text that they have constructed to appear as an ancient text. Clearly they are liars, and lying is an immoral act. In fact it is worse than lying; it is sacrilege,<sup>12</sup> because the authorship of the text they are faking is attributed to God, and the false text lays out the way that an entire nation will act to achieve a spiritual relationship with God.

A possible response is that while the authors have made up the story of the manuscript's origins, they do believe that what the text says truly is what God wills. They believe that the opening histories of the world and of the nation really are history. In fact they know these stories as traditionally passed-on stories, but they believe that the stories do tell what actually occurred in the nation's ancient past. The lies perpetrated about the origins of the stories are "white lies" created to support what they strongly believe otherwise to be true. Yes, they are lies, but the lies are white, that is, the lies are believed to speak truth. The way of the Torah is the will of God and it is the sole moral and political way that can lead to national redemption and individual salvation.

However, if this response does reflect the intent of the authors of the Hebrew scriptures, their act remains nonetheless vicious and not pious. They lack sufficient trust in God, for they believe that a good of as much magnitude as prescribing the single and sole path through which nations and peoples can become good and achieve their appropriate salvation can only be achieved through a lie. Such cynical distrust is itself an act of sacrilege that

overrides the otherwise good intentions of the liars. The authors believe that good effects (commitments to what really is the model for the path to realizing human perfection) can be achieved only through bad acts (forging a document that claims falsely that God is its author and Moses was its agent of delivery). This belief is itself vicious in two respects. First, it entails that bad means can be justified by good consequences. Second, it expresses profound distrust of divine justice and providence because it implicitly believes that God was not capable of producing a world in which good results can be achieved through good actions.

#### *Are the Hebrew Scriptures a Fraud?*

Clearly if the text is a fraud, then it is not pious, and as such it is not a solid foundation for the moral and epistemic claims of any religion. However it is far from obvious that the Hebrew scriptures are a fraud. A fraud involves two judgments. First, that what the text claims is not true, and second that the text's authors knew that the claims are not true, and neither judgment can be settled solely on the grounds of archeological evidence. They would be true first if archeology is a valid source for authoritative judgments about history and second if the authors think that they are writing history. Let us consider the second question first.

#### *Are the Hebrew Scriptures History?*

It is unlikely that the composers of the narratives of the Hebrew scriptures had anything like a modern understanding of history as a narrative that reports factually a sequence of events that occurred in past time and space framed within a conceptually meaningful structure where the structure itself is something supplied by the authors to make intelligible the factually reported narratives. Rather, it is far more likely that no clear separation is made between the conceptual framework and the spatial-temporal events being reported, and to the extent that the two can be separated, the conceptual framework is more important in the minds of the composers than is an accurate recording of merely spatial-temporal events. From this perspective there is no intention by the authors to separate what we would call *myth* from what we would call *history*. As such a sequence of temporally located events can be reported that express a primarily intended conceptual truth about reality that need not necessarily accurately report an at best secondarily intended sequence of empirical events.

Consider the following contemporary example: Around the time that my then synagogue in Mt. Airy (the Germantown Jewish Center in Philadelphia) hired a rabbi named Hershel Matt, a story was circulating about him



that in a synagogue in New Jersey where he was the rabbi he refused to cash his salary checks because he believed he was not doing a good job since many members did not come to services on Friday evenings. In consequence, to the embarrassment of the congregation's leadership, the rabbi got a manual working-class job in the community to pay his bills. When the leadership urged him to quit his outside job and live instead on his reasonably good rabbinical salary, he refused and said, "I can only cash your checks if I am doing a good job, and I am doing a good job as your rabbi only if I succeed in attracting you regularly to services."

If what we mean by truth is an accurate report of empirical events that occur in a spatial-temporal sequence, then this story is false. There was a rabbi named Hershel Matt who was a rabbi in several different New Jersey communities around the time in which the story was told, but none of the events in the story ever in fact happened. However, in another sense the story is completely true. He was in fact a most pious, hard-working Conservative rabbi who, despite the fact that he was most beloved by the congregations he served, always felt he was a failure because he was unable to guide the congregation to a significantly (by his standards) higher level of piety and service to God. I have never known a rabbi who was more successful as a spiritual guide than was Hershel Matt and I have never known a rabbi whose anguish over perceived failure as a spiritual guide was deeper. So when I tell this story about Matt, I believe that I am telling a true story even though no event reported in the story ever happened.

My suggestion is that both my little story about one Conservative rabbi in a New Jersey synagogue and the far bigger stories about the origin of the Jewish people and the creation of the universe are logically similar. They are not history (*Geschichte* in German). Rather they are a Holy Narrative, which is my interpretation of the German term *Heilsgeschichte*, a term that literally translates into English as a salvation story. In general, history is first and foremost a story that is believed to be true. However, in modern times the truth is to be judged by the empirical accuracy of recorded events. Truth in this sense applies to chronicles, not histories. Truth, in the premodern period and especially in the biblical and early rabbinic periods, was not judged in this way. Rather, truth was judged by what the story tells its readers about achieving happiness, where happiness is judged by achieving one's natural end, which, in the case of human beings (and even more specifically in the case of Jews and the Jewish people), is fulfilled by serving the will of the one deity who created the universe.

It is this understanding of history that fits what the Hebrew scriptures actually do, which is to describe an idealized political entity in an idealized uni-

verse<sup>13</sup> that provides a paradigm for how, at least, the Jewish people should direct their lives toward a goal of personal and collective redemption in an anticipated end of days. In this sense the narrative can be called false only if it is not an accurate guide to the desired cosmic end, and it is only a fraud if its authors do not believe in the moral end they are describing and advocating. Certainly archeology provides little help in assessing this judgment.

Yet, how accurate are the Hebrew scriptures as history, not in the sense of the term intended by the authors of scripture, but in the sense of history, more akin to a chronicle, as an accurate report of a set of empirical happenings in the sequence in which they in fact occurred? The current state of archeological findings suggests a negative answer to this question, and it is the logical statement of this conclusion that I want to examine next.

#### *Are the Hebrew Scriptures Authoritative?*

Did the events reported in the Hebrew scriptures ever actually happen? How much authority should we give to the text of the Hebrew scriptures in answering this question? How much authority should we give the archeology in answering this question? Finally what is the significance of these questions about history and authority for judgments that history matters in making judgments about the legitimacy of a religion such as rabbinic Judaism that claims as its foundation authority the words in the Hebrew scriptures?

There are many ways to account for epistemic authority depending on what it is we are discussing. If the topic is arithmetic, then the only authority is the definitions and rules of inference in this language. Truth judgments depend totally on an accurate application of the rules because the rules alone are both necessary and sufficient to produce judgments that are absolutely, necessarily true. Hence, in base 10, given the rules and definitions of arithmetic,  $2 + 3 = 5$ . This judgment is absolutely true, and it cannot be otherwise, no matter who says so—my math teacher, my fellow students, the president of my university, the president of the United States, or even God. In this case I can speak with this level of unqualified certainty because the subject domain is incredibly simple. All I need is one entity (the number 1), one function (+), and a minimal number of symbols and rules of inference, such as  $a + (b + c) = (a + b) + c$ , or  $a + b = b + a$ , or  $a - b = c$  means  $b + c = a$ .

In general, the more complex the subject domain the more complex the rules and inferences, and the less certain and the more controversial the conclusions. Propositions you believe yourself entitled to believe as a rational person are not as certain as other less controversial claims that you call knowledge. In general, the line between beliefs and knowledge is a line of evidence and certainty, and where that line is to be drawn varies depending on

the subject domain. Claims in biology that can count as knowledge (e.g., the principle of natural selection) have a sufficiently high degree of certainty at this point in history so that biologists are entitled to claim this principle in evolution as knowledge. However, a far stricter line can be drawn in physics. There a claim with only the relatively lesser degree of certainty of evolution would be in physics only a hypothesis. But physics can draw stricter lines between knowledge and belief because the subject matter of physics (namely, points of light separated by huge distances with relatively little interaction) are vastly simpler than the subject matter of animals, which in turn is vastly simpler than the subject matter of human psychology. Somewhere down near the lowest scales of what qualifies by the name science is a field like archeology, where conclusions must be based on relatively small and vastly incomplete data preserved through history largely by principles of chance. Hence, clearly for Jews who give the Hebrew scriptures as interpreted in rabbinic tradition a very high level of credence because they believe that both the text and its interpretation are dictated directly by God through the Jewish people can remain relatively unconcerned by the findings of biblical archeology. They have a reasonable degree of basis to believe that what archeologists conclude today need not be what they will conclude tomorrow, so that there is no urgent need for committed Jews to alter their traditional beliefs solely because of the opinions presented by present-time, reigning experts in archeology. However, the case is radically different when we turn to subjects like physics and astronomy. There the possibility for error is radically narrower, and while it is possible for them to revise what they conclude that they know, such revisions take centuries.

I would certainly grant that anything dictated by God is more authoritative than any human discovery even if God does not always tell the truth.<sup>14</sup> Even if what God says is not true, it should be obeyed. However, we cannot accept what rabbinic tradition says on God's authority. On such matters we have no way to access the time of God. Rather, we accept or do not accept a rabbinic interpretation on the authority of the rabbis and we accept or do not accept what the Hebrew scriptures say on the authority of the authors of the Hebrew scriptures, and these authorities are human, not divine. In general unless I have reason to doubt either the rabbis or the scriptures, I accept their authority. However, when the claims of scientists have a reasonable degree of certainty relative to their subject domain, and that certainty is sufficient to call what they assert knowledge rather than mere belief, I feel compelled, as a reasonable human being, to give serious attention to scientific knowledge in deciding what I do and do not believe on every subject. However, that does not mean that I blindly accept anything scientists claim to know about nature, as

I do not blindly accept any rabbi's claim about what God says either in rabbinic tradition or in the Torah. I know full well that everything changes and changes continually, including my judgments about what I know, including what scientists think they know, and including what rabbis believe they know.

There are times that my judgments about the empirical world differ significantly from the beliefs of the Jewish tradition, and today, because of the influence of biblical archeology, I am prepared to doubt the historicity of much in the narratives of the Bible. Still, I know that nothing critically depends on that doubt. I know from my sources in science that this plastic world is constructed by my senses in my mind from a more fundamental reality that lies behind my perceived reality, and the biblical narratives report events in a perceived, but not an ultimately real universe. Similarly I believe from my sources in both Jewish philosophy and Jewish mysticism that this world, including the world of the biblical narrative, are only a shadow reflection of a far more profound reality of the domain of God and the angels, and it is this deeper reality that is really my interest morally, spiritually, and intellectually. Whether or not there ever was a shadow world of Jerusalem ruled over by form embodiments (in Aristotelian philosophy) or compound energies held together by force fields (in post-Newtonian science) named Saul, David, and Solomon doesn't matter as compared to the stories about them as interpreted through centuries of Jewish commentaries that speak of the achievement of a penultimate state of perfection in a human vision of a Kingdom of God and an ultimate completion of everything in a universal vision of a "World-to-Come."

## Notes

1. For example, the time of transition in at least western Europe from the political and cultural hegemony of the Roman Catholic Church and the scholastic period—when church university scholars comprehended everything in a world-life view that synthesized elements of the Hebrew scriptures with a Christian tradition of commentaries with an amalgamation of Greek and Roman schools of philosophy as they were interpreted in a combined tradition of Muslim, Jewish, and Christian commentaries—to a predominately Protestant and/or Positivist period—when scholars commissioned by royalty comprehended everything in a world-life view that struggled to transcend the internal wars of the Christian church through a revival of ancient Roman philosophies (such as Skepticism) with new, post-Aristotelian revisions of fields of information such as astronomy, physics, geology, anatomy, and (last but not least) mathematics.

2. Discussions of how individuals and the collective ought to practice agriculture (ZERAİM), observe festivals (MOED), practices that relate specifically to females

(NASHIM), how disputes over damages should be adjudicated (NEZIKIM), and how sacrifices should be performed in offering matters of holiness (KEDASHIM) and purity (TOHOROT).

3. Note especially the books—such as AVODAH and TOHORAH—that describe in minute detail an idealized sacrificial cult in Jerusalem.

4. Note especially the books—such as MISHPATIM and SHOFETIM—that present an idealized picture of the interrelated roles of priests and princes in a model Jewish theocracy.

5. See especially chapter 2, paragraphs 1–2. “It is a commandment to love and fear this honorable and awesome deity. As Scripture says, ‘And you shall love the Lord your God’ and ‘Fear the Lord your God.’” (Dt 6:5, 13). “What is the path to love and fear him? When the human being understands his great wonderful deeds and creations, and thereby sees (God’s) wisdom which is incomparable and without end, immediately he will become a lover, a praiser, a glorifier, a yearner with great passion to know (his) great name.” Note that in Rambam’s understanding no separation can be drawn between the intellect and the emotions in learning to worship God. These two aspects of human consciousness are not only complementary, but they also are mutually entailing. Note further that based on these two paragraphs Maimonides continues in this chapter to discuss physics and cosmology using the best natural philosophy (i.e., science) of his day.

6. As Spinoza said in chapter 3 of his *Tractatus Theologico-Politicus*. See Samuel Shirley’s English translation (Leiden, The Netherlands: Brill, 1989).

7. The revision of the biblical narrative of history that follows is based primarily on two sources of modern academic biblical studies: (1) Israel Finkelstein and Neil Asher Silberman, in consultation with Baruch Halpern, Nadav Naaman, Jack Sasson, and David Ussishkin, *The Bible Unearthed: Archeology’s New Vision of Ancient Israel and the Origin of Its Sacred Texts* (New York: Free Press, 2001), who together reflect the current conclusions of contemporary Israeli biblical studies. (2) Robert Elliott Friedman, *Who Wrote the Bible?* (San Francisco: Harper Collins, 1989), whose popular book on biblical source criticism reflects a reasonably wide-spread consensus among contemporary North American academic Bible scholars.

8. That is, the age in the Near East when Homo sapiens forged and used all kinds of tools, including weapons, made of bronze.

9. That is, the age in the Near East when Homo sapiens forged and used all kinds of tools and weapons made of iron.

10. The dates on the Omri dynasty are the reigns of Omri (854–873 BCE), Ahab (973–852 BCE), Ahaziah (852–851 BCE), and Jehoram (851–842 BCE).

11. By agreeing to obey before they hear what the obligations are, Israel renders its agreement unconditional. What their words mean in this context is we will do what it says whatever it says without stipulating any preconditions for obedience.

12. A sacrilege is an immoral act directed against God. By extension a sacrilege is an immoral violation of something considered sacred, and clearly this proclaimed Torah of Moses is intended to be believed to be a sacred object.

13. What is idealized is the description of the Israelite theocracy and the way the cult affects history. It is not idealized in the sense that the authors make humanity in general and Jews in particular to be more than they seem to be. The ideal presented here is theocratic and not humanistic.

14. Consider for example God telling Israel in Exodus that he will bring them to a land flowing of milk and honey when all but two of them would die in the desert, or God in the Book of Judges telling the gathered tribes of Israel to attack Benjamin not to punish Benjamin but to punish the gathered tribes for attacking Benjamin first without divine permission. The God of the biblical narrative is portrayed as a perfect ruler and the story tellers recognize that good rulers cannot and do not always speak what is true.





## Conclusion

### What is the Word of God?

In classical Jewish philosophy the good of everything—universes and minerals, plants and animals, Jews and other human beings—is to be measured by their obedience to the word of God, and there are five sources for determining that word—(1) prophecy, (2) sacred texts that record the prophecy, (3) traditions of textual interpretation of the prophecy in religious communities, (4) natural sense experience and rational reflection on the meaning or significance of the observations, and (5) traditions of interpretation of the observations in academic communities. For the past century at least philosophy (Jewish and general) has focused most of its attention not on experience but on the meaning of words in texts and left reflective observation to scientists. What may be (debatably) a predominant interest for philosophers in general has become almost the sole concern of Jewish philosophers.

In the second half of the twentieth century, Jewish philosophers have divided into two groups that have almost no connection with each other. One group deals with classical texts that they call medieval Jewish philosophy, but these scholars rarely treat their objects of scholarship as philosophy, certainly not in any sense that the term *philosophy* was used in the pre-modern past. Some of them are historians of ideas who concern themselves with what their texts mean only enough to provide a surface interpretation, but never with the kind of probing by which these texts might continue to function, as they originally functioned, as part of a reasoned path leading to personal and



collective wisdom. Other scholars who study classical texts are archivists and philologists. They collect and sometimes publish manuscripts, and catalogue technical terms and phrases usually in a chronological order with relatively superficial analysis of how an earlier text influences a later text, or how and why the later text differs from its alleged historical source. Rarely do these scholars reflect upon what difference these artifacts of the past have for contemporary life and thought, and almost never do they discuss whether what the authors of these texts teach is true. In short, neither of the two groups of so-called medieval Jewish philosophers ever do philosophy.

The second group of contemporary Jewish philosophers is no less text oriented than the medieval Jewish philosophers and exhibits little more concern with truth. The primary difference between them is that whereas the medieval scholars look to the cultural categories of a now dead ancient Muslim empire for the context of interpretation of the language they use about a largely obsolete Greco-Roman in origin pursuit of wisdom, the modern Jewish philosophers look to the cultural categories of a now dead German state and Austro-Hungarian empire for the context of interpretation of the language they use about a largely obsolete early modern humanist tradition in pursuit of meaning. What both groups share in common is a willingness to concede to the new class of twentieth-century scientists all questions of truth. However, it is precisely these truth judgments that need to be the concern of twenty-first-century Jewish critical thinking if Judaism is to reemerge as a believable (rather than merely a comfortable, nostalgically satisfying) path of collective and individual well-being. It is for these reasons that Jewish philosophy as it has been practiced in the last two-thirds of the twentieth century is dying as philosophy and deserves its fate.

### Some Challenges from Modern Science

The first part of this book isolated some of the kinds of concerns that arise from the contemporary sciences that should be of concern to reasonably well-educated contemporary Jews in Western civilization who hope to be able to live an integrated complete life both as a Jew and as a modern human being. The main concerns isolated and identified here were the following:

1. Rabbis trained exclusively as rabbis no longer are considered the most reliable interpreters of what the Hebrew scriptures say, but the ultimate authority for valuing the religious judgments of rabbis is that they are reliable interpreters.

2. With almost no exceptions scientists who study the nature and the history of the universe will agree that the laws that govern it are purely mechanical principles and/or consequences of accidents or purely chance happenings.<sup>1</sup> Yet no beliefs about God are more fundamental than the claims that he created everything in nature and, as he created it, it is good.<sup>2</sup> If God's continuing act of creation is not good, what sense does it make to say that God is good, and if God is not good, what reason is there to worship God?
3. How is it intelligible to believe that a universe as vast in space and time and as empty of anything whatsoever as is this universe could be governed by anything or anyone?
4. Within the framework of modern scientific explanations of human consciousness, most of which are mechanistic and materialistic, what sense can it make to speak of the existence of a soul, given its long history of use in Jewish thinking on a Platonic model of a nonphysical, nonmechanical real entity?
5. Where within the framework of what counts in modern science, as an explanation is there any place for meaningful assignments to events, things, and persons of qualities, purposes, and moral values?
6. Do human beings occupy any distinctive place as a species in the life of the universe among all of its diverse inhabitants? Certainly, given the universe's age and dimensions, it seems rationally indefensible to claim that humans are created in some special sense in God's image and that the universe was created for the sake of humanity. How can human beings justify any claim to special moral status among God's creatures? In more religious language, how can we interpret the fundamental Jewish belief that God loves us?
7. Does positing the existence of a creator of the universe serve any useful purpose for making what happens in the universe more intelligible? Does it tell us anything substantive about the universe to say that the God of Israel is its creator?
8. How are the life sciences, with their assumption of gradually evolving species over extremely large units of time, coherent with the assumptions in the physical sciences of a mechanistic, purposeless universe regulated by necessitating causes whose origins are in pure chance? While natural selection and the survival of the fittest do not suggest anything especially favorable to the prosperity of the human species, are not these two fundamental principles of the mechanics of evolution purposeful principles?

9. Do not the sciences agree with Judaism that the phenomenal world that our senses report and our minds interpret is not ultimately reality? Or, rather, given that the world of perception is in some sense real, this sense of reality is most qualified, since both the scientists and Judaism posit a reality that transcends the mere world of appearances?
10. Given that ultimate reality is reflected in the phenomenal world and that it is through the study of the phenomenal that we human beings gain some access into the more real or the ultimately real, how do the conceptions of reality in science and Judaism compare and contrast? Do scientists as scientists and Jews as Jews live in the same or in radically different realities?
11. While there need be a distinction between a world as it appears to human beings and a world that is real beyond what appears, is there any useful point to continuing to assert that the material world and the mental or spiritual world are two different worlds? Are the grammatical forms of subject and object in Western languages the best way to model a reality behind what may be mere accidental linguistic form? While language mirrors the way we think about reality, why must language mirror the way reality in fact is?
12. Are being alive and being dead distinct states of being or are they two asymptotic ends that only ideally (but not actually) define how all things exist in the universe? Are being alive and being dead states or processes? Would the concrete, lived reality of all individuals be better understood—as the Christian American philosopher Alfred North Whitehead and the Jewish German theologian Franz Rosenzweig suggested—as a series of infinite movements from an asymptotic origin in creation toward an asymptotic end in death?
13. Especially in the light of centuries of evolution and equally in the light of Jewish conceptions of an idealized human transformation-in-nature in the end of days, why should any special moral value be given to preserving human nature as it is now at this present time in between a past leading back to creation and a future pointing toward a redemption?
14. What does it mean to treat Halachah as if it were the law of a nation-state when for many more centuries than it did so function, in the past no less than in the present and in the future, Halachah has hardly ever functioned as an actual political law code? If in fact Jews have almost always been free to opt out of communities actually governed by legislation whose source of authority was the Torah and rabbinic in-

- terpretations of the Torah, then the claim that the Torah is law is, in the past no less than now, at best only a metaphor. But if the Torah is not really law, what is it really?
15. How does the fact that money always has had and continues to have a central role in determining the quality of Jewish life impact on plans for future Jewish life? Is the reality that the Jewish communal life functions politically, not through an elite of the wise, but primarily as an oligarchy of the wealthy something to be encouraged or discouraged? Is it possible to imagine a realistic Jewish community not governed by economic influences and concerns, and, even if it were possible, would such a Jewish polity be desirable—morally and/or pragmatically—in this the created world?
  16. Can the present world that the sciences purport to describe tell us anything useful about the idealized future world that Judaism envisions in order to promote? Can science say anything about the ideal and can Judaism say anything about the actual? Which, if either or both or neither, is real?
  17. If the ancient mix of Platonism, Aristotelianism, Pythagoreanism, and Stoicism out of the Greco-Roman world can no longer provide a conceptual foundation for an intelligible systematization of Jewish thought and life (as liberal Judaism claims), can the earlier modernist mix of Cartesianism, Spinozism, Newtonian physics, and Kantian ontology that arose out of the so-called enlightenment provide a conceptual foundation for a reformed Jewish thought and life that is in any sense, conceptual or practical, superior to the pre-modern classical worldview? Is the modern no less intellectually and politically dead than the worldview it replaced? If the answer is yes, and neither traditional nor liberal Judaism offer a conceptually viable, intellectually defensible system for continuing Jewish living, what are our resources for once again formulating the kind of reconstruction of traditional beliefs through new modes of thinking that Jews in the past were able to formulate? How do we create a new and viable understanding of Judaism for this new post-world-wars global civilization, and, once formulated, how do we reinvigorate a Jewish polity to enact it?

