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How advances in science change Jewish law and ethics: assisted reproductive technologies and the redefinition of parenthood

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Dissertation

**HOW ADVANCES IN SCIENCE CHANGE JEWISH LAW AND ETHICS:
ASSISTED REPRODUCTIVE TECHNOLOGIES
AND THE REDEFINITION OF PARENTHOOD**

by

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

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God blessed them, and God said to them, “Be fruitful and multiply, and fill the earth, and master it ...

— Genesis 1:28

Rava said: [After a person dies], when he is led in for heavenly judgment, he is asked: Did you conduct your business transactions faithfully? Did you set aside fixed times for Torah study? Did you engage in procreation? Did you hope for salvation? Did you delve into wisdom? When you learned Torah, did you learn it deeply and infer one thing from another? But even so, if reverence of God was this person’s resource it is well, and if it was not, then it is not well.

— Talmud Bavli, Shabbat 31a

Rabbi Yehoshua ben Korchah: Whoever raises an orphan in [her or] his home, Scripture accounts it is as if [she or] he gave birth to the child. ... Rabbi Yonatan: Whoever teaches Torah to his [or her] fellow’s child, Scripture accounts him [or her] as if he [or she] gave birth to the child.

— Talmud Bavli, Sanhedrin 19a

DEDICATION

עֲטָרַת זְקֵנִים בְּנֵי בָנִים וְתִפְאֶרֶת בָּנִים אֲבוֹתָם

The crown of elders are children's children
And the glory of children their parents

Proverbs 17:6

I dedicate this work to

Rosalie and Shelwin Samuels

Who provided me with life, love, and education.

Your lives have been models of *menschlikhkeit*, dedication, and service to others.

I have been privileged to study with giants, but you will always be my greatest teachers.



I also dedicate this work to my love and life's partner

Stephanie Newman Samuels

and in honor of our children

Amitai Yitzchak (Max Isaac), Yedidyah Chaim (Leo Chaim),

Tzvi Aryeh Meyer (Harry Meyer), and Yakir Yehudah (Henry Judah)

in whom generations live and who are the pride and joy of their parents and grandparents.

May we merit to raise and educate our children

as our parents and grandparents did for us.

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What constitutes the worthy life and how do we achieve it? These are essential questions that we must ask concerning our personal aspirations, as well as those we hold for the children we bring into this world, nurture, and raise to maturity and independence. In rabbinic literature, the sages of old framed this inquiry in two-fold fashion: prospectively at the start of life, and retrospectively at the end of life. The first concerns the blessings shared upon the birth of a child, the second is framed in the Talmud as an interview at the end of one's days before the celestial bar of judgment. Jews traditionally bless a newborn child to live a life filled with Torah, *chuppah* (the marriage canopy), and *ma'asim tovim* (good deeds). In modern idiom, a life defined by seeking divine and human wisdom, marriage and companionship, and service to others. Among the questions the rabbis imagine are asked of us upon life's conclusion include whether we dealt faithfully with others, contributed to society, endeavored to raise up the next generation, whether we sought wisdom and understanding, and lived with a sense of awe and ultimate accountability. The juxtaposition of a pious life of learning, parenthood and procreation, and social concern impresses upon us that the rabbis understood these life objectives to be integrally interlaced. I have been privileged in my own life as a rabbi, teacher, and perpetual student, as well as a husband, father, son, and sibling, to pursue these goals and experience their blessings, and thus I am deeply grateful to the Source of all Blessings for the opportunities I have been afforded.

The focus of this dissertation on infertility and assisted-reproductive and genetic technologies presented me with a fascinating theoretical interplay of religion and science, and its impact on the development of Jewish law and ethics. I do not take for granted that one person's theoretical interest is another person's existential crisis, and pray that my scholarship will not aggrieve those facing the hardships of infertility. Perhaps these pages may even offer the comfort of hope found in scientific and technological advancement and the serious attention given them by Jewish bioethicists and medical *halakhists*.

This dissertation is the product of an incredible eleven-year journey as a student in the Religion and Science track of Boston University's Graduate Division of Religious Studies. First expression of gratitude goes to the convener of our program, Professor Wesley J. Wildman, a master teacher, brilliant scholar of astounding erudition and creativity, and gracious mentor. Professor Wildman exquisitely leads by example, sets a tone of kindness and collegiality, and nurtures an educational environment of excellence in which faculty and students learn from one another. Without his accommodating support, I would never have managed to complete this demanding PhD program as a part-time student and full-time community rabbi. I am also thankful to him for serving as my dissertation's second reader.