### **Some Responses to the Challenges**

The second part of this book raised a few preliminary suggestions about the kinds of opinions that could integrate a reasonably strong affirmation of the epistemic value of contemporary sciences with a equally reasonable and

equally strong faith in the moral and spiritual value of a reinterpreted Jewish system of beliefs as part of a total approach through biblical and rabbinic Jewish texts to human, terrestrial, and cosmic happiness. The main opinions outlined here were the following:

The core belief upon which Judaism has always stood is the belief that the Torah is the word of God. However, that belief, like every other aspect of Judaism (and like every other aspect of life in general), is subject to constant reinterpretation. (Meaning, like all of life, only becomes frozen in death.) The new interpretation suggested here—with respect for the research of contemporary academic biblical historians and in the spirit and under the influence of Maimonides' *Mishneh Torah*—is reducible to two primary faith claims. First, everything in the universe is constantly changing. As such it more resembles what Whitehead called a system of *processes* than it does what pre-modern Jewish philosophers thought of as a hierarchal chain of fixed, unchanging substances. Two, the creator of a universe composed of endless motions from origins in nothing to ends as something of value is better understood in moral than in physical terms. As such it more resembles what Rosenzweig described *meta-philosophies* in his new thinking than it does the categories of the thinking formalized in Aristotelian logic that is employed in the central texts of Jewish philosophers from Hellenistic times to the present. In the new thinking God is worshipped and served primarily as the ultimate end with which everything unites in an idealized anticipated conclusion to all history—mineral, vegetable, and animal no less than human and divine—in a singular state of unity that transcends all conceptual dichotomies, including Jews and the nations, humans and animals, life and death, and even creation and the creator. As such the logic of the new thinking is inherently ethical in purpose and utopian in nature rather than discursive in both nature and purpose.

The two essential features of Maimonidean classical Jewish philosophy identified previously provides a correct model for reflecting upon a contemporary program of Jewish revival. This book is concerned only with one part of the program. No revitalized understanding of Judaism can succeed if it considers only action and does not base its pragmatics on a solid reasonable understanding of the nature of reality. In the past that understanding was found in rabbinic thought through the study of philosophy. In the present there is no such adequate understanding primarily because understanding must be sought through the sciences rather than through philosophy, and Jewish thinkers at this present time are notably lacking in any degree of scientific sophistication. While Jews as individuals have in the past century played critical roles in the life of the sciences of Western civilization, these scientifically sophisticated individuals have played no positive role in rethinking Judaism,

because the social leadership of modern Jewry conceived of no positive role for them. In this sense—of divorcing the political and spiritual life of the Jewish people from their intellectual life—modern Judaism is (unfortunately) unique, to its own detriment. Never before in history have Jews as Jews contemplated less about the nature of the universe, the quality of life in the universe, and the relevance of Judaism to both life and the universe.

The primary purpose of this book is to promote the development among religious Jews of all contemporary varieties, a desire to forge a symbiosis between science and Judaism. Toward that end I have suggested in the second part of this book a number of beliefs for future investigation by Jewish thinkers as Jews in response to the challenges from science raised in the first part of this book. The suggestions are some of my beliefs, but they are only (reasoned) beliefs that are rooted in a sincere (and informed) respect for both the way of rabbinic tradition (HALACHA) and a life committed to the pursuit of wisdom (as philosophy used to be called).

This book is also an appeal for committed thinking Jews to establish programs of study on the interaction in every way—historically, conceptually, and ethically—between the modern sciences as well as modernist and traditionalist forms of Jewish identity. At the present moment there is considerable intellectual activity about ethical issues related to medicine, but almost nothing in this modern period on the interaction between forms of Judaism and other sciences. What I would like to see happen, first of all, is that the sciences become a central part of all Jewish curricula—from lessons in Jewish schools for children undergraduate and graduate programs in universities, and that science literacy be programmed into the training of Jewish communal leaders, especially the training of future rabbis. Scholars and teachers should be trained who are minimally literate in Jewish texts and professionally competent in some science, who will guide their students to ask the kinds of questions I have raised in this book and offer answers informed by reason and training in every scientific source of knowledge and in every source of Jewish belief. As such this book should be read not as a new Jewish philosophy or even as a critique of past Jewish philosophy, despite its title, but as an appeal for the establishment now of a new research project to create a new understanding of Judaism that would constructively fit our “brave new world.”

## Notes

1. Events are either purposeful (i.e., for a reason, the result of an intentional act) or necessary (i.e., the result of a cause), or accidental (i.e., the result of chance).
2. That is, that nature is purposeful.





# Bibliography

I have provided two bibliographies, one minimalist and the other expanded. Neither is complete. The first list is restricted primarily to books directly cited in the text. In addition, I provide a short list of background books that includes books about the most commonly referenced philosophers in the book (Maimonides, Alfred North Whitehead, and Franz Rosenzweig) and some encyclopedic volumes that can serve as a good introduction to the two dominant fields of academic study referenced in this volume (Jewish philosophy as well as science and religion).

## Minimal Bibliography

### On Jewish Philosophy in General

Frank, Daniel H., and Oliver Leaman, eds. *History of Jewish Philosophy*. *Routledge History of World Philosophies*, Vol. II. London: Routledge, 1997.

Samuelson, Norbert M. *Jewish Philosophy: An Historical Introduction*. London: Continuum, 2003.

### On Science and Religion in General

Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge, UK: Cambridge University Press, 1999.

Clayton, Philip, and Zachary Simpson, eds. *Oxford Handbook of Religion and Science*. Oxford: Oxford University Press, 2006.

Darwin, Charles. *Origin of Species by Means of Natural Selection*. London: John Murray, 1859.



Efron, Noah J. *Judaism and Science: A Historical Introduction*. Westport, CT: Greenwood Press, 2007.

### **On the Philosophies of Maimonides, Rosenzweig, and Whitehead**

Batnitzky, Leora. *Idolatry and Representation: The Philosophy of Franz Rosenzweig Reconsidered*. Princeton, NJ: Princeton University Press, 2000.

Christian, William A. *An Interpretation of Whitehead's Metaphysics*. New Haven, CT: Yale University Press, 1959.

Davidson, Herbert A. *Moses Maimonides: The Man and His Works*. Oxford, UK: Oxford University Press, 2005.

Emmet, Dorothy. *Whitehead's Philosophy of Organism*. New York: Macmillan, 1966.

Ford, Lewis S. *Emergence of Whitehead's Metaphysics 1925–1929*. Albany: State University of New York Press, 1984.

Fox, Marvin. *Interpreting Maimonides: Studies in Methodology, Metaphysics, and Moral Philosophy*. Chicago: University of Chicago Press, 1990.

Gibbs, Robert. *Correlations in Rosenzweig and Levinas*. Princeton, NJ: Princeton University Press, 1992.

Glatzer, Nahum Norbert. *Franz Rosenzweig: His Life and Thought*. New York: Farrar, Straus & Young, 1953.

Gordon, Peter Eli. *Rosenzweig and Heidegger: Between Judaism and German Philosophy*. Berkeley: University of California Press, 2003.

Hartshorne, Charles. *Whitehead's View of Reality*. New York: Pilgrim Press, 1981.

Hosinski, Thomas E. *Stubborn Fact and Creative Advance: An Introduction to the Metaphysics of Alfred North Whitehead*. Lanham, MD: Rowman & Littlefield, 1993.

Kraus, Elizabeth M. *The Metaphysics of Experience: A Companion to Whitehead's Process and Reality*. American Philosophy Series, No 9. New York: Fordham University Press, 1992.

Lango, John W. *Whitehead's Ontology*. Albany: University of New York Press, 1972.

Lowe, Victore. *Understanding Whitehead*. Baltimore: Johns Hopkins Press, 1962.

Maimonides, Moses. *The Guide of the Perplexed*. Translated by Shlomo Pines. Chicago: University of Chicago Press, 1963.

Mosès, Stéphane. *System and Revelation: The Philosophy of Franz Rosenzweig*. Translated by Catherine Tihanyi. Detroit: Wayne State University Press, 1992.

Rosenzweig, Franz. *The Star of Redemption*. Translated by Barbara E. Galli. Madison, WI: University of Wisconsin Press, 2005.

Samuelson, Norbert M. *A User's Guide to Franz Rosenzweig's Star of Redemption*. Richmond, UK: Curzon Press, 1999.

Schmidt, Paul F. *Perception and Cosmology in Whitehead's Philosophy*. New Brunswick, NJ: Rutgers University Press, 1967.

Schmied-Kowarzik, Wolfdietrich. *Rosenzweig im Gespräch mit Ehrenberg, Cohen und Buber*. Freiburg/München, Germany: Verlag Karl Alber, 2006.

Sherburne, Donald W., ed. *A Key to Whitehead's Process and Reality*. Chicago: University of Chicago Press, 1981.

**Books Cited**

- Alston, William P. *Perceiving God: The Epistemology of Religious Experience*. Ithaca, NY: Cornell University Press, 1991.
- Bamshad, Michael, and Steve E. Olson. "Does Race Exist?" *Scientific American Magazine* (November 10, 2003).
- Barr, Stephen M. *Modern Physics and Ancient Faith*. Notre Dame, IN: University of Notre Dame Press, 2003.
- Behe, Michael. *Darwin's Black Box: The Biochemical Challenge to Evolution*. New York: Simon and Schuster, 1996.
- Bruckstein, Almut (Shoshana). Hermann Cohen's "Charakteristik der Ethik Maimunis": A Reconstructive Reading of Maimonides' Ethics. Ph.D. dissertation for Temple University. Ann Arbor, MI: U.M.I., 1992.
- Chartier, Roger. *Cultural Origins of the French Revolution*. Translated by Lydia G. Cochrane. Duke: Durham, NC University Press, 1991.
- Clayton, Philip. *Mind and Emergence: From Quantum to Consciousness*. Oxford: Oxford University Press, 2004.
- Dawkins, Richard. *The Blind Watchmaker*. Harmondsworth: Penguin, 1991.
- Dobbs, Betty Jo. *The Foundations of Newton's Alchemy or "The Hunting of the Greene Lyon."* Cambridge: Cambridge University Press, 1975.
- Dorff, Elliot N. *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics*. Philadelphia: Jewish Publication Society, 1998.
- Efron, Noah J. *Judaism and Science: A Historical Introduction*. Westport, CT: Greenwood Press, 2007.
- Falk, Raphael. "Zionism, Race, and Eugenics." In *Jewish Tradition and the Challenge of Darwinism*. Edited by Geoffrey Cantor and Marc Swetlitz, 137–62. Chicago: University of Chicago Press, 2006.
- Fara, Patricia. *Newton: The Making of Genius*. London: Picador (Macmillan), 2002.
- Figala, Karin. "Newton's Alchemy," In *Cambridge Companion to Newton*. Edited by I. Bernard Cohen and George E. Smith. Cambridge: Cambridge University Press, 2002.
- Finkelstein, Israel, and Neil Asher Silberman. *The Bible Unearthed: Archeology's New Vision of Ancient Israel and the Origin of its Sacred Texts*. New York: Free Press, 2001.
- Fisch, Menachem. *Rational Rabbis: Science and Talmudic Culture*. Bloomington: Indiana University Press, 1997.
- Friedman, Richard Elliot. *Who Wrote the Bible?* San Francisco: Harper, 1989.
- Fukuyama, Francis. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Picador, 2002.
- Garreau, Joel. *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—What It Means to Be Human*. New York: Broadway Books, 2005.
- Graetz, Heinrich. *History of the Jews*. Philadelphia: Jewish Publication Society of America, 1891–1899.
- Halberthal, Moshe, and Avishai Margali. *Idolatry*. Translated by Naomi Goldblum. Cambridge, MA: Harvard University Press, 1992.

- Hauerwas, Stanley. *God, Medicine, and Suffering*. Grand Rapids, MI: William B. Eerdmans Publishing Co., 1990.
- Hertzberg, Arthur. *The Zionist Idea: Historical Analysis and Reader*. Garden City, NY: Doubleday, 1959.
- Hughes, James. *Citizen Cyborg: Why Democratic Societies Must Respond to the Re-designed Human Future*. Cambridge, MA: Westview Press, 2004.
- James, William. *Principles of Psychology*. Bristol, UK: Thoemmes Press, 1998.
- Katz, Steven T., ed. *Mysticism and Religious Traditions*. Oxford: Oxford University Press, 1983.
- Kurzweil, Ray. *The Age of Spiritual Machines: When Computers Exceed Intelligence*. New York: Viking, 1999.
- . *The Singularity is Near: When Humans Transcend Biology*. New York: Viking, 2005.
- Leakey, Richard. *The Origin of Humankind*. New York: Basic Books, 1994.
- Lindberg, David C. *Theories of Vision: From Al-Kindi to Kepler*. Chicago: University of Chicago Press, 1976.
- Macleish, Archibald. "J. B.: A Play in Verse." Boston: Houghton Mifflin, 1986.
- Meyer, Michael A. *Response to Modernity: A History of the Reform Movement in Judaism*. New York: Oxford University Press, 1988.
- Minsky, Marvin Lee. *The Emotional Machine: Commonsense Thinking, Artificial Intelligence, and the Future of the Human Mind*. New York: Simon and Schuster, 2006.
- The New Columbia Encyclopedia*. Edited by William H. Harris and Judith S. Levey. New York: Columbia University Press, 1975.
- Numbers, Ronald. *Darwinism Comes to America*. Cambridge, MA: Harvard University Press, 1998.
- Pinker, Steven. *The Blank Slate: The Modern Denial of Human Nature*. New York: Penguin Books, 2002.
- . *How the Mind Works*. New York: W. W. Norton & Co., 1997.
- Popkin, Richard. *The History of Scepticism from Savonarola to Bayle*. Oxford: Oxford University Press, 2003.
- Putnam, Hilary. *The Many Faces of Realism*. Chicago: Open Court, 1987.
- Rolston, Holmes III. *Genes, Genesis, and God: Beyond Selfishness to Shares Values*. New York: Columbia University Press, 1997.
- Samuelson, Norbert M. *A User's Guide to Franz Rosenzweig's Star of Redemption*. Richmond, UK: Curzon, 1999.
- . *The First Seven Days: A Philosophical Commentary on the Creation of Genesis*. Atlanta, GA: Scholars Press, 1992.
- . *Introduction to Modern Jewish Philosophy*. Albany: State University of New York Press, 1989.
- . *Jewish Philosophy: An Historical Introduction*. London: Continuum, 2003.
- . *Judaism and the Doctrine of Creation*. Cambridge: Cambridge University Press, 1994.
- . *Revelation and the God of Israel*. Cambridge: Cambridge University Press, 2003.

- Seeskin, Kenneth. *Searching for a Distant God: The Legacy of Maimonides*. Oxford: Oxford University Press, 2000.
- Singer, Peter. *Rethinking Life and Death: The Collapse of our Traditional Ethics*. New York: St. Martin's Press, 1995.
- Smith, Brian Cantwell. *On the Origin of Objects*. Cambridge, MA: MIT Press, 1996.
- Spinoza, Benedict. *Tractatus Theologico-Politicus*. Gebhardt edition, 1925. Translated by Samuel Shirley. Leiden: E. J. Brill, 1989.
- Tattersall, Ian. *The Fossil Trail: How We Know What We Think We Know About Human Evolutions*. Oxford: Oxford University Press, 1995.
- Tillich, Paul. *Systematic Theology*, Chicago: University of Chicago Press, 1967.
- Tirosh-Samuelson, Hava, and Christian Wiese, eds. *Judaism and the Phenomena of Life: The Legacy of Hans Jonas*. Boston: Brill Academic Publishers, scheduled for release in 2008.
- Valle, Michael S. "Divine Abandonment and the Evidential Argument from Evil." Unpublished dissertation, philosophy department at Arizona State University, 2004.
- Van Kley, Dale K. *The Religious Origins of the French Revolution: From Calvin to the Civil Constitution, 1560–1791*. New Haven, CT: Yale University Press, 1996.
- Wahrman, Miryam. *Brave New Judaism: When Science and Scriptures Collide*. London: Brandeis University Press, 2002.
- Wells, Herbert George. *Shape of Things to Come*. New York: Macmillan Company, 1933.
- Whitehead, Alfred North. *Process and Reality*. New York: Free Press, 1978.
- Wolfson, Elliot. *Language, Eros, Being: Kabbalistic Hermeneutics and Poetic Imagination*. New York: Fordham University Press, 2005.
- Zohar*. Pritzker edition. Translated by and with a commentary by Daniel C. Matt. Stanford, CA: Stanford University Press, 2004.

### Expanded Bibliography

The second list identifies additional books that have informed my thinking. They are examples of the academic fields (listed in order of relative importance for this volume) of (1) science and Judaism, (2) Jewish philosophy, and (3) the sciences.

The books on the sciences listed include primarily secondary works about science rather than primary scientific works themselves. This secondary literature is historical, cultural, and/or philosophical. In general, all analysis is set in a historical context that considers the cultural setting of the thought. Similarly, all description of history emphasizes people's thought in its cultural setting. The listed readings from the sciences emphasize the physical and the life sciences with special focus on physics, evolutionary biology, and psychology.

Even within the restrictions mentioned the bibliography remains incomplete. It excludes books that I do not know, books that I do not remember,

and books that did not in any sense influence my conclusions. The books on the list that did *influence* my thinking include claims with which I agree, as well as claims with which I disagree but deeply respect. *Respect* means that I could not easily dismiss the claims set forth because the arguments for them are forceful and/or the evidence for them is profound and/or I have considerable respect for the thinkers making these claims. Anyone who reads the books listed in the bibliography should be able to distinguish among their claims, views which I share and views which I reject. My hope is that readers will not be able to judge whether the books missing from my bibliography were intentionally or unintentionally omitted.<sup>1</sup>

Again the order of the categories expresses my evaluation of the importance of the academic subjects for judging the described death and anticipated rebirth of Jewish philosophy. However no such ordering is reflected within the categories. There the cited books are listed alphabetically according to the names of the authors.

### Science and Judaism

- Berger, Yitzhak, and David Shatz, eds. *Judaism, Science, and Moral Responsibility*. Lanham, MD: Rowman & Littlefield, 2002.
- Cantor, Geoffrey, and Marc Swetlitz, eds. *Jewish Tradition and the Challenge of Darwinism*. Chicago: University of Chicago Press, 2006.
- Charpa, Ulrich, and Ute Deichman, eds. *Jews and Sciences in German Contexts*. Tübingen, Germany: Mohr Siebeck, 2007.
- Dorff, Elliot N. *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics*. Philadelphia: Jewish Publication Society of America, 1998.
- Efron, John M. *Medicine and the German Jews: A History*. New Haven, CT: Yale University Press, 2001.
- Fisch, Menachem. *Rational Rabbis: Science and Talmudic Culture*. Bloomington: Indiana University Press, 1997.
- Freudenthal, Gad. *Science in the Medieval Hebrew and Arabic Traditions*. Aldershot, UK: Ashgate and Variorum, 2005.
- Goldish, Matt. *Judaism in the Theology of Sir Isaac Newton*. Dordrecht, The Netherlands: Kluwer, 1998.
- Jonas, Hans. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Chicago: University of Chicago Press, 1984.
- Meier, Levi, ed. *Jewish Values in Bioethics*. New York: Human Sciences Press, 1986.
- , ed. *Jewish Values in Health and Medicine*. Lanham, MD: University Press of America, 1991.

---

<sup>1</sup> In so doing I hope to avoid (or at least minimize) the offense that the Jewish way (HALAKHAH) describes as gossip (literally, an “evil tongue”, LeSHON HA-RA’).

- Rose, Aubrey, ed. *Judaism and Ecology*. London: Cassell, 1992.
- Rosner, Fred, and J. David Bleich, eds. *Jewish Bioethics*. New York: Sanhedrin Press, 1979.
- Rosner, Fred, and Samuel Kotteck, eds. *Moses Maimonides: Physician, Scientist and Philosopher*. Northvale, NJ: Jason Aronson, 1993.
- Rosner, Fred. *Biomedical Ethics and Jewish Law*. Hoboken, NJ: Ktav, 2001.
- . *Modern Medicine and Jewish Ethics*. Hoboken, NJ: Ktav, 1986; reprinted New York: Yeshiva University Press, 1991.
- Ruderman, David B. *Jewish Thought and Scientific Discovery in Early Modern Europe*. New Haven, CT: Yale University Press, 1995.
- . *Kabbalah, Magic, and Science: The Cultural Universe of a Sixteenth-Century Jewish Physician*. Cambridge, MA: Harvard University Press, 1988.
- . *The World of a Renaissance Jew: The Life and Thought of Abraham ben Mordecai Farissol*. Cincinnati: Hebrew Union College Press, 1983.
- Schimmel, Solomon. *Wounds Not Healed By Time: The Power of Repentance and Forgiveness*. New York: Oxford University Press, 2002.
- Silvia de Leon-Jones, Karen. *Giordano Bruno and the Kabbalah: Prophets, Magicians, and Rabbis*. New Haven, CT: Yale University Press, 1997.
- Swetlitz, Marc. *Judaism and Ecology, 1970–1986: A Sourcebook of Readings*. Wyncote, PA: Shomrei Adamah, 1990.
- Tirosh-Samuelson, Hava. *Judaism and Ecology: Created World and Revealed Word*. Cambridge, MA: Harvard University Press, 2002.
- Wahrman, Miryam. *Brave New Judaism: When Science and Scriptures Collide*. Hanover: University Press of New England for: Brandeis University Press, 2002.
- Zohar, No'am. *Alternatives in Jewish Bioethics*. Albany: State University of New York Press, 1997.

## Jewish Philosophy

- Anckaert, L., and B. Casper. *Franz Rosenzweig: A Primary and Secondary Bibliography*. Leuven, Belgium: BibliotheekVan De Faculteit Der Godgeleerdheid Van De K.U. Leuven, 1990.
- Anckaert, Luc, Martin Brassier, and Norbert Samuelson, eds. *The Legacy of Franz Rosenzweig: Collected Essays*. Leuven, Belgium: Leuven University Press, 2004.
- Appel, Gerson. *A Philosophy of Mizvot*. New York: Ktav, 1975.
- Arendt, Hannah. *Eichmann in Jerusalem*. New York: Penguin, 1963.
- . *The Human Condition*. Chicago: University of Chicago Press, 1958.
- . *The Jew as Pariah*. Edited by R. Feldman. New York: Grove Press, 1978.
- . *Love and Saint Augustine*. Chicago: University of Chicago Press, 1995.
- . *Rahel Varnhagen: The Life of a Jewess*. Edited by I. Weissberg. Translated by C. Winston. Baltimore: Johns Hopkins University, 1997.
- Bakan, David. *Maimonides on Prophecy: A Commentary on Selected Chapters of the Guide of the Perplexed*. London: Jason Aronson, 1991.

- Batnitzky, Leora. *Leo Strauss and Emmanuel Levinas: Philosophy and the Politics of Revelation*. Cambridge, UK: Cambridge University Press, 2006.
- Bennett, Jonathan. *A Study of Spinoza's Ethics*. Indianapolis: Hackett Publishing Co., 1984.
- Benor, Ehud. *Worship of the Heart: A Study of Maimonides' Philosophy of Religion*. Albany: State University of New York Press, 1995.
- Bergman, Shmuel Hugo. *Dialogical Philosophy from Kierkegaard to Buber*. Translated by Arnold A. Gerstein. Albany: State University of New York Press, 1991.
- Bernasconi, Robert, and Simon Critchley, eds. *Re-reading Levinas*. Bloomington: Indiana University Press, 1991.
- Bernstein, Richard. *Hannah Arendt and the Jewish Question*. Cambridge, MA: MIT Press, 1996.
- Biale, David. *Kabbalah and Counter History*. Cambridge, MA: Harvard University Press, 1982.
- Bokser, Ben Zion. *Abraham Isaac Kook*. New York: Paulist Press, 1978.
- Borowitz, Eugene B. *Renewing the Covenant*. Philadelphia: Jewish Publication Society, 1991.
- . *Exploring Jewish Ethics: Papers on Covenant Responsibility*. Detroit: Wayne State University Press, 1990.
- . *A New Jewish Theology in the Making*. Philadelphia: Westminster Press, 1968.
- . *Reform Judaism Today*. New York: Behrman House, 1978.
- Buijs, Joseph A., ed. *Maimonides: A Collection of Critical Essays*. Notre Dame, IN: University of Notre Dame Press, 1990.
- Burggraeve, Roger. *Emmanuel Levinas*. Leuven, Belgium: Center for Metaphysics and Philosophy of God, Institute of Philosophy, 1982.
- . *From Self-Development to Solidarity: An Ethical Reading to Human Desire in Its Socio-Political Relevance according to Emmanuel Lévinas*. Leuven, Belgium: Center for Metaphysics and Philosophy of God, Institute of Philosophy, 1985.
- Cohen, Richard A. *Ethics, Exegesis and Philosophy: Interpretation after Levinas*. Cambridge, UK: Cambridge University Press, 2001.
- . *Elevations: The Height of the Good in Rosenzweig and Levinas*. Chicago: University of Chicago Press, 1994.
- , ed. *Face to Face with Levinas*. Albany: State University of New York Press, 1989.
- Critchley, Simon, and Robert Bernasconi, eds. *The Cambridge Companion to Levinas*. Cambridge, UK: Cambridge University Press, 2002.
- Curley, Edwin M. *Spinoza's Metaphysics: An Essay in Interpretation*. Cambridge, MA: Harvard University Press, 1969.
- , ed. *The Collected Works of Spinoza*. Princeton, NJ: Princeton University Press, 1985.
- Damasio, Antonio. *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*. Orlando, FL: Harcourt, 2003.

- Davidson, Herbert A. *Proofs of Eternity, Creation and the Existence of God in Medieval Islamic and Jewish Philosophy*. Oxford: Oxford University Press, 1987.
- De Dijn, Herman. *Spinoza: The Way to Wisdom*. West Lafayette, IN: Purdue University Press, 1996.
- Deveaux, Sherry. *The Role of God in Spinoza's Metaphysics*. London: Continuum, 2007.
- Diamond, James Arthur. *Maimonides and the Hermeneutics of Concealment: Deciphering Scripture and Midrash in the Guide of the Perplexed*. Albany: State University of New York Press, 2002.
- Diamond, Malcolm. *Martin Buber*. New York: Harper & Row, 1968.
- Dietrich, Wendell S. *Cohen and Troeltsch: Ethical Monotheistic Religion and Theory of Culture*. Chico, CA: Scholars Press, 1986.
- Drury, Shadia. *Leo Strauss and the American Right*. New York: St. Martin's Press, 1997.
- Eisen, Arnold M. *The Chosen People in America: A Study in Jewish Religious Ideology*. Bloomington: Indiana University Press, 1983.
- Eisen, Robert. *The Book of Job in Medieval Jewish Philosophy*. Oxford: Oxford University Press, 2004.
- . *Gersonides on Providence, Covenant, and the Chosen People: A Study in Medieval Jewish Philosophy and Biblical Commentary*. Albany: State University of New York Press, 1995.
- Fackenheim, Emil L. *The Jewish Bible after the Holocaust: A Re-Reading*. Bloomington: Indiana University Press, 1990.
- . *Encounters Between Judaism and Modern Philosophy*. New York: Basic Books, 1973.
- . *The God Within*. Toronto: University of Toronto Press, 1996.
- . *God's Presence in History*. New York: New York University Press, 1970.
- . *The Jewish Return Into History: Reflections in the Age of Auschwitz and a New Jerusalem*. New York: Schocken Books, 1978.
- . *The Jewish Thought of Emil Fackenheim: A Reader*. Edited by Michael L. Morgan. Detroit: Wayne State University Press, 1987.
- . *Quest for Past and Future*. Bloomington: Indiana University Press, 1968.
- . *The Religious Dimension in Hegel's Thought*. Boston: Beacon, 1970.
- . *To Mend the World*. New York: Schocken Books, 1989.
- Faur, José. *Homo Mysticus: A Guide to Maimonides's Guide for the Perplexed*. Syracuse, NY: Syracuse University Press, 1999.
- . *Golden Doves with Silver Dots: Semiotics and Textuality in Rabbinic Tradition*. Bloomington: Indiana University Press, 1986.
- Frank, Daniel H., and Oliver Leaman, eds. *The Cambridge Companion to Medieval Jewish Philosophy*. Cambridge, UK: Cambridge University Press, 2003.
- Frank, Daniel H., ed. *Autonomy and Judaism: The Individual and the Community in Jewish Philosophical Thought*. Albany: State University of New York Press, 1993.
- , ed. *Commandment and Community: New Essays in Jewish Legal and Political Philosophy*. Albany: State University of New York Press, 1995.



- Friedman, Maurice S. *Martin Buber and the Eternal*. New York: Human Sciences Press, 1986.
- . *Martin Buber's Life and Work*. New York: Dutton, 1983.
- . *Encounter on the Narrow Ridge: A Life of Martin Buber*. New York: Parago House, 1991.
- Funkenstein, Amos. *Maimonides: Nature, History and Messianic Beliefs*. Tel Aviv: MOD Books, 1997.
- Galli, Barbara Ellen. *Franz Rosenzweig and Jehuda Halevi*. Montreal: McGill-Queen's University Press, 1995.
- , ed. *Cultural Writings of Franz Rosenzweig*. Syracuse, NY: Syracuse University Press, 2000.
- Garrett, Don, ed. *Cambridge Companion to Spinoza*. Cambridge, UK: Cambridge University Press, 1996.
- Gibbs, Robert. *Why Ethics? Signs of Responsibility*. Princeton, NJ: Princeton University Press, 2000.
- Green, Kenneth Hart. *Jew and Philosopher: The Return to Maimonides in the Jewish Thought of Leo Strauss*. Albany: State University of New York Press, 1993.
- Greenberg, Yudit. *Better Than Wine: Love, Poetry, and Prayer in the Thought of Franz Rosenzweig*. Atlanta: Scholars Press, 1996.
- Grene, Marjorie, and Debra Nails, eds. *Spinoza and the Sciences*. In *Boston Studies in the Philosophy of Science*, edited by S. Cohen and Marx W. Wartofsky. Vol. 91. Boston: D. Reidel Publishing Co., 1986.
- Gutting, Gary. *French Philosophy in the Twentieth Century*. Cambridge, UK: Cambridge University Press, 2001.
- Hart, Alan. *Spinoza's Ethics, Part I & II: A Platonic Commentary*. Leiden, The Netherlands: E. J. Brill, 1983.
- Heschel, Abraham Joshua. *Man is Not Alone: A Philosophy of Religion*. New York: Farrar, Straus and Young, 1951.
- . *Man's Quest for God*. New York: Scribner's, 1954.
- . *Moral Grandeur and Spiritual Audacity*. Edited by Susannah Heschel. New York: Farrar Straus Giroux, 1996.
- . *A Philosophy of Judaism: God in Search of Man*. London: John Calder, 1956.
- . *The Sabbath: Its Meaning for Modern Man*. New York: Farrar, Straus and Giroux, 1951.
- Hodes, Aubrey. *Martin Buber: An Intimate Portrait*. New York: Viking Press, 1971.
- Hughes, Aaron W. *The Texture of the Divine: Imagination in Medieval Islamic and Jewish Thought*. Bloomington: Indiana University Press, 2004.
- Husik, Isaac. *A History of Mediaeval Jewish Philosophy*. Preface by Steven Harvey. Mineola, NY: Dover Publications, 2002.
- Hyman, Arthur, ed. *Maimonidean Studies*. New York: Ktav, 1990.
- Jonas, Hans. *The Phenomenon of Life: Toward a Philosophical Biology*. Evanston, IL: Northwestern University Press, 2001.

- . *Mortality and Morality: A Search for the Good after Auschwitz*. Edited by Lawrence Vogel. Evanston, IL: Northwestern University Press, 1996.
- Jospe, Raphael. *Jewish Philosophy in the Middle Ages, From Rav Saadia Gaon to the Rambam*. Raanana, Israel: The Open University of Israel, 2006. (in Hebrew)
- . *Torah and Sophia: The Life and Thought of Shem Tov Ibn Falaquera*. Cincinnati: Hebrew Union College Press, 1988.
- Kaplan, Edward K. *Holiness in Words: Abraham Joshua Heschel's Poetics of Piety*. Albany: State University of New York Press, 1996.
- Kaplan, Edward, and Samuel Dresner. *Abraham Joshua Heschel: Prophetic Witness*. New Haven, CT: Yale University Press, 1998.
- Katz, Claire Elise. *Levinas, Judaism, and the Feminine: The Silent Footsteps of Rebecca*. Bloomington: Indiana University Press, 2003.
- Katz, Steven. *Jewish Philosophers*. New York: Bloch, 1975.
- Kaufman, William E. *Contemporary Jewish Philosophies*. New York: Reconstructionist Press and Behrman House, 1976.
- Kavka, Martin. *Jewish Messianism and the History of Philosophy*. Cambridge, UK: Cambridge University Press, 2004.
- Kellner, Menachem Marc, ed. *Contemporary Jewish Ethics*. New York: Sanhedrin Press, 1978.
- , ed. *The Pursuit of the Ideal: Jewish Writings of Steven Schwarzschild*. Albany: State University of New York Press, 1990.
- . *Dogma in Medieval Jewish Thought: From Maimonides to Abravanel*. Oxford: Oxford University Press, 1986.
- . *Maimonides on Human Perfection*. Atlanta: Scholars Press, 1990.
- . *Maimonides on Judaism and the Jewish People*. Albany: State University of New York Press, 1991.
- . *Must A Jew Believe Anything?* London: Vallentine Mitchell & Co., 1999.
- Kennington, Richard, ed. *The Philosophy of Baruch Spinoza*. Washington, DC: Catholic University of America Press, 1980.
- Keplnes, Steven. *Buber's Hermeneutical Philosophy and Narrative Theology*. Bloomington: Indiana University Press, 1992.
- Kluback, William. *Hermann Cohen: The Challenge of a Religion of Reason*. Chico, CA: Brown Judaica/Scholar's Press, 1984.
- . *The Idea of Humanity: Hermann Cohen's Legacy of Philosophy and Theology*. Lanham, MD: University Press of America, 1987.
- Kohler, L., and H. Saner, eds. *Hannah Arendt-Karl Jaspers Correspondence, 1926–1969*. New York: Harcourt Brace, 1992.
- Kohn, Jerome, ed. *Arendt, Essays in Understanding, 1930–1954*. New York: Harcourt Brace, 1994.
- Kook, Abraham Isaac. *Halakhic Man*. Translated by Lawrence Kaplan. Philadelphia: Jewish Publication Society of America, 1986.
- . *On Repentance*. Translated by Pinchas Peli. New York: Paulist Press, 1984.

- Kraemer, J., ed. *Perspectives on Maimonides: Philosophical and Historical Studies*. Oxford: Oxford University Press, 1991.
- Kreisel, Howard Theodore. *Maimonides' Political Thought: Studies in Ethics, Law, and the Human Ideal*. Albany: State University of New York Press, 1999.
- Kretzmann, Norman, Anthony Kenny, and Jan Pinborg, eds. *The Cambridge History of Later Medieval Philosophy*. Cambridge, UK: Cambridge University Press, 1982.
- Langermann, Y. Tzvi. *The Jews and the Sciences in the Middle Ages*. Aldershot, UK: Ashgate Variorum, 1999.
- Leaman, Oliver. *Moses Maimonides*. London: Routledge, 1990.
- . *Evil and Suffering in Jewish Philosophy*. Cambridge: Cambridge University Press, 1995.
- Leibowitz, Yeshayahu. *The Faith of Maimonides*. New York: Adama, 1987.
- . *Judaism, Human Values, and the Jewish State*. Cambridge, MA: Harvard University Press, 1992.
- Levenson, Alan T. *An Introduction to Modern Jewish Thinkers: From Spinoza to Soloveitchik*. Lanham, MD: Rowman & Littlefield, 2006.
- Levinas, Emmanuel. *Time and the Other*. Translated by Richard A. Cohen. Pittsburgh, PA: Duquesne University Press, 1987.
- . *Totality and Infinity: An Essay on Exteriority*. Translated by Alphonso Lingis. Pittsburgh, PA: Duquesne University Press, 1961.
- . *Entre Nous: On Thinking-of-the-Other*. New York: Columbia University Press, 1998.
- . *Existence and Existents*. Translated by A. Lingis. The Hague: Martinus Nijhoff, 1978.
- . *The Levinas Reader*. Edited by Seán Hand. Oxford: Basil Blackwell, 1989.
- . *Nine Talmudic Readings*. Translated by Annette Aronowicz. Bloomington: Indiana University Press, 1990.
- . *Otherwise than Being or Beyond Essence*. Translated by Alphonso Lingis. The Hague: Nijhoff, 1981.
- . *Time and the Other*. Translated by Richard A. Cohen. Pittsburgh, PA: Duquesne University Press, 1995.
- Levy, Ze'ev. *Between Yafeth and Shem: On the Relationship Between Jewish and General Philosophy*. New York: Peter Lang, 1987.
- . *Jewish Aspects of Spinoza's Philosophy*. New York: Peter Lang, 1989.
- Lingis, Alphonso, ed. *The Collected Philosophical Papers of Emmanuel Levinas*. The Hague: Martinus Nijhoff, 1986.
- Llewelyn, John. *Emmanuel Levinas: The Genealogy of Ethics*. New York: Routledge, 1995.
- Lobel, Diana. *Between Mysticism and Philosophy: Sufi Language of Religious Experience in Judah Ha-Levi's Kuzari*. Albany: State University of New York Press, 2000.
- Lubarsky, Sandra B., and David R. Griffin, eds. *Jewish Theology and Process Thought*. Albany: State University of New York Press, 1996.

- MacNabb, D. G. C. *Emotion, Thought and Therapy: A Study of Hume and Spinoza and the Relationship of Philosophical Theories of the Emotions to Psychological Theories of Therapy*. Berkeley: University of California Press, 1977.
- Mason, Richard. *The God of Spinoza*. Cambridge, UK: Cambridge University Press, 1997.
- Meir, Ephraim. *Jewish Existential Philosophers in Dialogue*. Jerusalem: Hebrew University Magnes Press, 2004. (in Hebrew)
- . *Letters of Love: Franz Rosenzweig's Spiritual Biography and Oeuvre in Light of the Grittli Letters*. New York: Peter Lang, 2006.
- Mendes-Flohr, Paul R. *Martin Buber's Transformation of German Social Thought*. Detroit: Wayne State University Press, 1988.
- . *From Mysticism to Dialogue: Martin Buber's Transformation of German Social Thought*. Detroit: Wayne State University Press, 1988.
- , ed. *The Philosophy of Franz Rosenzweig*. Hanover/London: University Press of New England, 1988.
- , ed. *A Land of Two Peoples: Martin Buber on Jews and Arabs*. New York: Oxford University Press, 1983.
- Miller, Ronald H. *Dialogue and Disagreement: Franz Rosenzweig's Relevance to Contemporary Jewish-Christian Understanding*. Lanham, MD: University Press of America, 1989.
- Myers, Henry Alonzo. *The Spinoza-Hegel Paradox: A Study of the Choice Between Traditional Idealism and Systematic Pluralism*. Ithaca, NY: Cornell University Press, 1944.
- Nadler, Steven. *Spinoza: A Life*. Cambridge, UK: Cambridge University Press, 1999.
- . *Spinoza's Ethics: An Introduction*. Cambridge, UK: Cambridge University Press, 2006.
- Neusner, Jacob. *Judaism as Philosophy: The Method and Message of the Mishnah*. Baltimore: Johns Hopkins University Press, 1999.
- Ochs, Peter, ed. *Reviewing the Covenant: Eugene B. Borowitz and the Postmodern Renewal of Jewish Theology*. Albany: State University of New York Press, 2000.
- , ed. *The Return to Scripture in Judaism and Christianity: Essays in Postcritical Scriptural Interpretation*. New York: Paulist Press, 1993.
- , ed. *Understanding the Rabbinic Mind: Essays on the Hermeneutic of Max Kadushin*. South Florida Studies in the History of Judaism, Number 14. Atlanta, GA: Scholars Press, 1990.
- . *Peirce, Pragmatism and the Logic of Scripture*. Cambridge: Cambridge University Press, 1998.
- Ochs, Peter, and Nancy Levene, eds. *Textual Reasonings: Jewish Philosophy and Text Study at the End of the Twentieth Century*. Grand Rapids, MI: William B. Eerdmans Publishing, 2002.
- Oppenheim, Michael D. *Speaking/Writing of God: Jewish Philosophical Reflections on the Life with Others*. Albany: State University of New York Press, 1997.

- . *What Does Revelation Mean for the Modern Jew? Rosenzweig, Buber, Fackenheim*. Lewiston, NY: Edwin Mellen Press, 1985.
- Pines, Shlomo, and Yermiyahu Yovel, eds. *Maimonides and Philosophy*. Dordrecht, The Netherlands: Martinus Nijhoff, 1986.
- Pollock, Frederick. *Spinoza: His Life and Philosophy*. London: Kegan Paul, 1980.
- Poma, Andrea. *The Critical Philosophy of Hermann Cohen*. Albany: State University of New York Press, 1997.
- Putnam, Hilary. *Jewish Philosophy as a Guide to Life: Rosenzweig, Buber, Levinas, Wittgenstein*. Bloomington: Indiana University Press, 2008.
- Rashkover, Randi. *Revelation and Theopolitics: Barth, Rosenzweig and the Politics of Praise*. London: T&T Clark, 2005.
- Ravitzky, Aviezer. *Crescas' Sermon on the Passover and Studies in His Philosophy*. Jerusalem: Israel Academy of Sciences and Humanities, 1988.
- . *History and Faith: Studies in Jewish Philosophy*. Amsterdam: J. C. Gieben, 1996.
- Rosenberg, Shalom. *Good and Evil in Jewish Thought*. Tel Aviv: MOD Books, 1989.
- . *Revelation, Faith, Reason*. Ramat Gan, Israel: Bar Ilan University Press, 1976.
- Rotenstreich, Nathan. *Jews and German Philosophy: The Polemics of Emancipation*. New York: Schocken, 1984.
- Rothschild, Fritz A., ed. *Between God and Man: An Interpretation of Judaism from the Writings of Abraham Heschel*. New York: Harper & Row, 1959.
- Rubinstein, Ernest. *An Episode of Jewish Romanticism: Franz Rosenzweig's The Star of Redemption*. Albany: State University of New York Press, 1999.
- Rudavsky, T. M. *Time Matters: Time, Creation and Cosmology in Medieval Jewish Philosophy*. Albany: State University of New York Press, 2000.
- Samuelson, Norbert M. *Creation and the End of Days: Judaism and Scientific Cosmology: Proceedings of the 1984 Meeting of the Academy for Jewish Philosophy*. Lanham, MD: University Press of America, 1986.
- . *The First Seven Days: A Philosophical Commentary on the Creation of Genesis*. Atlanta, GA: Scholars Press, 1992.
- . *Gersonides on God's Knowledge*. Toronto: Pontifical Institute of Mediaeval Studies, 1977.
- . *An Introduction to Modern Jewish Philosophy*. Albany: State University of New York Press, 1989.
- . *Revelation and the God of Israel*. Cambridge, UK: Cambridge University Press, 2002.
- . *Studies in Jewish Philosophy: Collected Essays of the Academy for Jewish Philosophy, 1980–1985*. Lanham, MD: University Press of America, 1987.
- Sanford, Stella. *The Metaphysics of Love: Gender and Transcendence in Levinas*. London: Continuum, 2000.
- Santner, Eric L. *On the Psychotheology of Everyday Life: Reflections on Freud and Rosenzweig*. Chicago: University of Chicago Press, 2001.