I am profoundly indebted to Dr. Michael A. Grodin for his ongoing mentorship for the past ten years, and for serving as my primary reader and for helping guide the writing of this dissertation. Dr. G., as he is fondly called, is a stellar and versatile scholar and teacher, patient tutor, compassionate ethicist and counselor, excellent physician, and an exemplary, empathetic, human being. One of my greatest life-experiences was my

eighteen-month, two-hundred-hour internship with him in medical ethics at Boston Medical Center, and serving as his research and teacher's assistant, and student. He represents an incredible model of scholarship and service. I am proud and humbled to call him my mentor.

I am also deeply appreciative of the members of my Dissertation Defense Committee, my esteemed teachers Professor Deanna Klepper, Chair, and Professors Steven Katz and Diana Lobel, in addition to my two readers. I also express my thanks to several teachers, colleagues, and friends who graciously agreed to read a draft of my dissertation and share invaluable feedback: Professors Sylvia Barack Fishman of Brandeis University, Jacob Meskin of Hebrew College, and David Shatz of Yeshiva University (YU), and Rabbi Aryeh Klapper of the Center for Modern Torah Leadership. Throughout my research and writing, I have been abundantly aware of the fact that I am a man, writing on five men, writing on reproductive Jewish bioethics. I am therefore especially grateful to Professors Klepper and Barack Fishman for their helpful critique and counsel.

I also express my great gratitude to all the other professors with whom I have had opportunity to study at BU, including Ariel Berger, Alisa Bokulich, Wayne W. LaMorte, Christopher I. Lehrich, Robert Cummings Neville, Jon H. Roberts, Adam Seligman, Kurt Wegter-McNelly, and Elie Wiesel of blessed memory. I also express my sincere gratitude to the Professor Jonathan Klawans, outgoing Director of the Graduate Division of Religious Studies, Professor Jennifer Wright Knust, Director of Graduate Studies, as well as to the administrative staff of our department Karen Nardella, Melissa Merolla, and

Ryan Sullivan, as well as the deans of the Graduate School of Arts and Sciences, and the librarians of BU's library system. Special thanks to Professor Steven Katz who was extraordinarily helpful when I first approached him about becoming a graduate student at BU. I entered BU seeking a multi-disciplinary educational experience to expand my knowledge, deepen my understanding, and hone my skills in scholarly research and writing. I graduate BU profoundly satisfied with my experience and hungry for continuing learning.

My academic interests in religion and science were cultivated during my undergraduate years and my first tour of graduate school at YU, whose motto is "*Torah u-Madda* – Torah and Science," in the original spirit of *scientia* referring to full scope of human knowledge. Rabbi Dr. Norman Lamm, president of YU at that time, encouraged students to study broadly and deeply Judaism's Torah tradition, as well as scientific and humanistic knowledge, creating a worldview born of the resulting synergistic synthesis. Rabbi Aharon Lichtenstein, with whom I studied at Yeshivat Har Etzion (YHE) and in YU's affiliated rabbinical school, the Rabbi Isaac Elchanan Theological Seminary, likewise modelled an integrated religious and intellectual personality committed to the study of both *Torah u-Madda*. During my two years as a student at YHE, seven years at YU, and in the years following, I have had opportunity to study with extraordinary scholars and teachers, including several that feature prominently in this thesis. In a rabbinical school course on contemporary *halakhah*, I first studied Jewish bioethics with this thesis's exemplars Rabbis J. David Bleich and Moshe D. Tendler. Since the beginning of my rabbinate, I have appreciated the teachings and ongoing consultation of

Rabbi Michael J. Broyde. At YHE, I studied Talmud with Rabbi Ezra Bick. For two summers at the Hebrew Theological College, i.e., Skokie Yeshiva, I learned Talmud with the late Rabbi Moshe Hershtler. I was a fellow rabbinical student with Dr. Edward Reichman. As a BU student attending a Jewish religion and science conference at Arizona State University, I met Rabbi Elliot N. Dorff. Unfortunately, I have not had the opportunity yet to meet Dr. John D. Loike. In researching and writing this thesis, I made the deliberate decision not to seek counsel or discuss this project with this dissertation's Jewish bioethical exemplars or primary sources of scholarship, but rather to rely more dispassionately upon their published scholarship. I am extraordinarily grateful for the opportunity to learn from them through their writings.

I am also thankful for a rabbinical continuing-education certification course that I took in 2011-12 through YU's Center for the Jewish future and the Puah Institute of Jerusalem on "Reproductive Medicine and Jewish Law," administered by Rabbi Naphtali Lavenda and Rabbi Gidon Weitzman. I am enduringly grateful for the ongoing mentorship of Rabbi Dr. Jacob J. Schacter of Yeshiva University, with whom I began my rabbinical career as his rabbinic intern and then assistant rabbi. Thank you as well to my supportive colleagues in the Boston rabbinate and the members of the Beit Din of Boston, led by Rabbis Joseph Polak and Yaakov Jaffe. I have been a matriculated student for 36 of my 49 years, and a seeker of wisdom throughout, and there are countless other mentors, role models, teachers, study partners, colleagues, students, and educational institutions to whom I am abundantly thankful, but will not list here.

Words fail me when I try to express the deep regard and appreciation I feel for the members of Congregation Shaarei Tefillah (CST), who inspire me daily with sacred purpose, and with whom my family has shared its life over the past 22 years. When I interviewed with CST all those years ago, I told them that I intended to complete a Ph.D. during my tenure in Boston. I am extraordinarily grateful for their ongoing support and encouragement, and for sharing this journey in learning with me.

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Benjamin Joseph Samuels, Newton, Massachusetts

August 7, 2017 – *15 Av, 5777*

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ABSTRACT

This dissertation investigates the ways scientific and biotechnological advancement impact and change Jewish law and ethics. It analyzes the contemporary Jewish bioethical debate concerning the identification of maternity and paternity in four cases of assisted reproductive technologies (ART): in vitro fertilization, gestational surrogacy, cloning, and mitochondrial replacement therapy. Unprecedented modes of procreation engender new definitions of parenthood, challenging a longstanding Jewish framework of theology, law, and ethics.

Part I develops a conceptual scaffolding for the discrete analyses of Part II, and considers the philosophical bases of parenthood, the gendered nature of Jewish legal bioethics, the relationship of law and ethics, and ways of relating religion and science. For each case of ART, Part II examines the biological science and technology in historical context, locates Jewish bioethical concerns within the larger bioethical discussion, and critically reviews the epistemological and axiological dimensions of the legally oriented analyses of a select group of leading Jewish bioethicists, chosen for their copious writings on ART and contextualizing oeuvres: Rabbi J. David Bleich, Rabbi

Michael J. Broyde, Rabbi Elliot N. Dorff, and the collaborative writings of Dr. John D. Loike and Rabbi Moshe D. Tandler. Insights from Jewish feminist bioethical criticism and other notable Jewish bioethical works enhance the analyses.

Through a focused study of the redefinition of parenthood in Jewish law and bioethics, I demonstrate four ways in which advances in science impact Jewish law and ethics. One, scientific awareness leads to greater sophistication and nuance of analysis. Two, Jewish bioethicists grapple with religion and science relations, and speak directly to these overarching considerations. Three, the epistemological and axiological influence of religion and science relations correlate with greater openness to new technologies, theoretical conceptualizations, and their practical applications. Four, advances in science change Jewish legal and bioethical analyses and outcomes through (at least) four possible methodological mechanisms – namely, theoretic holism, innovative interpretation, indeterminate gaps, and realist realignment. Jewish bioethics are thus shown to illumine the intricate interrelationship between religion and science and its impact on Jewish law and ethics.

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ABBREVIATIONS

AH	assisted hatching
AI	artificial insemination
AID	artificial insemination donor, i.e., with non-spousal sperm.
AIH	artificial insemination homologous, i.e., with husband's sperm.
ART	assisted reproductive technologies
ASRM	American Society for Reproductive Medicine
CDC	Centers for Disease Control and Prevention
CLIA	Clinical Laboratory Improvement Act
CMS	The Centers for Medicare and Medicaid Services
CT	chromosome transfer
DNA	deoxyribonucleic acid
ET	embryo transfer
FCSRCA	The Fertility Clinic Success Rate and Certification Act
FDA	The Food and Drug Administration
FISH	fluorescent in situ hybridization
GI	gastrointestinal
GIFT	gamete intra-fallopian transfer
GINA	Genetic Information Nondiscrimination Act
GMO	genetically modified organism
GS	gestational surrogacy
GVT	germinal vesicle transfer