- Schmied-Kowarzik, Wolfdietrich, ed. *Philos Franz Rosenzweig 1886–1929, Der: Internationaler Kongress-Kassel, 1986*. Volumes 1–2. Freiburg/München, Germany: Karl Alber, 1988.
- Schweid, Eliezer. *Democracy and Halakhah*. Lanham, MD: University Press of America, 1994.
- . *Wresting Until Day-Break: Searching for Meaning in the Thinking on the Holocaust*. Lanham, MD: University Press of America, 1994.
- Seeskin, Kenneth. *Cambridge Companion to Maimonides*. Cambridge, UK: Cambridge University Press, 2005.
- . *Maimonides on the Origin of the World*. Cambridge, UK: Cambridge University Press, 2005.
- . *Autonomy in Jewish Philosophy*. Cambridge, UK: Cambridge University Press, 2001.
- . *Jewish Philosophy in a Secular Age*. Albany: State University of New York Press, 1990.
- . *Maimonides: A Guide for Today's Perplexed*. West Orange, NJ: Behrman House, 1991.
- . *Searching for a Distant God: The Legacy of Maimonides*. Oxford: Oxford University Press, 2000.
- . *Dialogue and Discovery: A Study in Socratic Method*. Albany: State University of New York Press, 1987.
- Shapira, Avraham. *Hope for our Time: Key Trends in the Thought of Martin Buber*. Albany: State University of New York, 1999.
- Sherman, Franklin. *The Promise of Heschel*. New York: J. B. Lippincott Co., 1970.
- Sherwin, Byron L. *Abraham Joshua Heschel: Makers of Contemporary Theology*. Atlanta, GA: John Knox Press, 1979.
- Silman, Yochanan. *Philosopher and Prophet: Judah Halevi, the Kuzari, and the Evolution of His Thought*. Albany: State University of New York Press, 1995.
- Simon, Julius, ed. *History, Religion, and Meaning: American Reflections on the Holocaust and Israel*. Westport CT: Greenwood Press, 2000.
- Sirat, Colette. *A History of Jewish Philosophy in the Middle Ages*. Cambridge, UK: Cambridge University Press, 1996.
- . *Hebrew Manuscripts of Middle Ages*. Translated by Nicholas De Lange. Cambridge, UK: Cambridge University Press, 2002.
- Soloveitchik, Joseph B. *Family Redeemed: Essays on Family Relationships*. Hoboken, NJ: Ktav, 2000.
- . *Out of the Whirlwind: Essays on Mourning, Suffering and the Human Condition*. Hoboken, NJ: Ktav, 2003.
- . *Worship of the Heart: Essays on Jewish Prayer*. Hoboken, NJ: Ktav, 2003.
- . *Halakhic Man*. Philadelphia: Jewish Publication Society of America, 1983.
- Srajek, Martin C. *In the Margins of Deconstruction: Jewish Conceptions of Ethics in Emmanuel Levinas and Jaques Derrida*. Dordrecht, The Netherlands: Kluwer Academic Publishers, 1998.

- Stitskin, Leon D. *Eight Jewish Philosophers in the Tradition of Personalism*. New York: Feldheim, 1979.
- . *Jewish Philosophy: A Study in Personalism*. Brooklyn, NY: Yeshivah University Press, 1976.
- Strauss, Leo. *Persecution and the Art of Writing*. Chicago: University of Chicago Press, 1988.
- Tirosh-Rothschild, Hava. *Between Worlds: The Life and Thought of Rabbi David ben Judah Messer Leon*. Albany: State University of New York Press, 1991.
- Tirosh-Samuels, Hava, ed. *Women and Gender in Jewish Philosophy*. Bloomington: Indiana University Press, 2004.
- . *Happiness in Premodern Judaism: Virtue, Knowledge, and Well-Being*. Cincinnati: Hebrew Union College Press, 2003.
- Twersky, Isadore. *Introduction to the Code of Maimonides (Mishneh Torah)*. New Haven, CT: Yale University Press, 1980.
- , ed. *Rabbi Moses Nahmanides (Ramban): Explorations in His Religious and Literary Virtuosity*. Cambridge, MA: Harvard University Press, 1983.
- Vermes, Pamela. *Buber on God and the Perfect Man*. Missoula, MT: Scholar's Press, 1980.
- Villa, Dana. *Arendt and Heidegger: The Fate of the Political*. Princeton, NJ: Princeton University Press, 1996.
- Weiss, R., and C. Butterworth. *Ethical Writings of Maimonides*. New York: Dover, 1983.
- Weiss, Raymond. *Maimonides' Ethics: The Encounter of Philosophic and Religious Morality*. Chicago: University of Chicago Press, 1991.
- Wiedebach, Hartwig. *Hermann Cohen: Reflexionen und Notizen*. Hildesheim, Germany: Georg Olms Verlag, 2003.
- Wolfson, Elliot R. *Alef, Mem, Tau: Kabbalistic Musings on Time, Truth, and Death*. Berkeley: University of California Press, 2006.
- . *Along the Path: Studies in Kabbalistic Myth, Symbolism, and Hermeneutics*. Albany: State University of New York Press, 2000.
- . *Through a Speculum that Shines: Vision and Imagination in Medieval Jewish Mysticism*. Princeton, NJ: Princeton University Press, 1994.
- , ed. *Rending the Veil: Concealment and Secrecy in the History of Religion*. New York: Seven Bridges, 1999.
- Wolfson, Harry Austryn. *The Philosophy of Spinoza: Unfolding the Latent Processes of His Reasoning*. Cambridge, MA: Harvard University Press, 1934.
- . *Crescas' Critique of Aristotle*. Cambridge, MA: Harvard University Press, 1929.
- . *Philo: Foundations of Religious Philosophy in Judaism, Christianity and Islam*. Cambridge, MA: Harvard University Press, 1982.
- . *The Philosophy of Kalam*. Cambridge, MA: Harvard University Press, 1976.
- . *Repercussions of the Kalam in Jewish Philosophy*. Cambridge, MA: Harvard University Press, 1979.

- Yaffe, Martin D. *Judaism and Environmental Ethics*. Lanham, MD: Lexington Books, 2001.
- Yovel, Yirmiyahu. *Spinoza and Other Heretics*. Princeton, NJ: Princeton University Press, 1989.
- Zank, Michael. *The Idea of Atonement in the Philosophy of Hermann Cohen*. Providence, RI: Brown Judaic Studies, 2000.

## Science

- Abir-Am, Pnina G., and Dorinda Outram, eds. *Uneasy Careers and Intimate Lives: Women in Science, 1789–1979*. New Brunswick, NJ: Rutgers University Press, 1987.
- Aczel, Amir D. *The Artist and the Mathematician: The Story of Nicolas Bourbaki, the Genius Mathematician Who Never Existed*. New York: Thunder's Mouth Press, 2006.
- Alberts, Bruce. *Molecular Biology of the Cell*. New York: Garland, 1994.
- Aldrige, Susan. *The Thread of Life: The Story of Genes and Genetic Engineering*. Cambridge, UK: Cambridge University Press, 1998.
- Alexander, H. G., ed. *The Leibniz-Clarke Correspondence*. Manchester, UK: Manchester University Press, 1956.
- Anstey, Peter R. *Philosophy of Robert Boyle*. London: Routledge, 2000.
- Appleyard, Bryan. *Brave New Worlds: Staying Human in the Genetic Future*. New York: Viking, 1998.
- Ariew, Roger, ed. *G.W. Leibniz and Samuel Clarke: Correspondence*. Indianapolis: Hackett Publishing Co., 2000.
- Asimov, Isaac. *The Human Brain: Its Capacities and Functions*. New York: Mentor, 1994.
- Atkins, P. *Creation Revisited*. Harmondsworth, UK: Penguin, 1994.
- Barbour, Ian G. *Ethics in an Age of Technology*. San Francisco: Harper, 1993.
- . *Ethics in an Age of Technology: The Gifford Lectures*. Vol. 2. New York: Harper-Collins Books, 1993.
- . *Models and Paradigms: A Comparative Study in Science and Religion*. San Francisco: Harper & Row, 1976.
- . *Myths, Models and Paradigms*. New York: Harper & Row, 1974.
- . *Religion and Science: Historical and Contemporary Issues*. New York: Harper-Collins Books, 1997.
- . *Religion in an Age of Science*. San Francisco: Harper, 1990.
- . *When Science Meets Religion: Enemies, Strangers, or Partners?* San Francisco: Harper, 2000.
- Barr, Stephen M. *Modern Physics and Ancient Faith*. Notre Dame, IN: Notre Dame University Press, 2003.
- Barrow, John D. *The Book of Nothing*. New York: Vintage Books, 2000.
- . *Constants of Nature*. New York: Pantheon, 2002.



- , and F. J. Tipler. *The Anthropic Cosmological Principle*. Oxford: Oxford University Press, 1986.
- . *The Artful Universe*. Oxford: Clarendon Press, 1995.
- Beauchamp, Tom L., and James F. Childress, eds. *Principles of Biomedical Ethics*. Oxford: Oxford University Press, 2001.
- Bengston, Stefan, ed. *Early Life on Earth*. New York: Columbia University Press, 1994.
- Berger, Peter L. *The Sacred Canopy: Elements of a Sociological Theory of Religion*. New York: Doubleday, 1967.
- Bernstein, Ellen, ed. *Ecology and the Jewish Spirit*. Woodstock, VT: Jewish Lights Publishing, 1998.
- Bernstein, Jeremy. *Albert Einstein and the Frontiers of Physics*. New York: Oxford University Press, 1996.
- Blackwell, Richard J. *Galileo, Ballarmino, and the Bible*. Notre Dame, IN: University of Notre Dame Press, 1991.
- Blank, Robert H. *Brain Policy: How the Neuroscience will Change Our Lives and Our Politics*. Washington, DC: Georgetown University Press, 1999.
- Bleich, J. David. *Bioethical Dilemmas: A Jewish Perspective*. Hoboken, NJ: Ktav, 1998.
- Bohm, David. *Wholeness and the Implicated Order*. London: Routledge and Kegan Paul, 1980.
- Bohr, Niels. *Atomic Theory & the Description of Nature*. Cambridge, UK: Cambridge University Press, 1934.
- . *The Physical Principles of Quantum Theory*. Chicago: University of Chicago Press, 1930.
- . *Physics and Philosophy*. New York: Harper & Row, 1958.
- Bono, James J. *Word of God and the Languages of Man: Interpreting Nature in Early Modern Science and Medicine*. Madison: University of Wisconsin Press, 1995.
- Borgmann, Albert. *Power Failure: Christianity in the Culture of Technology*. Grand Rapids, MI: Brazos Press, 2003.
- Borrow, John, and Frank Tipler. *The Anthropic Cosmological Principle*. Oxford: Oxford University Press, 1986.
- Bova, Ben. *The Story of Light*. Naperville, IL: Sourcebooks, 2002.
- Bowler, Peter J. *Life's Splendid Drama: Evolutionary Biology and Reconstruction of Life's Ancestry*. Chicago: University of Chicago Press, 1996.
- . *The Mendelian Revolution: The Emergence of Hereditarian Concepts in Modern Science and Society*. Baltimore: Johns Hopkins University Press, 1989.
- Boyd, Richard, Philip Gaspar, and J. D. Trout, eds. *The Philosophy of Science*. Cambridge, MA: MIT Press, 1991.
- Boyer, Carl B. *A History of Mathematics*. New York: John Wiley & Sons, 1991.
- Brian, Denis. *Einstein: A Life*. New York: John Wiley & Sons, 1986.
- Brockman, John, ed. *The Next Fifty Years: Science in the First Half of the Twenty-First Century*. New York: Vintage Books, 2002.
- Brooke, John, and Geoffrey Cantor. *Reconstructing Nature: The Engagement of Science and Religion*. Oxford: Oxford University Press, 1998.

- Brusatin, Manlio. *A History of Colors*. Translated by Robert H. Hopcke and Paul Schwartz. Boston: Shambhala (distributed in the U.S. by Random House, 1991).
- Brush, Stephen G. *A History of Modern Planetary Physics*. 3 vols. Cambridge, UK: Cambridge University Press, 1996.
- Bub, Jeffrey. *Interpreting the Quantum World*. Cambridge, UK: Cambridge University Press, 1997.
- Buchwald, Jed Z. *Rise of the Wave Theory of Light: Optical Theory and Experiment in the Early Nineteenth Century*. Chicago: University of Chicago Press, 1989.
- Buchwald, Jed Z., and I. Bernard Cohen, eds. *Isaac Newton's Natural Philosophy*. Boston: MIT Press, 2001.
- Budden, F. J. *The Fascination of Groups*. Cambridge, UK: Cambridge University Press, 1972.
- Burrow, John W. *Evolution and Society: A Study in Victorian Social Theory*. Cambridge: Cambridge University Press, 1966.
- Cairns-Smith, A. G. *Evolving the Mind: On the Nature of Matter and the Origin of Consciousness*. Cambridge, UK: Cambridge University Press, 1998.
- Cantor, Geoffrey N. *Michael Faraday: Sandemanian and Scientist. A Study of Science and Religion in the Nineteenth Century*. London: Macmillan, 1991.
- . *Optics After Newton*. Manchester, UK: Manchester University Press, 1983.
- Caplan, Arthur L., ed. *The Sociobiology Debate: Readings on the Ethical and Scientific Issues Concerning Sociobiology*. New York: Harper & Row, 1978.
- Capra, Fritjof. *The Tao of Physics*. Boston: Shambhala, 2000.
- Cassell, Eric J. *Nature of Suffering and the Goals of Medicine*. Oxford: Oxford University Press, 2004.
- Cassels, J. M. *Basic Quantum Mechanics*. London: Macmillan, 1982.
- Clagett, Marshall. *Greek Science in Antiquity*. London: Abelard-Schuman, 1957.
- . *The Science of Mechanics in the Middle Ages*. Madison: University of Wisconsin Press, 1959.
- Clayton, Philip. *Explanation from Physics to Theology: An Essay in Rationality and Religion*. New Haven, CT: Yale University Press, 1989.
- Cohen, I. Bernard, ed. *Isaac Newton's Papers and Letters on Natural Philosophy and Related Documents*. Cambridge, UK: Cambridge University Press, 1958.
- . *Revolution in Science*. Cambridge, MA: Harvard University Press, 1985.
- Cohen, I. Bernard, and George E. Smith, eds. *Cambridge Companion to Newton*. Cambridge, UK: Cambridge University Press, 2002.
- Cole-Turner, Ronald. *The New Genesis: Theology and the Genetic Revolution*. Louisville, KY: Westminster/John Knox Press, 1993.
- Craig, William Lane, and Quentin Smith. *Theism, Atheism, and the Big Bang Cosmology*. Oxford: Oxford University Press, 1996.
- Crombie, A. C. *The History of Science: From Augustine to Galileo*. New York: Dover Publications, 1995.
- Crowe, Michael J. *Theories of the World from Antiquity to the Copernican Revolution*. New York: Dover, 1990.

- Dale, Edward Everett. *The Indians of the Southwest: A Century of Development under the United States*. London: University of Oklahoma Press, 1949.
- Damasio, Antonio R. *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Putnam, 1994.
- Dantzig, Tobias. *Number: The Language of Science*. New York: Free Press, 1930.
- d'Aquili, Eugene G., and Andrew B. Newberg. *The Mystical Mind: Probing the Biology of Belief*. Minneapolis: Fortress Press, 1999.
- Davidson, Eric H. *Gene Activity in Early Development*. Orlando, FL: Academic Press, 1986.
- Davies, Paul C. W. *The Cosmic Blueprint*. New York: Simon & Schuster, 1988.
- . *God and the New Physics*. New York: Viking Penguin, 1983.
- . *The Last Three Minutes: Conjectures about the Ultimate Fate of the Universe*. London: Weidenfeld & Nicholson, 1994.
- . *The New Physics*. Cambridge, UK: Cambridge University Press, 1989.
- . *Other Worlds*. London: Dent, 1980.
- . *Space and Time in the Modern Universe*. Cambridge, UK: Cambridge University Press, 1977.
- Davis, Donald Edward. *Ecophilosophy: A Field Guide to the Literature*. San Pedro, CA: R & E Miles, 1989.
- Davis, Edward B., and Michael Hunter, eds. *Robert Boyle: A Free Enquiry into the Vulgarly Received Notion of Nature*. Cambridge, UK: Cambridge University Press, 1996.
- Dawkins, Richard. *The Blind Watchmaker*. Harmondsworth, UK: Penguin, 1991.
- . *Climbing Mount Improbable*. London: Penguin Books, 1996.
- . *River Out of Eden*. London: Weidenfeld & Nicholson, 1995.
- . *The Selfish Gene*. New York: Granada Publishing, 1978.
- de Santillana, Giorgio. *Origins of Scientific Thought: Thought from Anaximander to Proclus, 600 B.C. to A.D. 500*. Chicago: University of Chicago Press, 1961.
- de Waal, Frans. *Good Natured: The Origins of Right and Wrong in Humans and Other Animals*. Cambridge, MA: Harvard University Press, 1996.
- de Waal, Frans, and Frans Lanting. *Bonobo: The Forgotten Ape*. Berkeley: University of California Press, 1997.
- de Witt, Bryce, and Neill Graham, eds. *The Many-Worlds Interpretation of Quantum Mechanics*. Princeton, NJ: Princeton University Press, 1973.
- Deacon, Terrence W. *The Symbolic Species: The Co-Evolution of Language and the Brain*. New York: W.W. Norton & Co., 1997.
- Debus, Allen G. *Man and Nature in the Renaissance*. Cambridge, UK: Cambridge University Press, 1978.
- Dembski, William A. *Intelligent Design: The Bridge Between Science and Theology*. Downers Grove, IL: Intervarsity Press, 1999.
- Dennett, Daniel C. *Brainchildren: Essays on Designing Minds*. Cambridge, MA: MIT Press, 1998.
- . *Brainstorms*. Cambridge, MA: MIT Press, 1998.

- . *Consciousness Explained*. New York: Little, Brown & Co., 1991.
- . *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. London: Penguin Books, 1995.
- . *Elbow Room*. Cambridge, MA: MIT Press, 1998.
- . *Intentional Stance*. Cambridge, MA: MIT Press, 1998.
- Denton, Michael. *Nature's Destiny: How the Laws of Biology Reveal Purpose in the Universe*. New York: Free Press, 1998.
- Devall, Bill, and George Sessions. *Deep Ecology*. Salt Lake City: Gibbs Smith, 1985.
- DeWitt, B. S., and N. Graham. *The Many Worlds Interpretation of Quantum Mechanics*. Princeton, NJ: Princeton University Press, 1973.
- Dhanani, Alnoor. *The Physical Theory of Kalam*. Leiden, The Netherlands: Brill, 1994.
- Diamond, Jared. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W. W. Norton & Co., 1997.
- . *The Third Chimpanzee: The Evolution and Future of the Human*. New York: HarperCollins Books, 1992.
- Dillenberger, John. *Protestant Thought and Natural Science*. London: Collins, 1960.
- Ditchburn, R. W. *Light*. New York: Dover, 1991.
- Doczi, György. *The Power of Limits: Proportional Harmonies in Nature, Art and Architecture*. Boston: Shambhala, 1981.
- Donald, Merlin. *Origins of Modern Mind: Three States in the Evolution of Culture and Cognition*. Cambridge, MA: Harvard University Press, 1991.
- Drees, Willem B. *Religion, Science and Naturalism*. Cambridge, UK: Cambridge University Press, 1996.
- Duff, M. J., and C. J. Ishon, eds. *The Quantum Theory of Space and Time*. Cambridge, UK: Cambridge University Press, 1982.
- Duhem, Pierre. *Medieval Cosmology: Theories of Infinity, Place, Time, Void, and the Plurality of Worlds*. Translated by Roger Ariew. Chicago: University of Chicago Press, 1985.
- Dunham, William. *Journey Through Genius: The Great Theorems of Mathematics*. New York: John Wiley & Sons, 1990.
- Dyson, George B. *Darwin Among the Machines: The Evolution of Global Intelligence*. Reading, MA: Addison-Wesley, 1997.
- eSilva, João Luis Andrade, and Georges Lochak. *Quanta*. Translated by Patrick Moore. New York: McGraw-Hill, 1969.
- Eastwood, Bruce S. *Astronomy and Optics from Pliny to Descartes*. London: Variorum, 1989.
- Eells, Ellery. *Probabilistic Causality*. London: Cambridge University Press, 1991.
- Eigen, Manfred. *Steps Towards Life*. Oxford: Oxford University Press, 1992.
- Einstein, Albert. *Ideas and Opinions*. Translated by Sonja Bargmann. New York: Wings Books, 1954.
- . *Out of My Later Years*. New York: Bonanza Books, 1956.
- Ekeland, Ivar. *Mathematics and the Unexpected*. Chicago: University of Chicago Press, 1988.