HGP	Human Genome Project
ICSI	intracytoplasmic sperm injection
iPS	induced pluripotent stem
IVF	in vitro fertilization
IVM	in vitro maturation
MFCT	maternal fetal cellular trafficking
m-FISH	multiplex fluorescence in situ hybridization
mtDNA	mitochondrial DNA
MRT	mitochondrial replacement therapy
MST	maternal spindle transfer
nDNA	nuclear DNA
NGT	nuclear genome transfer
NIH	National Institute of Health
OED	Oxford English Dictionary
OHSS	ovarian hyperstimulation syndrome
OXPHOS	oxidative phosphorylation
PCR	polymerase chain reaction
PGD	preimplantation genetic diagnosis
PNT	pronuclear transfer
RA	Rabbinical Assembly
RCA	Rabbinical Council of America
SCNT	somatic cell nuclear transfer

SCSA	sperm chromatin structure assay
TEFNA	testicular fine needle aspiration
TESE	testicular sperm extraction
TET	tubal embryo transfer
TB	Talmud Bavli [Babylonian Talmud]
TJ	Talmud Yerushalmi [Palestinian Talmud]
TS	traditional surrogacy
UNESCO	The United Nations Educational, Scientific, and Cultural Organization
ZIFT	zygote intra-fallopian transfer

INTRODUCTION

This multi-disciplinary, “Religion and Science” doctoral dissertation aims to investigate the challenge of assimilating new scientific knowledge and technological capability within a religious framework of older, even ancient, theology, law, and ethics. At the dialogic junction of religion and science stand competing sources of authority, epistemologies, axiologies, and worldviews. The historical encounter of science and religion and the determination of their proper relationship form the foundational inquiry of the “Religion and Science” academic guild discipline.¹ While general schemas of science and religion relations have been studied, specific application to Jewish bioethics calls for further examination.

Although there are a variety of Jewish bioethical methodologies (see Chapter Two, pp. 39-58, “The History and Foundational Models of Contemporary Jewish Bioethics and Medical Halakhah (Jewish Law)”), the forceful legacy of Judaism’s legal tradition, i.e., *halakhah*, and the preponderance of primarily Orthodox, and also Conservative, Jewish halakhists, physicians, and academics involved in Jewish bioethics, have shaped a principally halakhically oriented Jewish bioethical literature. This dissertation directly engages the question of Jewish religion and science relations by asking in what ways do greater scientific awareness, changes in scientific understanding, and advances in technological capability challenge, and even change, the modes and methodologies of Jewish legal and bioethical inquiry.

¹ See Barbour 1997, 77-105; Gregersen and van Huyssteen 1998, 1-11; Haught 1995, 2-9, 202-03; McGrath 2010, 1-6, 43-45; Peters 1998, 11-22.

I particularly examine how Jewish bioethical scholarship has responded to advances in scientific understanding and technological capability in relation to emerging assisted reproductive and genetic technologies. *More specifically, I do so through a focused analysis of epistemological and axiological dimensions of the contemporary Jewish bioethical debate concerning the identification of maternity and paternity in four current cases of assisted reproductive and genetic technologies: 1. In Vitro Fertilization; 2. Gestational Surrogacy; 3. Cloning; and 4. Mitochondrial Replacement Therapy.* I have chosen these cases because the first two are older, now more commonplace, with ample Jewish bioethical literature; while the second two are more cutting-edge. Also, the respective cases developed successively and cumulatively, as numbered, allowing me to track Jewish bioethical development in line with scientific and technological development.

Context

Over the past six decades, we have witnessed the discovery of DNA, identifying links between genes and both traits and disease, the development of biotechnology to combine and reengineer genetic material, the mapping of genomes, and assisted reproductive technologies (ART).² These rapidly developing fields have yielded significant changes in scientific understanding and technological capability that indeed challenge Jewish bioethics. All of these scientific achievements have empowered

² See US Dept. of Energy 2012. For a detailed history of the development and advancement of genetic and genomic science, see Mukherjee 2016, especially pp. 201-495.

humanity with the ability to alter and even manufacture life in ways previously unknown.³

For example, one of the recent innovations in reproductive and genetic technologies is the genetic manipulation and manufacture of human gametes using multiple genetic donors.⁴ Thus, “three-parent babies” develop from an embryo that was conceived *in vitro* with genetic material from a sperm donor; a chromosomal, nuclear DNA (nDNA) ovum donor; and a mitochondrial DNA (mtDNA) and cytoplasm ovum donor. MtDNA replacement, i.e., Mitochondrial Replacement Therapy (MRT), utilizes techniques developed in cloning research.⁵ If the gestator is a surrogate other than one of the gamete donors, the resultant child arguably has four biological parents. The primary motivation for this assisted reproductive technology is to allow women suffering from non-nDNA-caused mitochondrial disease to reproduce healthy offspring who will not

³ Philosophers of biology have begun to contemplate the impact of these technologies on biological classification and on the nature of nature, especially considering polygenomic organisms, synthetic biology, and potentially transhumanism. See Parry and Dupre 2010. For other futuristic speculations, see Fukuyama 2002.

⁴ On April 6, 2016, scientist John Zhang and his US team of the New Hope Fertility Center in New York City, working with an infertile Jordanian couple in Mexico, delivered the world’s first three-parent baby boy, see Hamzelou 2016. In January 2017, the Nadiya Clinic for Reproductive Medicine in Kiev, Ukraine reported that it helped an idiopathically infertile woman deliver the first three-parent baby girl, and the first MRT occurrence of germline modification, see Scutti 2017.

⁵ In pronuclear transfer (PNT), the gametes of the intended father and mother are brought together through *in vitro* fertilization to create an embryo. A second embryo from a donor egg and sperm is simultaneously created. The pronuclei of both embryos are removed on day one, at the single-cell stage, and the pronuclei with the conjoined DNA of the intended father and mother is inserted into the enucleated embryo that contains healthy mitochondrial DNA (mtDNA) from the second ovum donor. Although sperm do contain some mitochondria, they do not contribute to the mtDNA of the developing embryo, see Yabuuchi et al. 2012; Craven 2010. In nuclear genome transfer (NGT), the most recent and promising technique, a donor ovum is denucleated and the nucleus of the intended mother containing her nuclear DNA (nDNA) is inserted into the donor ovum containing cytoplasm and healthy mtDNA. *In vitro* fertilization is then applied using the intended father’s sperm, see Amato et al. 2014. Other techniques utilized in the recent past include maternal spindle transfer (MST), metaphase chromosome transfer (CT) and germinal vesicle transfer (GVT), see Yabuuchi et al. 2012.

suffer the same malady as the woman with whom the child shares nDNA (Claiborne, 2016; Kelly 2013; Wong 2013). While tri-gametic embryos aim to free the resultant child of its mother's pathogenic mtDNA and disease, the artificial manufacture of gametes from multiple donors also constitutes an example of germline modification in that laboratory-induced changes may be passed on to future offspring.⁶ As technologies advance and more complex genetic engineering and gamete manufacture occurs, the religious and secular legal, ethical, and social questions multiply. These questions impinge on an array of important bioethical and biological concerns, such as eugenics, genetic diversity, and human evolution, as well as religious, philosophical, psychological, and sociological issues of identity, sexuality, gender, reproductive roles, personal status, lineage, family constructs, equitable access, and distributive justice. Translating these questions and concerns into fair and functional public policy requires astute insight and perspicacious foresight.

In vitro fertilization, gestational surrogacy, cloning, and tri-gametic embryos invite bioethical discussion of the rights and responsibilities, duties and obligations of procreation and parenthood in an age of advancing scientific knowledge and technology. In this dissertation, I explore the positions considered and claimed by legally oriented Jewish bioethicists and assess in what ways they are informed by contemporary science, including the axiological influence of secular bioethical discussion and societal mores. I investigate how Judaism's robust textual-interpretive tradition, creative legal process,

⁶ Since spermatid mitochondria are degraded during fertilization, only female offspring produced through MRT could transmit mtDNA to a new generation, thus leading scientists and bioethicists to recommend initially limiting MRT trials to male embryos, see Clairborn 2016, 88-95;119-121. For an explanation of the biological mechanism leading to the degradation of paternal mtDNA, see Zhou 2016.

history of legal precedents, and religious and ethical instruction, develop in light of novel scientific understandings and technological capability, as well as changing moral judgments.