- Ellis, George F. R., and R. M. Williams. *Flat and Curved Space-times*. New York: Oxford University Press, 1988.
- Fabel, Arthur, and Donald St. John, eds. *Teilhard in the 21st Century: The Emerging Spirit of Earth*. New York: Orbis Books, 2003.
- Fakhry, Majid. *Islamic Occasionalism and Its Critique by Averroës and Aquinas*. London: Allen and Unwin, 1958.
- Fan, Hung, Ross F. Conner, and Luis P. Villarreal, eds. *Aids: Science and Society*. Singapore: Jones & Bartlett, 1998.
- Fano, G. *Mathematical Methods of Quantum Mechanics*. New York: McGraw Hill, 1971.
- Fantoli, Anibale. *Galileo: From Copernicanism and for the Church*. Translated by George V. Coyne. Vatican City: Vatican Observatory Publications, 1996.
- Farrington, Benjamin. *Science in Antiquity*. London: Oxford University Press, 1947.
- Fauvel, John, Raymond Flood, Michael Shortland, and Robin Wilson, eds. *Let Newton Be!* Oxford: Oxford University Press, 1988.
- Feenberg, Andrew. *Questioning Technology*. London: Routledge, 1999.
- Feigl, Herbert, and May Brodbeck, eds. *Readings in the Philosophy of Science*. New York: Appleton-Century-Crofts, 1953.
- Feldhay, Rivka. *Galileo and the Church: Political Inquisition or Critical Dialogue?* Cambridge, UK: Cambridge University Press, 1995.
- Feldman, David M., and Fred Rosner, eds. *Compendium on Medical Ethics: Jewish Moral, Ethical and Religious Principles in Medical Practice*. New York: Federation of Jewish Philanthropies of NY, 1984.
- Ferguson, Kitty. *Prisons of Light—Black Holes*. Cambridge, UK: Cambridge University Press, 1998.
- Ferngren, Gary B., ed. *Science and Religion: A Historical Introduction*. Baltimore: Johns Hopkins University Press, 2002.
- Feynman, Richard P. *QED: The Strange Theory of Light and Matter*. Princeton, NJ: Princeton University Press, 1985.
- . *What do YOU Care What Other People Think?* New York: Bantam, 1988.
- Field, Michael, and Martin Golubitsky. *Symmetry in Chaos: A Search for Pattern in Mathematics, Art, and Nature*. Oxford: Oxford University Press, 1992.
- Fine, Arthur. *The Shaky Game—Einstein Realism & the Quantum Theory*. Chicago: University of Chicago Press, 1986.
- Fisch, Menachem. *William Whewell, Philosopher of Science*. Oxford: Oxford University Press, 1991.
- Fisch, Menachem, and Simon Schaffer, eds. *William Whewell: A Composite Portrait*. Oxford: Clarendon, 1991.
- Fisher, Helen. *Anatomy of Love: A Natural History of Mating, Marriage, and Why We Stray*. New York: Fawcett Columbine, 1992.
- Fodor, Jerry. *The Mind Doesn't Work That Way*. Cambridge, MA: MIT Press, 2001.
- Foerst, Anne. *God in the Machine: What Robots Teach US About Humanity*. New York: Dutton, 2004.

- Force, James E. *William Whiston: Honest Newtonian*. Cambridge, UK: Cambridge University Press, 1985.
- Foucault, Michel. *The Order of Things: An Archeology of the Human Sciences*. New York: Vintage Books, 1970.
- Fowles, Grant R. *Introduction to Modern Optics*. New York: Dover, 1975.
- French, A. P., and E. F. Taylor. *An Introduction to Quantum Physics*. Middlesex, UK: Nelson, 1978.
- Friedman, Lee M. *Robert Grosseteste and the Jews*. Cambridge, UK: Cambridge University Press, 1934.
- Fritsch, Harold. *An Equation that Changed the World: Newton, Einstein, and the Theory of Relativity*. Chicago: University of Chicago Press, 1997.
- Fukuyama, Francis. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Farrar, Straus and Giroux, 2002.
- Funkenstein, Amos. *Theology and the Scientific Imagination: From the Middle Ages to the Seventeenth Century*. Princeton, NJ: Princeton University Press, 1986.
- Gadamer, Hans Georg. *Reason in the Age of Science*. Translated by Frederick Lawrence. Cambridge, MA: MIT Press, 1981.
- Garreau, Joel. *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—and What It Means to Be Human*. New York: Broadway Books, 2005.
- Gascoigne, John. *Cambridge in the Age of the Enlightenment: Science, Religion, and Politics from the Restoration to the French Revolution*. Cambridge, UK: Cambridge University Press, 1989.
- Gautreau, Ronald, and William Savin. *Modern Physics*. Schaum's Outline Series. New York: McGraw Hill, 1978.
- Gayon, Jean. *Darwinism's Struggle for Survival: Heredity and the Hypothesis of Natural Selection*. New York: Cambridge University Press, 1998.
- Gazzaniga, Michael S. *The Ethical Brain*. New York: Dana Press, 2005.
- Gell-Mann, Murray. *The Quark and the Jaguar: Adventures in the Simple and the Complex*. New York: W. H. Freeman and Co., 1994.
- Gerhart, John, and Marc Kirschner. *Cells, Embryos, and Evolution*. Cambridge, MA: Blackwell, 1997.
- Gesteland, Raymond F., and John F. Atkins, eds. *The RNA World*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press, 1993.
- Gilkey, Langdon. *Maker of Heaven and Earth: The Christian Doctrine of Creation in the Light of Modern Knowledge*. Lanham, MD: University Press of America, 1985.
- Glass, Leon, and Michael C. Mackey. *From Clocks to Chaos: The Rhythms of Life*. Princeton, NJ: Princeton University Press, 1988.
- Gleick, James. *Genius: The Life and Science of Richard Feynman*. New York: Vintage Books, 1992.
- . *Isaac Newton*. New York: Pantheon Books, 2003.
- . *Chaos: Making a New Science*. New York: Penguin, 1987.
- Glücklich, Ariel. *Sacred Pain: Hurting the Body for the Sake of the Soul*. Oxford: Oxford University Press, 2001.

- Godfrey-Smith, Peter. *Complexity and the Function of Mind in Nature*. New York: Cambridge University Press, 1998.
- Goldman, Robert W. *Einstein's God: Albert Einstein's Quest as a Scientist and as a Jew to Replace a Forsaken God*. Northvale, NJ: Jason Aronson, 1997.
- Golshani, Medhi. *The Holy Qur'an & the Sciences of Nature*. Binghamton, NY: Institute of Global Cultural Studies, 1997.
- Goodenough, Ursula. *The Sacred Depths of Nature*. Oxford: Oxford University Press, 1998.
- Görman, Ulf, Willem B. Drees, and Hubert Meisinger, eds. *Creative Creatures: Values and Ethical Issues in Theology, Science and Technology*. London: T&T Clark International, 2005.
- Gottfried, Kurt. *Quantum Mechanics, Vol 1: Fundamentals*. Reading, MA: Benjamin/Cummings, 1966.
- Gould, Stephen Jay. *Bully for Brontosaurus*. New York: Norton, 1991.
- . *Ever Since Darwin: Reflections in Natural History*. New York: W. W. Norton, 1997.
- . *Full House: The Spread of Excellence from Plato to Darwin*. New York: Harmony Books, 1996.
- . *Rock of Ages: Science and Religion in the Fullness of Life*. New York: Ballantine Books, 1999.
- . *Eight Little Piggies*. New York: Norton, 1993.
- . *The Flamingo's Smile*. New York: Norton, 1985.
- . *Hen's Teeth and Horse's Toes*. New York: Norton, 1983.
- . *Ontogeny and Phylogeny*. Cambridge, MA: Belknap, 1977.
- . *The Panda's Thumb*. New York: Norton, 1980.
- . *Rock of Ages: Science and Religion in the Fullness of Life*. New York: Ballantine, 1999.
- . *Time's Arrow, Time's Chaos: Myth and Metaphor in the Discovery of Geological Time*. Cambridge, MA: Harvard University Press, 1987.
- . *Wonderful Life: The Burgess Shale and the Nature of History*. London: Penguin, 1989.
- Grafton, Anthony, and Nancy Siroisi. *Natural Particulars*. Cambridge, MA: MIT Press, 1999.
- Grant, Edward. *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional, and Intellectual Contexts*. Cambridge, UK: Cambridge University Press, 1996.
- . *God and Reason in the Middle Ages*. Cambridge, UK: Cambridge University Press, 2001.
- . *Physical Science in the Middle Ages*. New York: Wiley, 1971.
- . *Science and Religion, 400 BC–AD 1550: From Copernicus to Darwin*. Baltimore: Johns Hopkins University Press, 2004.
- Greene, Brian. *The Fabric of the Cosmos: Space, Time, and the Texture of Reality*. New York: Alfred A. Knopf, 2004.

- Gregersen, Niels Henrik, ed. *Rethinking Theology and Science: Six Models for the Current Dialogue*. Grand Rapids, MI: Wm. E. Eerdmans, 1998.
- Gribbin, John. *In Search of Schrodinger's Cat*. New York: Bantam, 1984.
- Grinnell, Frederick. *The Scientific Attitude*. New York: Guilford Press, 1992.
- Gutzwiller, Martin C. *Chaos in Classical and Quantum Mechanics*. New York: Springer Verlag, 1990.
- Hakfoort, Casper. *Optics in the Age of Euler: Conceptions of the Nature of Light, 1700–1795*. Translated by Enid Perlin-West. Cambridge, UK: Cambridge University Press, 1995.
- Halbertal, Moshe. *Between Torah and Wisdom*. Jerusalem: Hebrew University Magnes Press, 2000.
- Hall, A. Rupert. *Philosophers at War: The Quarrel between Leibniz and Newton*. Cambridge, UK: Cambridge University Press, 1980.
- . *All Was Light: An Introduction to Newton's Opticks*. Oxford: Oxford University Press, 1993.
- Hall, A. Rupert, and Marie Boas Hall, eds. *The Unpublished Scientific Papers of Isaac Newton: A Selection from the Portsmouth Collection in the University Library, Cambridge*. Cambridge, UK: Cambridge University Press, 1962.
- Hankins, Thomas L. *Science and the Enlightenment*. Cambridge, UK: Cambridge University Press, 1985.
- Hanson, Norwood Russell. *Patterns of Discovery*. Cambridge, UK: Cambridge University Press, 1958.
- Haraway, Donna J. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge, 1989.
- Harding, Sandra. *Whose Science? Whose Knowledge? Thinking from Women's Lives*. Ithaca, NY: Cornell University Press, 1991.
- Harré, Rom. *The Philosophies of Science: An Introductory Survey*. Oxford: Oxford University Press, 1992.
- Harris, Judith Rich. *The Nurture Assumption: Why Children Turn Out The Way They Do*. New York: Free Press, 1998.
- Harrison, E. R. *Cosmology: The Science of the Universe*. Cambridge, UK: Cambridge University Press, 1981.
- Harrison, J. *The Library of Isaac Newton*. Cambridge, UK: Cambridge University Press, 1978.
- Harrison, Peter. *The Bible: Protestantism and the Rise of Natural Science*. New York: Cambridge University Press, 1998.
- Hartman, Geoffrey H. *Criticism in the Wilderness*. New Haven, CT: Yale University Press, 1980.
- . *Saving the Text*. Baltimore: Johns Hopkins University Press, 1981.
- Haight, John F. *Deeper Than Darwin: The Prospect of Religion in the Age of Evolution*. Boulder, CO: Westview Press, 2003.
- . *God After Darwin: A Theology of Evolution*. Boulder, CO: Westview Press, 2000.



- Hawking, Stephen W. *A Brief History of Time: From the Big Bang to Black Holes*. New York: Bantam Books, 1988.
- Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cibernetics, Literature, and Informatics*. Chicago: University of Chicago Press, 1999.
- Heath, Thomas L. *Aristarchus of Samos, the Ancient Copernicus: A History of Greek Astronomy to Aristarchus*. Oxford: Clarendon Press, 1913.
- . *A History of Greek Mathematics*. Oxford: Clarendon Press, 1921.
- Hefner, Philip. *Technology and Human Becoming*. Minneapolis: Fortress Press, 2003.
- . *The Human Factor: Evolution, Culture, and Religion*. Minneapolis: Fortress Press, 1993.
- Heilbron, J. L. *The Sun in the Church*. Cambridge, MA: Harvard University Press, 1999.
- Heisenberg, Werner. *Across the Frontiers*. Translated by Peter Heath. New York: Harper & Row, 1974.
- . *The Physicist's Conception of Nature*. Translated by Arnold J. Pomerans. Westport, CT: Greenwood Press, 1970.
- . *Physics and Philosophy: The Revolution in Modern Science*. New York: Harper Torchbook, 1962.
- Helm, Paul, ed. *Faith & Reason*. Oxford: Oxford University Press, 1999.
- Hempel, Carl G. *Aspects of Scientific Investigation*. New York: Free Press, 1965.
- . *Fundamentals of Concept Formation in Empirical Science*. Chicago: University of Chicago Press, 1952.
- Hentschel, Klaus. *Interpretation und Fehlinterpretationen der speziellen und der allgemeinen Relativitätstheorie durch Zeitgenossen Albert Einsteins*. Berlin: Birkhäuser, 1990.
- Herbert, Nick. *Quantum Reality: Beyond the New Physics*. New York: Doubleday/Anchor, 1985.
- Hodge, Jonathan, and Gregory Radick, eds. *Cambridge Companion to Darwin*. Cambridge, UK: Cambridge University Press, 2003.
- Hodgson, D. *The Mind Matters*. Oxford: Oxford University Press, 1991.
- Hollinger, David. *A. Science, Jews, and Secular Culture: Studies in Mid-Twentieth-Century American Intellectual History*. Princeton, NJ: Princeton University Press, 1996.
- Home, Dipanker. *Conceptual Foundations of Quantum Physics: An Overview from Modern Perspectives*. New York: Plenum, 1997.
- Honner, John. *The Description of Nature: Niels Bohr and the Philosophy of Quantum Mechanics*. New York: Oxford University Press, 1988.
- Hooykaas, R. *Religion and the Rise of Modern Science*. Grand Rapids, MI: Eerdmans, 1972.
- Houellebecq, Michel. *The Elementary Particles*. New York: Vintage International, 2000.
- Hourani, George F., ed. *Essays on Islamic Philosophy and Science*. Albany: State University of New York Press, 1975.
- Howell, Kenneth J. *God's Two Books: Copernican Cosmology and Biblical Interpretation in Early Modern Science*. Notre Dame, IN: University of Notre Dame Press, 2001.
- Huff, Toby E. *Rise of Early Modern Science: Islam, China, and the West*. Cambridge, UK: Cambridge University Press, 1993.

- Jacob, Margaret C. *The Newtonians and the English Revolution*. Hassocks, UK: Harvester Press, 1976.
- Jaki, Stanley L. *The Relevance of Physics*. Chicago: University of Chicago Press, 1966.
- . *The Road of Science and the Ways of God*. Chicago: University of Chicago Press, 1978.
- James, M., and D. Jongeward. *Born to Win: Transactional Analysis with Gestalt Experiments*. Reading, MA: Addison-Wesley Publishing Co., 1975.
- Jammer, Max. *Einstein and Religion*. Princeton, NJ: Princeton University Press, 1999.
- Johnson, Elizabeth A. *She Who Is: The Mystery of God in Feminist Theological Discourse*. New York: Crossroad Publishing Co., 1994.
- Jones, Steve. *In the Blood: God, Genes and Destiny*. London: HarperCollins, 1996.
- Jungnickel, Christa, and Russell McCormach. *Intellectual Mastery of Nature: Theoretical Physics from Ohm to Einstein*. Chicago: University of Chicago Press, 1925.
- Kaku, Michio. *Visions: How Science Will Revolutionize the 21st Century*. New York: Anchor Books, 1997.
- Kaku, Michio, and Jennifer Trainer. *Beyond Einstein: The Cosmic Quest for the Theory of the Universe*. New York: Bantam Books, 1987.
- Kaplan, Robert. *Nothing That Is: A Natural History of Zero*. Oxford: Oxford University Press, 1999.
- Kapstein, Matthew T., ed. *The Presence of Light: Divine Radiance and Religious Experience*. Chicago: University of Chicago Press, 2004.
- Kargon, Robert. *Atomism in England: From Harriot to Newton*. Oxford, UK: Clarendon Press, 1966.
- Kaufman, Stuart. *Origins of Order: Self-Organization and Selection in Evolution*. New York: Oxford University Press, 1993.
- Kaye, Joel. *Economy and Nature in the Fourteenth Century: Money, Market Exchange, and the Emergence of Scientific Thought*. New York: Cambridge University Press, 1998.
- Kelly, Kevin. *Out of Control: The New Biology of Machines, Social Systems, and the Economic World*. Reading, MA: Addison-Wesley, 1995.
- Kitcher, Philip. *Science, Truth, and Democracy*. Oxford: Oxford University Press, 2002.
- Koestler, Arthur. *The Ghost in the Machine*. New York: Macmillan, 1967.
- Kottek, S., and F. Rosner. *Sci & Medicine: Maimonides on Medicine, Science and Philosophy*. New York: Jason Aronson, 1991.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1962.
- . *The Copernican Revolution*. Cambridge, MA: Harvard University Press, 1957.
- Lachterman, David R. *Ethics of Geometry*. London: Routledge, 1998.
- Laidler, Keith J. *To Light Such a Candle: Chapters in the History of Science and Technology*. Oxford: Oxford University Press, 1998.
- Lakatos, I. *The Methodology of Research Programmes*. Cambridge, UK: Cambridge University Press, 1978.

- Langford, Jerome J. *Galileo, Science, and the Church*. Ann Arbor: University of Michigan Press, 1998.
- Larson, Edward J. *Evolution*. New York: Modern Library, 2004.
- Lattis, James M. *Between Copernicus and Galileo*. Chicago: University of Chicago Press, 1994.
- Leakey, Richard. *The Origin of Humankind*. New York: Basic Books, 1994.
- LeDoux, Joseph. *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*. New York: Simon & Schuster, 1996.
- Leon, Steven J. *Linear Algebra with Applications*. Upper Saddle River, NJ: Prentice Hall, 1998.
- Leslie, John, ed. *Physical Cosmology and Philosophy*. New York: Macmillan, 1990.
- . *Universes*. London: Routledge, 1989.
- Lewis, David Kellogg. *On the Plurality of Worlds*. Oxford: Oxford University Press, 1986.
- Lewis, John. *Galileo in France: French Reactions to the Theories and Trial of Galileo*. New York: Peter Lang, 2006.
- Lindberg, David C. *The Beginnings of Western Science: The European Tradition in Philosophical, Religious, and Institutional Context, 600 B.C. to A.D. 1450*. Chicago: University of Chicago Press, 1992.
- . *Science in the Middle Ages*. Chicago: University of Chicago Press, 1978.
- Lindberg, David C., and Geoffrey Cantor. *Discourse of Light from the Middle Ages to the Enlightenment*. Papers read at a Clark Library Seminar, April 24, 1982. Los Angeles: University of California Press, 1985.
- Lindberg, David C., and Ronald L. Numbers, eds. *God and Nature: Historical Essays on the Encounter Between Christianity and Science*. Berkeley: University of California Press, 1986.
- Linde, Andrei. *Particle Physics and Inflationary Cosmology*. New York: Gordon and Breach, 1990.
- Lloyd, G. E. R. *Early Greek Science: Thales to Aristotle*. New York: W. W. Norton & Co., 1970.
- . *Greek Science after Aristotle*. London: Chatto & Windus, 1973.
- . *Magic, Reason and Experience: Studies in the Origins and Development of Greek Science*. Cambridge, UK: Cambridge University Press, 1979.
- Lockwood, M. *Minds, Brains and the Quantum*. London: Blackwell, 1989.
- Lovelock, J. *Gaia*. Oxford: Oxford University Press, 1979.
- Liotard, Jean-Francois. *The Postmodern Condition: A Report on Knowledge*. Translated by Geoff Bennington and Brian Massumi. Minneapolis: University of Minnesota Press, 1984.
- MacAdams, David L. *Sources of Color Science*. Cambridge, MA: MIT Press, 1970.
- Machamer, Peter, ed. *The Cambridge Companion to Galileo*. Cambridge, UK: Cambridge University Press, 1999.
- Magner, Lois N. *A History of the Life Sciences*. New York: Marcel Dekker, 1994.
- Magnus, David, Arthur Caplan, and Glenn McGee, eds. *Who Owns Life?* Amherst, NY: Prometheus Books, 2002.

- Maienschein, Jane. *Whose View of Life? Embryos, Cloning, and Stem Cells*. Cambridge, MA: Harvard University Press, 2003.
- Maienschein, Jane, and Michael Ruse, eds. *Biology and Ethics*. Cambridge, UK: Cambridge University Press, 1998.
- Makdisi, George. *The Rise of Colleges: Institutions of Learning and the West*. Edinburgh, UK: Edinburgh University Press, 1981.
- Manuel, Frank F. *The Religion of Isaac Newton*. Oxford: Oxford University Press, 1974.
- Marcorini, Edgardo, ed. *The History of Science and Technology: A Narrative Chronology. Vol 1 Prehistory–1900, Vol 2 1900–1970*. New York: Facts On File, 1988.
- Matt, Daniel Chanan. *God & the Big Bank: Discovering Harmony Between Science and Spirituality*. Woodstock, VT: Jewish Lights Publishing, 2001.
- Matthews, Clifford N., and Roy A. Varghese, eds. *Cosmic Beginnings and Human Ends: Where Science and Religion Meet*. Chicago: Open Court, 1995.
- McEvoy, J. J. *The Philosophy of Robert Grosseteste*. Oxford: Oxford University Press, 1982.
- McGrath, Alister E. *Dawkin's God: Genes, Memes, and the Meaning of Life*. Williston, VT: Blackwell Publishing, 2004.
- . *Science & Religion: An Introduction*. Oxford: Blackwell, 1999.
- McGuire, John E., and Martin Tamny, eds. *Certain Philosophical Questions: Newton's Trinity Notebook*. Cambridge, UK: Cambridge University Press, 1983.
- Medina, John J. *The Clock of Ages: Why We Age—How We Age—Winding Back the Clock*. Cambridge, UK: Cambridge University Press, 1998.
- Merchant, Carolyn. *The Death of Nature: Women, Ecology and the Scientific Revolution*. San Francisco: Harper & Row, 1989.
- Merwin, David. *Space and Time in Special Relativity*. New York: McGraw Hill, 1968.
- Methuen, Charlotte. *Kepler's Tübingen: Stimulus to a Theological Mathematics*. Brookfield, VT: Ashgate, 1998.
- Michod, Richard, and Bruce Levin, eds. *The Evolution of Sex: An Examination of Current Ideas*. Sunderland, MA: Sinauer, 1988.
- Mitcham, Carl. *Thinking Through Technology: The Path between Engineering and Philosophy*. Chicago: University of Chicago Press, 1994.
- Montagu, A. *Science and Creationism*. Oxford: Oxford University Press, 1984.
- Moore, James R. *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870–1900*. Cambridge, UK: Cambridge University Press, 1979.
- Morris, Richard. *The Big Questions: Probing the Promise and Limits of Science*. New York: Time Books, 2002.
- Mulhall, Douglas. *Our Molecular Future: How Nanotechnology, Robotics, Genetics, and Artificial Intelligence Will Transform Our World*. Amherst, NY: Prometheus Books, 2002.
- Murdock, John, William R. Newman, and Christoph Lüthy, eds. *Late Medieval and Early Modern Corpuscular Matter Theory*. Leiden, The Netherlands: Brill, 2001.

- Murphy, Nancey. *Reconciling Theology and Science: A Radical Reformation Perspective*. Kitchener, ON: Pandora, 1997.
- . *Theology in the Age of Scientific Reasoning*. Ithaca, NY: Cornell University Press, 1990.
- Nadler, Steven, ed. *Cambridge Companion to Malebranche*. Cambridge, UK: Cambridge University Press, 2000.
- Nagel, Ernest, and James R. Newman. *Gödel's Proof*. New York: New York University Press, 1958.
- Nagel, Thomas. *The View from Nowhere*. Oxford: Oxford University Press, 1986.
- Nakamura, Katsuhiko. *Quantum Chaos: A New Paradigm of Nonlinear Dynamics*. Cambridge, UK: Cambridge University Press, 1993.
- Nasr, Seyyed Hossein. *A History of Ancient Mathematical Astronomy*. New York: Springer, 1975.
- . *The Need for a Sacred Science*. Albany: State University of New York Press, 2001.
- . *Science and Civilization in Islam*. Cambridge, MA: Harvard University Press, 1968.
- Nelkin, Dorothy, and M. Susan Lindee. *The DNA Mystic: The Gene as Cultural Icon*. New York: W. H. Freeman, 1985.
- Newton, Roger G. *The Truth of Science: Physical Theories and Reality*. Cambridge, MA: Harvard University Press, 1997.
- Noble, David F. *The Religion of Technology: The Divinity of Man and the Spirit of Invention*. New York: Penguin Books, 1997.
- North, John. *Astronomy and Cosmology*. New York: Norton, 1995.
- Numbers, Ronald L. *Creation by Natural Law: Laplace's Nebular Hypothesis in American Thought*. Seattle: University of Washington Press, 1977.
- . *Planets, Stars, and Orbs: The Medieval Cosmos, 1200–1687*. Cambridge, UK: Cambridge University Press, 1994.
- Numbers, Ronald L., and Darrell W. Amundsen, eds. *Caring and Curing: Health and Medicine in the Western Religious Traditions*. New York: Macmillan, 1986.
- Nye, David E. *American Technological Sublime*. Cambridge MA: MIT Press, 1994.
- Oakley, Francis. *Omnipotence, Covenant, and Order: An Excursion in the History of Ideas from Abelard to Leibniz*. Ithaca, NY: Cornell University Press, 1984.
- Olby, R. C., G. N. Cantor, J. R. R. Christie, and M. J. S. Hodge, eds. *Routledge Companion to the History of Modern Science*. London: Routledge University Press, 1990.
- Olson, Richard G. *Science and Religion, 1450–1900: From Copernicus to Darwin*. Baltimore: Johns Hopkins University Press, 2004.
- Osler, Margaret J. *Divine Will and the Mechanical Philosophy: Gassendi and Descartes on Contingency and Necessity in the Created World*. Cambridge, UK: Cambridge University Press, 1994.
- Padgett, Alan G. *Science and the Study of God: A Mutuality Model for Theology and Science*. Grand Rapids, MI: Wm. B. Eerdmans, 2003.

- Pagels, Heinz R. *The Cosmic Code: Quantum Physics as the Language of Nature*. Toronto: Bantam, 1982.
- Pannenberg, Wolfhart. *Toward a Theology of Nature: Essays on Science and Faith*. Louisville, KY: Westminster, 1993.
- Park, David Allen. *The Fire within the Eye*. Princeton, NJ: Princeton University Press, 1997.
- Paul, Wolfgang, and Jörg Baschnagel. *Stochastic Processes: From Physics to Finance*. Berlin: Springer, 2000.
- Paulos, John A. *Innumeracy: Mathematical Illiteracy and its Consequences*. New York: Hill and Wang, 1988.
- Peacocke, Arthur. *Creation and the World of Science*. Oxford: Oxford University Press, 1979.
- . *God and the New Biology*. San Francisco: Harper, 1986.
- . *Intimations of Reality: Critical Reason in Science and Religion*. Notre Dame, IN: University of Notre Dame Press, 1984.
- . *Theology for a Scientific Age*. London: SCM Press, 1993.
- Peat, F. David. *Superstrings and the Search for the Theory of Everything*. Chicago: Contemporary Books, 1988.
- Pelikan, Jaroslav. *Christianity and Classic Culture: The Metamorphosis of Natural Theology in the Christian Encounter with Hellenism*. New Haven, CT: Yale University Press, 1981.
- Peltonen, Markku, ed. *Cambridge Companion to Bacon*. Cambridge, UK: Cambridge University Press, 1996.
- Penrose, Roger. *Shadows of the Mind: A Search for the Missing Science of Consciousness*. Oxford: Oxford University Press, 1994.
- Penrose, Roger. *The Emperor's New Mind Concerning Computers, Minds, and the Laws of Physics*. Oxford: Oxford University Press, 1989.
- Peters, Ted, ed. *Science & Theology: The New Consonance*. Boulder, CO: Westview Press, 1998.
- . *Genetics: Issues of Social Justice*. Cleveland: Pilgrim, 1998.
- . *Playing God? Genetic Determinism and Human Freedom*. London: Routledge, 1996.
- Pinker, Steven. *The Blank Slate: The Modern Denial of Human Nature*. New York: Penguin Books, 2002.
- Polkinghorne, John C. *Belief in God in an Age of Science*. New Haven, CT: Yale University Press, 1998.
- . *The Faith of a Physicist: Reflections of a Bottom-Up Thinker. Gifford Lectures for 1993–1994*. Princeton, NJ: Princeton University Press, 1994.
- . *The Particle Play*. New York: Freeman, 1979.
- . *The Quantum World*. Harlow: Longman, 1984.
- . *Reason and Reality: The Relationship between Science and Theology*. London: SPCK, 1991.
- . *Science and Creation*. London: SPCK, 1988.

- . *Science and Providence*. London: SPCK, 1989.
- . *Beyond Science: The Wilder Human Context*. Cambridge, MA: Harvard University Press, 1996.
- Pollack, Robert. *The Faith of Biology and the Biology of Faith*. New York: Columbia University Press, 2000.
- Polyani, M. *Personal Knowledge*. London: Routledge, 1962.
- Popkin, Richard H. *The History of Scepticism, From Erasmus to Spinoza*. Berkeley: University of California Press, 1979.
- Popper, Karl. *Objective Knowledge*. London: Oxford University Press, 1972.
- Powers, J. *Philosophy and the New Physics*. London: Methuen, 1982.
- Prigogine, I., and I. Stengers. *Order Out of Chaos*. London: Heinemann, 1984.
- Rae, Alastair I. M. *Quantum Physics: Illusion or Reality?* Cambridge, UK: Cambridge University Press, 1986.
- Rashed, Rushdi. *Encyclopaedia of the History of Arabaic Science*. London: Routledge, 1996.
- Ratzsch, Del. *Nature, Design, and Science: The Status of Design in Natural Science*. Albany: State University of New York Press, 2000.
- Raven, C. E. *Science and Religion*. Cambridge, UK: Cambridge University Press, 1953.
- Redhead, Michael. *Incompleteness, Nonlocality & Realism: A Prolegomenon to the Philosophy of Quantum Mechanics*. Oxford: Clarendon Press, 1987.
- Rees, Dai, and Steven Rose, eds. *The New Brain Sciences: Perils and Prospects*. Cambridge, UK: Cambridge University Press, 2004.
- Regis, Edward. *Who Got Einstein's Office*. Reading, MA: Adderly-Wesley, 1987.
- Reichenbach, Bruce R., and V. Elving Anderson. *On Behalf of God: A Christian Ethic for Biology*. Grand Rapids, MI: William B. Eerdmans, 1995.
- Reiss, Michael J., and Roger Straughan. *Improving Nature? The Science and Ethics of Engineering*. Cambridge, UK: Cambridge University Press, 1998.
- Rensberger, Boyce. *Life Itself: Exploring the Realm of the Living Cell*. New York: Oxford University Press, 1996.
- Richardson, W. Mark, and Wesley J. Wildman, eds. *Religion and Science: History, Method, Dialogue*. London: Routledge, 1996.
- Richeerson, Peter J., and Robert Boyd, eds. *Not by Genes Alone: How Culture Transformed Human Evolution*. Chicago: University of Chicago Press, 2005.
- Robinson, Abraham. *Nonstandard Analysis and Philosophy*. New Haven, CT: Yale University Press, 1979.
- Rolston III, Holmes, ed. *Biology, Ethics, and the Origins of Life*. London: Jones and Bartlett Publishers, 1995.
- . *Science & Religion: A Critical Survey*. Philadelphia: Templeton Foundation Press, 2006.
- . *Philosophy Gone Wild*. Buffalo, NY: Prometheus Books, 1989.
- Ronchi, Vasco. *The Nature of Light*. Translated by V. Barocas. Cambridge, MA: Harvard University Press, 1970.

- Rose, Steven. *The Future of the Brain: The Promise and Perils of Tomorrow's Neuroscience*. Oxford: Oxford University Press, 2005.
- Rothman, Barbara Katz. *Genetic Maps and Human Imaginations: The Limits of Science in Understanding Who We Are*. New York: W. W. Norton & Co., 1998.
- Rousseau, G. S., and Roy Porter, eds. *The Ferment of Knowledge: Studies in the Historiography of Eighteenth Century Science*. Cambridge, UK: Cambridge University Press, 1980.
- Rucker, Rudy. *Infinity and the Mind*. New York: Bantam Books, 1982.
- Ruse, M., and E. O. Wilson. *Darwinian Paradigm: Essays on Its History, Philosophy and Religious Implications*. London: Routledge, 1989.
- . *Philosophy of Biology Today*. Albany: State University of New York Press, 1988.
- Ruse, Michael, ed. *Philosophy of Biology*. Amherst, NY: Prometheus, 1998.
- . *The Darwinian Revolution*. Chicago: University of Chicago Press, 1979.
- . *Mystery of Mysteries: Is Evolution a Social Construction?* Cambridge, MA: Harvard University Press, 1999.
- . *Taking Darwin Seriously*. Oxford: Oxford University Press, 1986.
- . *Evolutionary Naturalism*. London: Routledge, 1992.
- Russell, C. A. *Science and Social Change 1700–1900*. London: Macmillan, 1983.
- Russell, Robert J., Nancey Murphy, and Arthur R. Peacocke, eds. *Chaos and Complexity: Scientific Perspectives on Divine Action*. Vatican City State: Vatican Observatory Publication, and Berkeley: The Center for Theology and the Natural Sciences, 1995.
- Russell, Robert J., Nancey Murphy, Theo C. Meyering, and Michael A. Arbib, eds. *Neuroscience and the Person: Scientific Perspectives on Divine Action*. Rome: Vatican Observatory Foundation, 1999. Distributed by the University of Notre Dame Press.
- Russell, Robert John, Nancey Murphy, and C. J. Isham, eds. *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*. Berkeley, CA: Center for Theology and the Natural Sciences, 1996.
- Sabra, A. I. *Theories of Light: From Descartes to Newton*. Cambridge: Cambridge University Press, 1981.
- Saliba, George. *A History of Arabic Astronomy*. New York: New York University Press, 1994.
- Sayre, K. M., and F. J. Crossen, eds. *The Modeling of Mind*. Notre Dame, IN: University of Notre Dame Press, 1963.
- Scheffler, Israel. *Symbolic Worlds: Art, Science, Language, Ritual*. New York: Cambridge University Press, 1997.
- Schofield, Robert E. *Mechanism and Materialism: British Natural Philosophy in an Age of Reason*. Princeton, NJ: Princeton University Press, 1970.
- Schuster, John A., and Richard R. Yeo, eds. *Politics and Rhetoric of Scientific Method*. Dordrecht, The Netherlands: Martinus Nijhoff, 1986.
- Schwenk, Theodor. *Sensitive Chaos: The Creation of Flowing Forms in Water and Air*. New York: Schocken, 1976.



- Searle, John. *Minds, Brains and Science*. London: BBC Publications, 1984.
- . *The Rediscovery of the Mind*. Boston: MIT Press, 1992.
- Sears, F. W., M. W. Zemansky, and H. D. Young. *University Physics*. 7 ed. Reading, MA: Addison-Wesley Publishing Co., 1987.
- Sepper, Dennis L. *Goethe contra Newton: Polemics and the Project for a New Science of Color*. Cambridge, UK: Cambridge University Press, 1988.
- . *Newton's Optical Writings: A Guided Study (Masterworks of Discovery: Guided Studies of Great Texts in Science)*. New Brunswick, NJ: Rutgers University Press, ca. 1994.
- Shapiro, Alan E. *Fits, Passions, and Paroxysms: Physics, Method, and Chemistry and Newton's Theories of Colored Bodies and Fits of Easy Reflection*. Cambridge, UK: Cambridge University Press, 1993.
- Sharp, D. E. *Franciscan Philosophy at Oxford in the Thirteenth Century*. Oxford: Clarendon Press, 1930.
- Sharpe, Kevin, and Rebecca Bryant. *Has Science Displaced the Soul? Debating Love and Happiness*. Lanham, MD: Rowman & Littlefield, 2005.
- Shinn, Roger Lincoln. *The New Genetics: Challenges for Science, Faith, and Politics*. Wakefield, RI: Moyer Bel, 1996.
- Shipman, Harry L. *Black Holes, Quasars, and the Universe*. Boston: Houghton Mifflin Co., 1980.
- Silvers, Robert B. *Hidden Histories of Science*. London: Granta Books, 1995.
- Simmons, G. F. *Introduction to Topology and Modern Analysis*. New York: McGraw Hill, 1963.
- Smith, A. Mark. *Descartes's Theory of Light and Refraction: A Discourse On Method*. Philadelphia: American Philosophical Society, 1987.
- . *Ptolemy and the Foundations of Ancient Mathematical Optics: A Source Based Guided Study*. Philadelphia: American Philosophical Society, 1999.
- . *Ptolemy's Theory of Visual Perception : An English Translation of the Optics With Introduction and Commentary*. Philadelphia: American Philosophical Society, 1996.
- Smith, Brian Cantwell. *On the Origin of Objects*. Cambridge, MA: MIT Press, 1996.
- Smith, David Eugene. *History of Mathematics*. New York: Dover, 1952.
- Sobel, Dava. *Galileo's Daughter*. New York: Walker and Co., 1999.
- Sorabji, Richard, ed. *Matter, Space, and Motion: Theories in Antiquity and their Sequel*. Ithaca, NY: Cornell University Press, 1987.
- , ed. *Philoponus and the Rejection of Aristotelian Science*. London: Duckworth, 1987.
- Spero, Moshe Halevi. *Religious Objects as Psychological Structures: A Critical Interpretation of Object Relations Theory in Psychotherapy and Judaism*. Chicago: University of Chicago Press, 1992.
- Stahl, Willim H. *Roman Science: Origins, Development and Influence in the Later Middle Ages*. Madison: University of Wisconsin Press, 1962.
- Stanley, Steven. *Macroevolution: Pattern and Process*. San Francisco: Freeman, 1979.
- Stenmark, Mikael. *Rationality in Science, Religion, and Everyday Life: A Critical Evaluation of Four Models of Rationality*. Notre Dame, IN: Notre Dame University Press, 1995.

- Stewart, Ian. *Does God Play Dice: The New Mathematics of Chaos*. London: Penguin Books, 1989.
- Stock, Gregory. *Redesigning Humans: Choosing Genes, Changing our Future*. New York: Houghton Mifflin Co., 2003.
- Strauss, Claude Levi. *Structural Anthropology*. Garden City, NY: Doubleday and Co., 1967.
- Swimme, Brian. *The Universe is a Green Dragon: A Cosmic Creation Story*. Santa Fe, NM: Bear and Company, 1984.
- Szulakowska, Urszula, ed. *The Alchemy of Light: Geometry and Optics in Late Renaissance Alchemical Illustration (Symbola Et Emblemata. Studies in Renaissance and Baroque Symbolism)*. Leiden, The Netherlands: Brill, 2000.
- Tattersall, Ian. *The Fossil Trail: How We Know What We Think We Know About Human Evolution*. Oxford: Oxford University Press, 1995.
- Teilhard de Chardin, Pierre. *Activation of Energy*. New York: Harcourt Brace Jovanich, 1970.
- . *The Phenomenon of Man*. London: Collins, 1958.
- . *Toward the Future*. New York: Harcourt Brace Jovanich, 1975.
- Templeton, John M. *Evidence of Purpose: Scientists Discover Creation*. New York: Continuum, 1994.
- Thackray, Arnold. *Atoms and Powers: An Essay on Newtonian Matter-Theory and the Development of Chemistry*. Cambridge, UK: Cambridge University Press, 1970.
- Thomas, Keith. *Religion and the Decline of Magic: Studies in Popular Beliefs in Sixteenth and Seventeenth Century England*. New York: Oxford University Press, 1997.
- Thomas, P. F., C. F. Chyba, and C. P. McKay, eds. *Comets and the Origin and Evolution of Life*. New York: Springer, 1997.
- Thompson, J. M. J., and H. B. Stewart. *Nonlinear Dynamics and Chaos*. New York: John Wiley & Sons, 1986.
- Thorndike, L. *A History of Magic and Experimental Science*. New York: Columbia University Press, 1923.
- Tipler, F. J., and J. D. Barrow. *Anthropic Cosmological Principle*. New York: Oxford University Press, 1986.
- Tirosh-Samuelson, Hava. *Judaism and Ecology: Created World and Revealed Word*. Cambridge, MA: Harvard University Press, 2002.
- Toulmin, Stephen. *Return to Reason*. Cambridge, MA: Harvard University Press, 2001.
- . *The Philosophy of Science: An Introduction*. London: Hutchinson's University Library, 1955.
- Trefil, James S. *From Atoms to Quarks: An Introduction to the Strange World of Particle Physics*. New York: Charles Scribner's Sons, 1980.
- Turnbull, H. W., ed. *The Correspondence of Isaac Newton*. Cambridge, UK: Cambridge University Press, 1959.
- Vailati, Ezio. *Leibniz and Clarke: A Study of Their Correspondence*. Oxford: Oxford University Press, 1997.

- van der Waerden, B. L. *Science Awakening: Egyptian, Babylonian and Greek Mathematics*. Translated by Arnold Dresden. New York: John Wiley, 1963.
- Vickers, Brian, ed. *Occult and Scientific Mentalities in the Renaissance*. Cambridge, UK: Cambridge University Press, 1986.
- von Neumann, J. *Mathematical Foundations of Quantum Mechanics*. Princeton, NJ: Princeton University Press, 1955.
- Vroman, Akiva Jaap. *On God, Space & Time*. New Brunswick, NJ: Transaction Publishers, 1998.
- Wallace, William A., ed. *Reinterpreting Galileo*. Princeton, NJ: Princeton University Press, 1984.
- Ward, Keith. *God, Chance and Necessity*. Oxford: Oneword, 1996.
- Waskow, Arthur. *Torah of the Earth: Exploring 4,000 Years of Ecology in Jewish Thought*. Woodstock, VT: Jewish Lights Publishing, 2000.
- Waters, Brent. *From Human to Posthuman: Christian Theology and Technology in a Post-modern World*. Burlington, VT: Ashgate Publishing, 2005.
- Waters, Brent, and Ronald Cole-Turner, eds. *God and the Embryo: Religious Voices on Stem Cells and Cloning*. Washington, DC: Georgetown University Press, 2003.
- Watson, James D. *The Double Helix: A Personal Account of the Discovery of the Structure of DNA*. New York: W.W. Norton & Co., 1980.
- Weinberg, Steven. *The First Three Minutes*. New York: Bantam, 1977.
- Weiss, Richard J. *Brief History of Light and Those That Lit the Way (Series in Popular Science, Vol. 1)*. River Edge, NJ: World Science Publication, 1996.
- Wertheim, Margaret. *Pythagoras' Trousers: God, Physics, and the Gender Wars*. New York: Random House, 1995.
- Westfall, Richard S. *Essays on the Trail of Galileo*. Notre Dame, IN: University of Notre Dame Press, 1989.
- . *Force in Newton's Physics: The Science of Dynamics in the Seventeenth Century*. New York: MacDonald/American Elsevier, 1971.
- . *Never at Rest: A Biography of Isaac Newton*. Cambridge, UK: Cambridge University Press, 1980.
- . *Science and Religion in Seventeenth-Century England*. Ann Arbor: University of Michigan Press, 1973.
- Westman, Robert S., ed. *The Copernican Achievement*. Berkeley: University of California Press, 1975.
- Westman, Robert S., and J. E. McGuire. *Hermeticism and the Scientific Revolution*. Los Angeles: University of California Press, 1977.
- Wheeler, J. A., and W. N. Zurek, eds. *Quantum Theory and Measurements*. Princeton, NJ: Princeton University Press, 1983.
- White, Michael. *Isaac Newton: The Last Sorcerer*. New York: Basic Books, 1997.
- Wiener, Norbert. *God & Golem, Inc.* Cambridge, MA: MIT Press, 1964.
- Williams, George C. *Sex and Evolution*. Princeton, NJ: Princeton University Press, 1975.
- Wilson, Edward O. *Consilience: The Unity of Knowledge*. New York: Vintage Books, 1999.

- . *The Diversity of Life*. Cambridge, MA: Harvard University Press, 1992.
- . *On Human Nature*. Oxford: Oxford University Press, 1996.
- . *Sociobiology: The New Synthesis*. Cambridge, MA: Harvard University Press, 1975.
- Winship, Michael P. *Seers of God: Puritan Providentialism in the Restoration and Early Enlightenment*. Baltimore: Johns Hopkins University Press, 1996.
- Wiseman, James A. O. S. B. *Theology and Modern Science: Quest for Coherence*. London: Continuum, 2002.
- Wojcik, Jan W. *Robert Boyle and the Limits of Reason*. Cambridge, UK: Cambridge University Press, 1997.
- Wolfson, Richard, and Jay M. Pasachoff. *Physics: With Modern Physics for Scientists and Engineers*. 3rd. ed. Reading, MA: Addison-Wesley, 1999.
- Wood, Paul, ed. *Science and Dissent in England, 1688–1945*. Burlington, VT: Ashgate Publishing Limited, 2003.
- Wrangham, Richard, and Dale Peterson. *Demonic Males: Apes and the Origins of Human Violence*. Boston: Houghton Mifflin, 1996.
- Wright, Robert. *The Moral Animal: Why We Are the Way We Are: The New Science of Evolutionary Psychology*. New York: Pantheon, 1994.
- Yates, Frances A. *Giordano Bruno and the Hermetic Tradition*. London: Routledge & Kegan Paul, 1964.
- Yeo, Richard. *Defining Science: William Whewell, Natural Knowledge, and Public Debate in Early Victorian Britain*. Cambridge, MA: Harvard University Press, 1993.
- Yolton, John W. *Thinking Matter: Materialism in Eighteenth-Century Britain*. Oxford: Basil Blackwell, 1983.
- Zajonc, Arthur. *Catching the Light: The Entwined History of Light and Mind*. New York: Bantam Books, 1993.
- Zimmer, Carl. *Evolution: The Triumph of an Idea*. New York: HarperCollins Books, 2001.





# Index

- Aaron, 97, 220  
Abiathar, 220  
abortions, 198  
Abraham, 91, 129, 130, 186  
Abrahamic religions, 55, 67n32, 137, 146, 154n8  
accidents, 30, 173, 233, 237n1  
active, passive and, 100, 200, 215  
adaptation, 200  
age, vision and, 62, 66n22  
agnosticism, theological, 39, 41  
alchemy, 26n1  
algebra, 21–22  
Alhazen, 48  
ambiguous language, 32  
Americas, history of, 90–91  
amoraim, 88  
anatomism, 47  
ancestors, 91, 129, 220  
ancient Near East, 85, 86, 96–97, 113, 114  
anencephaly, 198  
anesthesia, 72, 81n3  
angelology, 20, 27n4  
angels, 16, 21, 25, 181  
animal(s): cruelty to, 199, 208n31; soul, 76–77  
anthropic coincidences, 149, 157n38  
anti-Semitism, 75  
apes/primates, 163, 201, 210n54  
Aristotle, 10–11, 13n10, 65n3, 235; on ends or purpose, 24; on form, 48, 172; on four causes, 172; on linguistics, 35, 43n5; on logic, 30, 37, 236; on physics, 54–55, 93–94, 145, 172–73, 191; on souls, 17, 132–34; on time, 22; on vision, 47–48  
Ashkenazi Jews, 56, 75, 89, 187  
asterisms, 27n5  
astrology, 21, 25, 27n7  
astronomy, 17–21, 25, 27n5, 29, 88, 114, 124  
astrophysics, 18, 20, 26, 149–50, 159  
asymptotes, 172; morality and, 175–80  
atheism, 20, 73, 147, 149, 158n40  
athletes, 181  
atomism, 11, 22, 173; on vision, 47–48  
atoms, 121, 149, 154n3, 173  
automobile, 183  
Averroes, 88

- Baal Shem Tov, Israel, 77  
 Babylonia, 220–21  
 Babylonian Talmud, 187, 212  
 Bateson, William, 53  
 behaviorism, 46  
 Behe, Michael, 68n41  
*Being and Nothingness* (Sartre), 148  
 Bible, 8; angels in, 21; history and, 85, 86, 91–93, 102n5, 109; meaning of, 169; as pious fraud, 217–21; as pious fraud, reflections on charge of, 221–27; wisdom and, 113, 114–19, 213. *See also* Torah  
 Biblical Judaism, 211–12, 213  
 Big Bang, 150, 156n20  
 bi-pedalism, 202, 210n54  
 birds, 129, 130, 152, 154n10  
 body: mind and, 174; soul separation from, 169, 186. *See also* mind-body dualism  
*The Book of Knowledge* (Maimonides), 190, 209n36, 216  
 books, external and internal, 98  
 bottom up causation, 57  
 Brahe, Tycho, 88  
 brain: consciousness and, 80–81, 83n19; death, 196–99; mind and, 46, 58, 109; size of, 201–2; vision and, 47, 48–50, 56, 66n21, 67n33, 109  
 Bronze Age, 219–20  
 Buber, Martin, 42, 101  
 Buddhism, 56, 88, 189, 208n23, 209n43  
  
 Cady, Linell, vii, viii  
 Cain and Abel, 194  
 calculus, 18, 26n1  
 Canaanites, 219  
 Cantwell-Smith, Brian, 132  
 capitalism, 79, 81, 202–5  
 carbon-based life, 141, 156n24, 157n39, 162  
 Cartesian dualism, 168–69  
 Cartesianism, 11, 170, 214, 235  
  
 catalysis, 200  
 Catholicism, 7, 10, 173; history and, 86–87; on life, 79, 195  
 causal principles, 17  
 causes: Aristotle on four, 172; effect and, 25; efficient, 17, 37–38, 54; final, 17, 24, 25, 38, 54; formal, 37–38, 172; material, 37–38, 172; universals and, 30  
 celestial kingdom, 72–73  
 celestial objects, realm of, 16–17  
 cells, 59, 68n39, 200  
 Chabad, 138, 142, 156n22, 170, 187, 188  
 chaos theory, 18  
 children, 184  
 chosenness, collective, 73, 109  
 Christians, 10, 11, 41; books against, 212; on divine providence, 59; history and, 85, 86–89, 92; on Pentateuch, 187; on vision, 47, 65n10; wars and, 214  
 classical Jewish philosophy, 3, 12n1, 40–41, 215  
 classical rabbinic Judaism, 12n6, 85–87, 212  
 classical science, 13n10  
 classical thought, 99–100, 103n17  
 Cohen, Hermann, 41–43, 89, 148, 168  
 color, 65n11  
 computers, 64, 132; game model, Dawkin's, 206n4; personalities and collected memories onto, 68n38  
 conception, procreation and, 195–96  
 consciousness, 135–36; brain and, 80–81, 83n19  
 consequent nature, 136  
 conservatives, 91–93, 142, 187–88, 224  
 constellations, 16, 21  
 constitutional theocratic oligarchy, 221  
 contingent existence, 37  
 Copernicus, 88  
 cosmogony, 19, 29, 54

- cosmological constant, 150  
 cosmology, 18–19, 26n3, 54, 114, 137  
 creation, 113–54; belief in, 145–51;  
   days and, 128–30, 151–52, 185;  
   division of humanity after, 129; earth  
   in, 128–30, 151–52, 154n10, 186;  
   God and, 15–16, 19–26, 27n13,  
   36–38, 109, 127, 128–30, 137,  
   141–42, 147, 150–52, 154, 164–65,  
   179, 185, 194, 233; Maimonides on,  
   69n41, 88; as myth, 129, 155n11;  
   out of nothing, 23, 27n13; place  
   identity, 130, 155n12; purpose for,  
   162, 207n4; revelation, redemption  
   and, 107, 111; sky in, 128–30, 152;  
   stages of, 128–30, 151–52, 154n10;  
   stars in, 129, 130, 154n10; ten  
   critical issues for study of, 113–14;  
   views on, 69n41; water in, 128–30  
 Crick, Francis, 101  
 critical realism, 56, 166  
 culture: changes in, 211, 212; religion  
   and, 5, 204
- darkness, light and, 28n13, 47, 128,  
 140, 152–53, 171, 177, 178–79, 199  
 DARPA (Defense Advanced Research  
 Projects Agency), 208n18  
 Darwin, Charles, 11, 66n23; on natural  
 selection, 50–51, 55, 59, 206n3; on  
 survival of the fittest, 51–52, 66n25,  
 206n3. *See also* neo-Darwinism  
 Darwinians, 53, 61, 66n23, 164  
 David, 93, 96, 103n16, 185, 219, 220,  
 227  
 Davidson, Herbert, 157n36  
 Dawkins, Richard, 161, 162, 206nn3–4  
 days, creation and, 128–30, 151–52,  
 185  
 death, 79–81; brain, 196–99; of Jewish  
 philosophy, 3, 4–6, 11, 24–25, 26,  
 55, 63, 65, 91, 97, 108, 232; life and,  
 60–63, 71–72, 175, 192–200  
 declarative sentences, 30–31, 147, 148  
 Democritus, 47  
 Descartes, René, 11, 26n1, 89, 170  
 determinism, 122, 124  
 Deuteronomy, 217–18  
 de Vries, Hugo, 53  
 diabetes, 74, 205–6  
 dimensions, objects occupying, 21–22  
 Dirac constant, 121  
 divine attributes, negative, 94  
 divine intervention, 67n26, 160  
 divine providence, 20–21, 59, 124–27  
 divine sanctification, 73  
 divine souls, 64, 76, 156n22  
 divine will, 69n41, 74, 167, 170, 176,  
 192  
 DNA (deoxyribonucleic acid), 59, 78,  
 138, 164  
 “D” source, 220, 221
- early rabbinic Judaism, 12n5  
 earth, 16, 19, 34, 43n4; in creation,  
   128–30, 151–52, 154n10, 186; living  
   and nonliving substances of, 16–17;  
   sun and, 35, 43n5  
 ectogenesis, 196  
 efficient causes, 17, 37–38, 54  
 electric field, 49, 66n19  
 Elijah, song about coming of, 208n27  
 emergence, principle of, 67n26  
 emotions, 29; reason and, 97, 99–102  
 empiricism: beyond, 55–56; religion  
   and, 55–56; transcending, 165–68  
 end of days, 58, 61; light and, 140;  
   revelation, redemption and, 46;  
   views on, 140–41, 153–54, 163,  
 178–79  
 energy, 57; light, motion and, 49; mass,  
   velocity and, 27n13, 48–49, 149;  
   soul as, 114, 131  
 enlightenment, 46, 65n11, 100, 203,  
 235  
 entities, 63–64, 132



- Epicureans, 173, 215  
 Epicurus, 47  
 epistemic value, 147  
 epistemology, 29, 43n1  
 eschatology, 118, 177  
 “E” source, 220, 221  
 essences, 30, 38, 125  
 essential nature, 125, 154n6  
 ether, 22  
 ethics, 40–42, 69n42; value and disvalue judgments and, 178  
*The Ethics* (Spinoza), 171  
 Euclid, 65n5, 65n10  
 eugenics, 61–62, 77, 82n12, 82n15  
 Europe and non-Europe, history of, 89–90  
 evil, good and, 24, 73, 140, 143, 183  
 evolution, 50–55, 202, 206n3, 233, 234; physics and, 226; of vision, 50–55. *See also* Darwin, Charles; Darwinians; mutationism; natural selection; neo-Darwinism; survival of the fittest  
 evolutionary psychology, 46, 50–52, 55–56, 60, 65n1, 66n23, 77  
 existence, 197; contingent, 37; of God, 25, 147–48, 150–51; necessary, 36; of universe, 114, 141  
 external predication, 35  
 extramission, 47, 65n10  
 eyeglasses, 62  
 eyes, 47–50, 53–54, 56, 65n11, 66n21–22  
 Ezra, 221  
  
 faith, 176, 177, 236  
 Falk, Raphael, 75  
 family, 163, 183–84  
 Feldman, David, 71  
 fictional chain of being, 64  
 final causes, 17, 24, 25, 38, 54  
 fine structure constant, 149  
 fire, 47, 74, 140, 152  
 fish, 129, 152, 154n10  
 form(s), 24; Aristotle on, 48, 172; word, 32  
 formal causes, 37–38, 172  
 formal principle, 17  
 free will, 122, 124  
 Freud, Sigmund, 45–46, 81n3  
 Fukuyama, Francis, 145, 182  
  
 galaxies, 21, 25, 43, 137, 141, 156n20  
 Galen, 47, 65n4, 82n10  
 Galileo, 11  
*galut* (the exile), 7, 12n7, 212  
 Gans, David, 88  
 Gaon of Sura, 212  
 Garden of Eden, 155n12, 186  
 Gassendi, Pierre, 11  
 Geddes, Norman Bel, 204  
 Genesis, 27, 40, 139, 194  
 genetic disorders, 75, 81n6  
 genetic engineering, 61–62, 182  
 genetics, 50–53, 59, 66n25, 68n40, 139; human nature and, 61–63, 182; Jewish race and, 75–76. *See also* Mendel, Gregor  
 geometry, 21–22  
 Gersonides, 15, 88, 101; on God, 125–26, 179; *Wars of the Lord*, 25, 157n34  
 Gerson, Levi Ben, 150, 157n34. *See also* Gersonides  
 God: choice to become human, 138, 156n21; communication from, 166; creation and, 15–16, 19–26, 27n13, 36–38, 109, 127, 128–30, 137, 141–42, 147, 150–52, 154, 164–65, 179, 185, 194, 233; existence of, 25, 147–48, 150–51; experiences of, 174–75; Gersonides on, 125–26, 179; goal of living to serve, 191; humans becoming like, 60–61; life, death and, 60–61; love and fear of, 217; monism and, 34–35; nature of, 127,

- 140, 151; oneness with, 141; physicality of, 128–31; reality of, 159, 165; redemption and, 15, 179; relationship with, 91, 108, 110, 116, 143–45, 159, 177, 189, 213, 222; reveals himself to humanity, 15; Rosenzweig on, 135, 140, 155n17; Spinoza on, 35, 166; statements about, 36–42, 66n20; three lines of thinking about, 177–78; time, space and, 114, 128, 139, 167, 179–80; Torah on, 34, 37, 40–42; will of, 26n1, 40–41, 60, 72, 119, 135, 164, 192, 222; word of, 231–32, 236
- gods, 181
- God talk, 36–42, 157n36
- Golden Age, 219
- good, evil and, 24, 73, 140, 143, 183
- good life, 72–73
- Gould, Stephen Jay, 201–2
- Graetz, Heinrich, 86
- Greco-Roman civilization, 85–87, 169, 173, 227n1
- Greece, 7
- GRIN (genetics, robotics, information sciences, nanotechnology), 144, 156n28, 182, 184, 186
- The Guide of the Perplexed* (Maimonides), 25, 37–42, 157n36, 180
- Halachah (way), 64–65, 169–70, 185–92, 218, 234
- Halevi, Judah, 76, 77, 166
- Ha-Nasi, Judah, 88, 119
- happiness, 29, 72, 126, 177, 191, 209n43, 213, 224; *Mishneh Torah* and, 215, 217
- Hasidism, 207n8; Chabad, 170, 187; on souls, 77, 82n11
- heavens, 18, 20, 43n4, 181; spirituality and, 17
- Hebrews, 129, 211, 219
- Hebrew scriptures: as authoritative, 218, 225–27; confidence/trust in, 127, 154n7, 193; as fraud, 223; history and, 86–87, 91–96, 98, 102n4, 223–25; how to read, 217–27; interpretation/meaning of, 8–10, 60, 69n41, 107, 119, 124, 128, 154n9, 168, 169, 172, 176, 187, 193; on Israel, 218–21; as pious, 222–23; revelation and, 128, 134, 151; on soul, 133. *See also* Torah
- hedonism, 72–73, 191
- Hegel, Georg Wilhelm Friedrich, 153, 170
- Heilsgeschichte* (salvation story), 224
- Hellenistic period, 7
- Heraclitus, 131, 191
- Hero of Alexandria, 65n5
- Hezekiah, 220, 221
- history, 3, 5–6, 85–102, 108, 175; of Americas, 90–91; ancient, medieval and modern, 86–89; Bible and, 85, 86, 91–93, 102n5, 109; Catholicism and, 86–87; Christians and, 85, 86–89, 92; of Europe and non-Europe, 89–90; Hebrew scriptures and, 86–87, 91–96, 98, 102n4, 223–25; intellectual, viii, 6, 12n2; of Israel, 85, 86, 94–96, 103n16, 110, 185–86, 211–12; of modern Jewish philosophy, distinctive, 6–10; Muslims and, 88, 90; myth *v.*, 95, 129, 152, 155n11, 220, 223; Protestants and, 86; rewriting, 211–14; of vision, 47–48; Zionism and, 85, 87, 91–92, 98–99
- The History of the Inductive Sciences* (Whewell), 165
- History of the Jews* (Graetz), 86
- Hitler, Adolph, 180, 203
- holocaust, 73–74
- homonids, 184, 202

- Homo sapiens, 75–76, 139, 144–45, 163–64, 182, 184, 198, 202, 228nn8–9
- Hughes, James, 145
- human(s), 78–79, 83n17, 233; becoming like God, 60–61; distinguished from other species, 58, 74, 198–99, 202; economics of living, dying and being, 202–6; first, 130, 194; God’s choice to become, 138, 156n21; other, distinctions between Jews and, 176–77; Rosenzweig on, 135, 156n19; transcending, 141–45
- humanity: beyond, 63–65; division of, after creation, 129; God reveals himself to, 15; life and, 199–202; transcending, 180–85
- human nature, 45–46, 55, 58–59, 66n23; factors in, 142–43, 156n25; genetics and, 61–63, 182
- Hyksos, 219
- I and Thou* (Buber), 42
- idealism, 166, 170, 174, 207n8
- ideas, 30–31, 43n1; Plato on, 48; referents of, 30–31; true or false, 30–32
- identity, Jewish, 89, 99, 109
- idolatry, 177–78, 180, 217
- Industrial Revolution, 208n22
- inertia, law of, 28n15, 114, 145–46
- infinity, 177
- information, knowledge *v.*, 116–19
- intellect, 29–30, 54; humans distinguished from other species by, 58, 74
- intellectual history, viii, 6, 12n2
- intelligent design, 54, 68n41, 162, 163, 165
- intelligentsia, 148–49
- internal predication, 35, 36
- intromission, 47
- Iron Age, 219–20
- irritability, 200
- Isaac, 91, 130
- Isaiah, 140, 153
- Ishmaelites, 129
- Israel, 7, 40, 75; exodus from Egypt, 219; Hebrew scriptures on, 218–21; history of, 85, 86, 94–96, 103n16, 110, 185–86, 211–12; moral laws revealed to, 126, 189
- Israelites, 40, 129, 211, 219–21, 229n13
- Jacob, 91, 185
- Jacobovitz, Emanuel, 71
- James, William, 171
- Jeremiah, 153, 220, 221
- Jerusalem, 96, 159, 160, 212, 216, 220, 227, 228n3
- Jewish history. *See* history
- Jewish identity, 89, 99, 109
- Jewish laws, 188–91
- Jewish nation, as subservient, 6–7
- Jewish people, definition of themselves, 213
- Jewish philosophy: changes in, 3; constructive, 4; death of, 3, 4–6, 11, 24–25, 26, 55, 63, 65, 91, 97, 108, 232; intellectual goal of, 4; issues for, 55–65; medieval, 35–36, 88–89, 93, 231–32; rebirth of, 3, 6
- Jewish philosophy, classical, 3, 12n1, 215; objections to Maimonides’ argument in, 40–41
- Jewish philosophy, modern, 3, 12n1, 86, 102n6; definition of, 4–6; distinctive history of, 6–10; distinctive science of, 10–12; failure of, 11–12, 18, 24, 102; negative theology in, 41–42
- Jewish race, 71–72, 75–77, 109
- Jewish thought, 86, 102n6
- Jonas, Hans, 57
- Josephus, 209n44
- Josiah, 218, 219, 220, 221

- “J” source, 220, 221
- JuBues* (Jew who is a Buddhist), 182
- Judah, kingdom of, 218–21
- Judaism: Biblical, 211–12, 213; classical, 212; classical rabbinic, 12n6, 85–87; early rabbinic, 12n5; liberal, 85, 91–93, 98, 100–101, 113, 120–24, 185–92, 206n2, 235; modern, 212; as philosophy, 214–17; Reform, 142, 169, 182, 187, 209n43; root principles of, 124; science and, 71, 81n1, 83n16, 107–8, 165, 168–70, 176, 204, 234–37; traditional, 72, 73, 79, 82n15, 98–99, 101–2, 111, 120, 124, 162, 169, 185, 197, 206n2, 208n27, 212
- Judeans, 211, 221
- Kabbalists, 64, 88, 100–101, 153, 166, 170
- Kant, Immanuel, 41, 148, 180, 235
- Kaplan, Mordecai, 166
- Karo, Joseph, 119, 187, 188, 208n33
- Kepler, Johannes, 47–48, 88
- Al-Kindi, 65n10
- Kingdom of God, 167, 178, 199, 205, 227
- Kingdom of Heaven, 153–54
- Kitab al-Manadhir* (*Book of Optics*) (Alhazen), 48
- knowing, 29
- knowledge, 116–19, 193, 213–14
- kosher, keeping, 9–10
- Kurzweil, Ray, 145, 181–82, 208n21, 209n43
- language: ambiguous, 32; ideal, 31–32; logic and, 30–31, 35–36, 41–43; nature of, 30–31; scientific, 30–31. *See also* linguistics
- laws: Jewish, 188–91; moral, 17, 126, 189–90, 215–17, 227n2, 228nn3–5; of motion, 17, 25, 27n13, 28n15, 33; of nature, 17, 19–20, 125–26, 192; perfection and, 126, 189, 216; of relations between things, 33; of virtues, 190
- Leah, 129
- Leakey, Richard, 210n54
- Leibniz, Gottfried, 18, 22, 26n1, 100
- liberal Judaism, 85, 91–93, 98, 100–101, 120–24, 235; traditional *v.*, 120, 124, 185, 206n2; transcending, 185–92; value of individuals and, 113, 120–24
- life, 78–79; carbon-based, 141, 156n24, 157n39, 162; Catholicism on, 79, 195; death and, 60–63, 71–72, 175, 192–200; humanity and, 199–202; non-life *v.*, 68n39, 197, 199–201
- light: darkness and, 28n13, 47, 128, 140, 152–53, 171, 177, 178–79, 199; end of days and, 140; energy, motion and, 49; vision and, 46–49, 65n11, 108
- limit principles, 146
- linguistics, 29, 33, 42, 43n2, 234; Aristotle on, 35, 43n5
- liturgy, 56
- Locke, John, 202
- logic: Aristotle on, 30, 37, 236; language and, 30–31, 35–36, 41–43; semantics and, 17, 37
- Lowy, Raymond, 204
- Lucretius, 47
- Maimonides, 15; argument, objections to, 40–41; *The Book of Knowledge*, 190, 209n36, 216; on classical thought, 100; on creation, 69n41, 88; *The Guide of the Perplexed*, 25, 37–42, 157n36, 180; *Mishneh Torah*, 23, 82n15, 186–91, 209n36, 215–17, 227n2, 228nn3–5, 236; on morality, 138; on negative divine attributes, 94; SEFER MADA, 115, 190; on

- way, 64–65. *See also* negative theology
- marriage, 184
- Marx, Karl, 11
- mass, 27n13; energy, velocity and, 27n13, 48–49, 149
- material causes, 37–38, 172
- materialism, 11, 13n14, 170, 174
- material principle, 17
- material science, 45–46
- material universe, 133
- material world, 56–57
- mathematicians, 47, 65n10
- Matt, Hershel, 223–24
- mechanistic philosophy, 11, 13n14
- mechanistic science: beyond, 57–60; transcending, 171–75
- medieval Jewish philosophy, 35–36, 88–89, 93, 231–32
- Mediterranean Sea, 187, 211
- MeLAKHIM (divine messengers), 16
- Mendel, Gregor, 51–53, 206n3
- mental activities, 29
- mental acts, 131–32, 174
- messianic age, 82n15, 155n15, 159, 163, 182, 208n27
- messianism, 160, 163, 182, 186, 192
- metabolism, 200
- metaphysics, 114, 151–54, 175
- Middle Eastern period, 7, 12n4
- midrash, 7, 97, 119, 187, 212
- mind(s), 57; brain and, 46, 58, 109
- mind-body dualism: beyond, 56–57; transcending, 168–71
- Mishnah, 7, 88, 103n10, 119, 212
- Mishneh Torah* (Maimonides), 23, 82n15, 186–91, 209n36, 215–17, 227n2, 228nn3–5, 236; happiness and, 217; perfection and, 189, 216–17
- modern Jewish philosophy. *See* Jewish philosophy, modern
- modern Judaism, 212
- modern scientific method, 9
- modes, 171
- money, 205, 235
- monism, 160, 168, 170–71
- monist ontology, 34–36, 114, 151
- monotheism, 20
- morality, 198–99; asymptotes and, 175–80; of Jewish race, 76; Maimonides on, 138; science and, 9–10; Torah and, 40–41; way and, 169–70
- moral laws, 17, 126, 189–90, 215–17, 227n2, 228nn3–5
- moral universe, 137–39
- Morgan, Thomas Hunt, 53
- Moses, 92, 97, 103n14, 155n12, 185; Torah and, 155n12, 186, 187, 188, 215, 221, 228n12
- MOSH (mostly original substrate human), 182
- Moslems, 212
- motion(s): laws of, 17, 25, 27n13, 28n15, 33; light energy and, 49; Newton on, 18, 25, 146–47; Rosenzweig on, 136
- Muslims, 7, 10; history and, 88, 90; on vision, 47–48, 65n10; wars and, 214. *See also* Moslems
- mutationism, 52–53, 55, 59, 68nn40–41, 150, 158n40, 206n3
- mysticism, 65, 88, 100–101, 227
- mystics, 166
- myth, history *v.*, 95, 129, 152, 155n11, 220, 223
- natural motions, 17
- natural philosophy, 5, 11, 13n13, 100, 213–14
- natural selection, 50–51, 55, 59, 69n41, 158n40, 161, 163, 206nn3–4
- nature: consequent, 136; essential, 125, 154n6; forces of, 149, 157n39; laws of, 17, 19–20, 125–26, 192; primordial, 136

- necessary existence, 36
- negative theology, 36–42, 114, 148, 151; in modern Jewish philosophy, 41–42
- neo-Darwinism, 46, 68n41, 138–39; challenge of, 159, 160–65
- Neriyah, Baruch ben, 220
- New Testament, 87, 187
- Newton, Isaac, 11, 57, 235; on calculus, 26n1; on God, 153; on motion, 18, 25, 146–47; *Principia Mathematica*, 48, 214; on space, 20, 22; on time, 20. *See also* post-Newtonian physics
- nu ( $\nu$ ) constant, 150
- Omri dynasty, 219, 220, 228n10
- optic nerve, 50, 56, 66n21
- optimists, pessimists and, 182–83
- orders, 190
- organization, 200
- The Origin of Species by Means of Natural Selection* (Darwin), 51
- Orthodox Jews, 71, 92–93, 99
- pain, pleasure and, 191, 209n43
- Parmenides, 27n11
- particle physics, 122
- particulars, universals and, 32–33, 34, 98
- passions, 29
- passive, active and, 100, 200, 215
- Pentateuch, 187, 219, 221
- perfection, 58, 61, 82n15, 117, 189; laws and, 126, 189, 216; *Mishneh Torah* and, 189, 216–17; transhumanism on, 191–92
- personality, 135
- persons, 202
- pessimists, optimists and, 182–83
- Philo in Egypt, 212
- philosophy, 51; mechanistic, 11, 13n14; medieval, 11, 25; natural, 5, 11, 13n13, 100, 213–14; revealed, 5, 11, 13n12, 214. *See also* Jewish philosophy
- The Philosophy of the Inductive Sciences, Founded upon their History* (Whewell), 165
- photons, 27nn12–13, 48–49
- physical reductionism, 57–58
- physical universe, 122, 130–31, 154n4
- physicists, 47
- physics, 17, 22, 26n1, 27n13, 29; Aristotle on, 54–55, 93–94, 145, 172–73, 191; evolution and, 226; particle, 122; post-Newtonian, 120, 146, 157n32; relativity, 114, 128; of vision, 48–50
- piety, 176
- Pinker, Steven, 77, 156n25
- Planck constant, 49, 121–22
- plastic world, 23, 28n14, 56, 101, 153, 166
- Plato, 10, 11, 13n10, 65n3, 235; on color, 65n11; on ideas, 48; *Republic*, 216; on souls, 17, 47, 65n11, 132–34, 155n15, 233; *Timaeus*, 54, 69n41, 129, 152, 153, 216; on universe, 54; on vision, 47–48, 65nn10–11
- pleasure, 184, 208n31; pain and, 191, 209n43
- pluralistic ontology, 35
- politics, 7, 10–11; Torah and, 40–41
- polytheism, 19
- positivism, 22, 27nn11–12, 214
- post-Newtonian physics, 120, 146, 157n32
- prayer book (siddur), 87, 134, 155n15
- predicates, of subjects, 30, 33, 34–35, 38, 43n5
- prehensions, 136
- priests, 186
- primordial nature, 136
- Principia Mathematica* (Newton), 48, 214

- Principles of Psychology* (James), 171  
*Process and Reality* (Whitehead), 152  
 procreation, conception and, 195–96  
 prophecy, 72, 76, 166, 182, 231  
 Protestants, 7, 86, 173  
 protoplasm, 200  
 psychology, 29; evolutionary, 46, 50–52, 55–56, 60, 65n1, 66n23, 77  
 “P” text, 221  
 Ptolemy, Claudius, 65n5, 65n10, 88  
 punctuated equilibrium, 206n3  
 purpose: Aristotle on ends or, 24; for creation, 162, 207n4  
 Putnam, Hilary, 166  
 Pythagoreans, 166, 235
- quantum mechanics, 18, 20, 113, 120–22, 131
- rabbinic statements, revelation *v.*, 188  
 rabbis: academics and, 113, 114–19; authority of, 7–10, 12n8, 211–12, 232; leadership move from priests and prophets to, 7; as sage, 116. *See also* tannaim
- race, Jewish, 71–72, 75–77, 109  
 Rachel, 129  
 radiation, 49  
 Ralbag, 25. *See also* Gersonides  
 Rambam, 23, 228n5. *See also* Maimonides  
 rational thought, 63–64, 74, 80, 198  
 realistic worldview, 174  
 reality: of God, 159, 165; mental and physical, 108; monistic conception of, 57; psychic and mental, 58  
 realms, of universe, 16–19, 34, 43n4; of celestial objects, 16–17; of divinity, 16; earth, 16, 34, 43n4  
 reason, 173; emotions and, 97, 99–102  
 redemption, 59, 73, 159–206; creation, revelation and, 107, 111; God and, 15, 179; revelation, end of days and, 46; ten critical issues for study of, 159–60  
 reductionism, 57–58, 59, 170, 174  
 referents, of ideas, 30–31  
 Reform Judaism, 142, 169, 182, 187, 209n43  
 relativity physics, 114, 128  
 relativity theory, 18, 21–22  
 religions, 7, 12n4; Abrahamic, 55, 67n32, 137, 146, 154n8; culture and, 5, 204; empiricism and, 55–56; science and, 5, 176, 185. *See also* Catholicism; Christians; Judaism; Moslems; Muslims  
 religious, secular and, 97–99  
 reproduction, 200–201; sexual, 59, 68n40, 78–79, 161  
*Republic* (Plato), 216  
 responsa, 87, 88  
 revealed philosophy, 5, 11, 13n12, 214  
 revelation, 211–27; creation, redemption and, 107, 111; end of days, redemption and, 46; Hebrew scriptures and, 128, 134, 151; history and, 91–97; inspiration, fraud and, 93–97; rabbinic statements *v.*, 188; redemption, end of days and, 46  
 rhetoric, 30–32  
 Rinat Neuroscience, 208n20  
 ritual, 56  
 RNA (ribonucleic acid), 59, 78  
*Roe v. Wade*, 196  
 Rome, 7, 10  
 Roosevelt, Franklin Delano, 203  
 root principles, of Judaism, 124  
 Rosenzweig, Franz, 42, 89, 131; on God, 135, 140, 155n17; on human, 135, 156n19; on motions, 136; on soul, 131, 135–36; Whitehead and, 114, 151–54, 168, 171, 175, 234, 236; on world, 135, 155n18  
 Rosner, Fred, 71

- Saadia, 15, 212  
 sacred texts, 34, 166, 221, 231  
 sacrilege, 222–23, 228n12  
 Sarah, 129, 186  
 Sartre, Jean-Paul, 148  
 Sass, Hans-Martin, 196  
 Saul, 219, 220, 227  
 Schneur Zalman of Liadi, 156n22  
 scholars, 7–8, 88, 116, 154n1  
 scholasticism, 11, 100  
 Scholem, Gershom, 101  
 science(s), 115, 144, 214; challenges  
   for, 232–35; challenges for, responses  
   to, 235–37; classical, 13n10;  
   definition of, 165, 174; distinctive,  
   of modern Jewish philosophy, 10–12;  
   Judaism and, 71, 81n1, 83n16,  
   107–8, 165, 168–70, 176, 204,  
   234–37; material, 45–46;  
   mechanistic, 57–60, 171–75;  
   morality and, 9–10; religion and, 5,  
   176, 185  
 scientific language, 30–31  
 scientivism, 165  
*Searching for a Distant God: The Legacy  
   of Maimonides* (Seeskin), 147–49,  
   151  
 secular, religious and, 97–99  
 Seeskin, Kenneth, 147–49, 151  
 SEFER MADA (Maimonides), 115, 190  
 self, 135  
 semantics, 34–35; logic and, 17, 37  
 seminaries, 117–18, 142  
 Semites, 129  
 sense(s): experience, 125, 166, 193,  
   214, 231; external, 23, 56, 103n19;  
   word meaning as, 30–31  
 sensorum, 153  
 Sephardic Jews, 89, 103n8, 187  
 set theory, 146  
 Sextus Empiricus, 191  
 sexual reproduction, 59, 68n40, 78–79,  
   161  
*The Shape of Things to Come* (Wells),  
   180–82, 208n26  
 Shema, 108, 134  
*The Shulchan Arukh* (Karo), 187,  
   208n33  
 simple empiricism, 166  
 Sinai, Torah and, 93–94, 96–97,  
   103n14, 155n12, 187–88, 190, 215  
 Singer, Peter, 64, 202  
 Skeptics, 11, 173, 214, 215, 227n1  
 Skinner, B. F., 46  
 sky, in creation, 128–30, 152  
 Solomon, 96, 103n16, 219–20, 227  
 somethings, 136  
 souls, 16–17, 23–24, 57–59, 171; animal,  
   76–77; Aristotle on, 17, 132–34; body  
   separation from, 169, 186; divine, 64,  
   76, 156n22; as energy, 114, 131;  
   Hasidism on, 77, 82n11; nature of,  
   114, 131–37; Plato on, 17, 47, 65n11,  
   132–34, 155n15, 233; Rosenzweig on,  
   131, 135–36; Stoicism on, 133;  
   Whitehead on, 131, 135–36  
 space, 22–24, 27n12; Newton on, 20,  
   22; time, God and, 114, 128, 139,  
   167, 179–80  
 Spain, 90  
 spatial location, 35  
 speciesism, 199  
 Spinoza, Baruch, 11, 57, 89, 100,  
   103n15, 212, 235; *The Ethics*, 171;  
   on God, 35, 166  
 spiritual interventions, 25  
 spirituality, heavens and, 17  
 spiritual universe, 133, 169  
 spiritual world, 23, 28n14, 56–57, 167  
*The Star of Redemption* (Rosenzweig),  
   42, 152–53, 206n1  
 stars, 16, 17–18, 21, 25, 27n6, 181; in  
   creation, 129, 130, 154n10  
 Stoicism, 10, 65n3, 173, 235; on  
   rhetoric, 30; on soul, 133; on  
   universe, 54; on vision, 47



- string theory, 21–22, 157n38
- subjects, predicates of, 30, 33, 34–35, 38, 43n5
- substance(s), 171; living and nonliving, of earth, 16–17; universal and, 30
- suffering, 71, 72–74, 144
- suffering of love, 72–73
- sun, earth and, 35, 43n5
- supermen, 181
- survival of the fittest, 51–52, 59, 63–64, 66n25, 161, 206n3
- synthesis, 200
- Talmuds, 7, 87, 88, 98, 119, 187–88, 212; Babylonian, 187, 212; on tractates, 215
- tannaim, 87, 88, 92, 103nn11–12, 187, 208n32
- Tanya* (Schneur Zalman of Liadi), 156n22
- Tattersall, Ian, 202
- technology, 61, 144–45, 176, 203–4, 210n60; transhumanism on, 162–63, 181–82. *See also* GRIN
- testimony, 193
- theism, 147, 149
- theistic evolution, 55
- theology, 17–18, 24–25; negative, 36–42, 114, 148, 151
- Thomas Aquinas, 41, 100
- Timaeus* (Plato), 54, 69n41, 129, 152, 153, 216
- time, 22, 27n8; God, space and, 114, 128, 139, 167, 179–80; Newton on, 20
- Tirosh-Samuelsan, Hava, vii, viii
- Torah: on God, 34, 37, 40–42, 60; language of, 31; morality and, 40–41; Moses and, 155n12, 186, 187, 188, 215, 221, 228n12; politics and, 40–41; Sinai and, 93–94, 96–97, 103n14, 155n12, 187–88, 190, 215; study of, 115–18, 123, 170, 234–35. *See also* *Mishneh Torah*
- Torah true, 99
- traditional Judaism, 72, 73, 79, 82n15, 98–99, 101–2, 111, 162, 169, 197, 208n27, 212; liberal *v.*, 120, 124, 185, 206n2
- transhumanism, vii, 61, 64, 68nn37–38, 82n15, 145; on perfection, 191–92; on technology, 162–63, 181–82
- true or false ideas, 30–32
- Truog, Robert, 198
- trust, 192–93
- “the Truth,” 135
- truth judgments, 8, 33, 172, 225, 232
- truth-value, 147
- uncertainty principle, 121, 124
- universals: causes and, 30; particulars and, 32–33, 34, 98; substance and, 30
- universe: breadth and depth of, 139–41; as contingent or necessary, 54, 69n41; existence of, 114, 141; finite *v.* infinite, 19; four elements in, 215; material, 133; moral, 137–39; origination of, 48; physical, 122, 130–31, 154n4; Plato on, 54; realms of, 16–19, 43n4; size of, 156n20; spiritual, 133, 169; Stoicism on, 54. *See also* creation
- universities, 115–18
- utopianism, 203–5
- vaccines, for diseases, 181
- vacuum, 22, 25, 27n13
- value, 147; and disvalue judgments, ethics and, 178; of individuals, 113, 120–24
- velocity, energy, mass and, 27n13, 48–49, 149
- viability, 196
- virtues, laws of, 190
- viruses, 64
- vision, 46–55; age and, 62, 66n22; brain and, 47, 48–50, 56, 66n21,

- 67n33, 109; Christians on, 47, 65n10; evolution of, 50–55; eyeglasses and, 62; history of, 47–48; light and, 46–49, 65n11, 108; physics of, 48–50; Plato on, 47–48, 65nn10–11; wisdom and, 46, 66n22
- Wallace, Alfred Russel, 50, 53
- Wars of the Lord* (Gersonides), 25, 157n34
- water, 183, 195; in creation, 128–30
- Watson, James, 101
- way (Halachah), 185–92, 218, 234; Maimonides on, 64–65; morality and, 169–70
- Wells, H. G., 180–82, 208n26
- Wette, W. M. L., 217–18
- Whewell, William, 165, 214
- Whitehead, Alfred North, 67n26, 131; on God, 140; Rosenzweig and, 114, 151–54, 168, 171, 175, 234, 236; on soul, 131, 135–36
- Wilson, E. O., 77
- wisdom, 237; Bible and, 113, 114–19, 213; divine *v.* human, 40; vision and, 46, 66n22
- work, living location and, 5, 12n3
- world: material, 56–57; plastic, 23, 28n14, 56, 101, 153, 166; Rosenzweig on, 135, 155n18; spiritual, 23, 28n14, 56–57, 167
- World's Fair, New York, 203–4
- “World-to-Come,” 61, 115, 155, 168, 171, 227
- worship, 177, 179
- Zadok, 220
- Zionism, 76–77, 82n15; history and, 85, 87, 91–92, 98–99
- Zohar*, 65n11, 76–77, 179
- Zoroastrian civilization, 7





## About the Author

**Norbert M. Samuelson** is the Grossman Chair of Jewish Studies at Arizona State University in the Department of Religious Studies. He is the author of twelve books and over 200 articles. His relevant publications include *Gersonides on God's Knowledge* (1977), *The First Seven Days: A Philosophical Commentary on the Creation of Genesis* (1992), *Judaism and the Doctrine of Creation* (1994), *Revelation and the God of Israel* (2002), *A Users' Guide to Franz Rosenzweig's Star of Redemption* (1999), and *Jewish Philosophy: An Historical Introduction* (2003).



"Norbert M. Samuelson is one of our finest scholars of Jewish thought. His reflections on the past and future of Jewish philosophy show a learned and incisive mind at work. This book will no doubt stimulate great debate, and not just in academic circles."

—STEVEN NADLER, UNIVERSITY OF WISCONSIN

"*Jewish Faith and Modern Science* offers a fresh and edgy challenge for the entire discipline of Jewish philosophy. It is a *shofar* blast that sends this call to today's Jewish philosophers: 'Awake from your humanistic slumber, look around and remember that disciples of Torah also live in the natural world. The Torah itself remembers that this world is also a place of God's word!'"

—PETER OCHS, UNIVERSITY OF VIRGINIA

"Norbert M. Samuelson's analysis of the death of Jewish philosophy is learned and deeply insightful. It is also courageous: few authors focus so bluntly on the most controversial issues in contemporary Jewish thought and practice. It is essential reading for those interested in the renewal of Jewish philosophy within the contemporary world."

—PHILIP CLAYTON, CLAREMONT GRADUATE UNIVERSITY

"Brilliantly conceived, *Jewish Faith and Modern Science* is a welcome and timely addition to the growing body of literature whose contributors seek to close the gap between religion and the natural sciences. Opening out new territory in the study of modern Judaism, Norbert M. Samuelson asks his readers to reconsider the major topic of Jewish philosophy under the impact of contemporary developments in all the sciences, from theoretical physics to the biosciences and technology."

—ZACHARY J. BRAITERMAN, SYRACUSE UNIVERSITY

"This book is a bombshell for most forms of religious apologetics and sets a new agenda for honest inquiring people of faith. Although the power of this book comes in its critique of the older traditions of Jewish philosophy, the care with which Norbert M. Samuelson analyzes those traditions makes it a good introduction to Jewish philosophy in general. Most aspects of his critique apply to traditional Christian philosophy and theology as well."

—ROBERT CUMMINGS NEVILLE, BOSTON UNIVERSITY

"At last a book on Jewish philosophy by someone who has the courage to point out that the emperor has no clothes. This long-overdue, thought-provoking book opens the path for a rebirth of modern Jewish thought."

—CARL FEIT, YESHIVA UNIVERSITY

"Norbert M. Samuelson never shirks big, important, and contentious issues. In this, his latest book, he powerfully argues that, to its detriment, Judaism has failed to grasp crucial developments in the sciences. Prepare to have your assumptions challenged and your mind opened to new possibilities for reframing and revitalizing Jewish thought."

—GEOFFREY CANTOR, UNIVERSITY OF LEEDS

NORBERT M. SAMUELSON is Grossman Chair of Jewish Studies at Arizona State University. An internationally renowned scholar of Jewish philosophy, he is widely published in the field.

For orders and information please contact the publisher

ROWMAN & LITTLEFIELD PUBLISHERS, INC.

A wholly owned subsidiary of

The Rowman & Littlefield Publishing Group, Inc.

4501 Forbes Boulevard, Suite 200

Lanham, Maryland 20706

1-800-462-6420 • [www.rowmanlittlefield.com](http://www.rowmanlittlefield.com)

ISBN-13: 978-0-7425-5892-2  
ISBN-10: 0-7425-5892-4