Method

*In order to frame systematically and focus my investigation, I will evaluate epistemological and axiological dimensions of four representative exemplars of Jewish bioethical investigations concerning each of the four aforementioned cases. For epistemic orientation, I first examine with precision the relevant biological science and assisted reproductive or genetic technology as discussed in current scientific literature in its historical context. I then locate the Jewish bioethical concerns within a larger bioethical framework. After these essential steps, I critically review the epistemological and axiological dimensions of the legally oriented analyses of a select group of leading Jewish bioethicists: Rabbi J. David Bleich, Rabbi Michael J. Broyde, Rabbi Elliot N. Dorff, and the collaborative writings of Dr. John D. Loike and Rabbi Moshe D. Tendler introduced in Chapter Two (pp. 58-65). I assess the extent that the Jewish bioethical scholarship under review displays adequate and sufficient scientific knowledge of the case; whether the bioethical issue or dilemma being studied represent an instance of new scientific understanding or unforeseen technological capability, and if the new knowledge is tentative, sufficient, or complete? I ask: is the new knowledge accepted at least *pro**

tanto and integrated as such?⁷ How does it align with previous scientific and traditional Jewish understandings: is the relationship one of conflict, independence, integration, or dialogue?⁸ Is there a discernible Jewish bioethical methodology being applied? Jewish bioethicists, to one degree or another, subscribe to a theory and theology of knowledge that affirms both Torah and science, revelation and reason, as sources of knowledge, wisdom, and truth.⁹ In practice, however, conflicts between Torah and science arise and are not always easily resolved (see Chapter Three, pp. 107-11, “Strategies for Contending with Conflicts Between Torah and Science”). Gauging the epistemic orientation of Jewish bioethical scholarship thus directly confronts the mixing of old and new knowledge.

Epistemology and scientific understanding alone cannot settle a bioethical dilemma. One’s moral axiology mediates the ethical considerations of new bioethical challenges. Therefore, it is also important to clarify the axiological dimensions of Jewish bioethical investigations. For each representative exemplar of Jewish bioethics concerning the four cases, I aspire to distill the discrete values and ethical concerns

⁷ *Pro Tanto* is Latin for “for so much,” and describes a belief or position that is accepted with the understanding that it may be overridden by other, more compelling considerations. See B. Brody 2014, 36n5.

⁸ See Barbour 1997, 77-105, for his four-fold typology of ways of relating science and religion. In general, the Religion and Science literature dealing with conflicts of science and religion adds helpful perspective here. Willem B. Drees’s 3 x3 classification of interactions of religion and science, in particular, considers how new knowledge, new views of knowledge and new appreciations of the world impinge upon cognitive, experiential, and traditional claims of religion. See Drees 1996, 39-49.

⁹ The term Torah in customary Jewish usage may have narrow or wide scopes of meaning, depending on context. Torah may simply refer to the combined collection of the five books of Moses in the Hebrew Bible. Alternatively, Torah may more generally refer to the entire corpus of Jewish religious literature, from biblical times until today. In the phrase, “Torah and Science,” Torah should be understood in its most expansive sense.

undergirding the Jewish bioethical analysis and evaluate them in comparative juxtaposition.

In halakhically oriented Judaism, there is ambivalence toward whether there is an ethic independent of or intrinsic to halakhah. This ambiguity is writ large in the titles of the books and articles of Jewish bioethics, some preferring to speak in the idiom of medical halakhah and others in terms of bioethics. The question of whether there is an ethic independent of Jewish law that can methodologically frame subsequent legal analysis or whether meta-ethical considerations are intrinsically embedded within the culturally traditioned legal process may be of acute importance when confronting previously unimagined ethical scenarios created by novel medical technology and new scientific knowledge. I explore this continuing debate and for each of the representative Jewish bioethical exemplars of the four cases, I ask three related, important axiological questions. First, are halakhic and Jewish bioethical investigations perceived as synonymous or as two related, yet distinct activities? Second, does the author conceive of an ethic independent of Jewish law? Third, is there an explicit recognition or inferred awareness that one's clarified values and ethics may legitimately help direct both halakhic and bioethical examination.¹⁰

For some Jewish bioethicists, an ethic independent of halakhah can be of prime importance in Jewish bioethical consideration, as it is precisely in the face of new knowledge and novel technologies unanticipated and without parallel within Jewish law that intuitive and supererogatory morality may serve an invaluable function. These more

¹⁰ David Shatz 2013 engages similar questions in his essay on ethical theories in Orthodox Judaism.

general, but fundamental axiological orienting inquiries will be most successful when assessing the views of individual Jewish bioethicists who have generated a larger body of scholarship. Thus, in choosing Jewish bioethical exemplars for the four cases of assisted reproductive and genetic technologies, I privilege those Jewish bioethicists with copious writings on ART and contextualizing oeuvres, such as: Rabbi J. David Bleich, Rabbi Michael J. Broyde, Rabbi Elliot N. Dorff, and the collaborative writings of Dr. John D. Loike and Rabbi Moshe D. Tendler. Insights from Jewish feminist bioethical criticism and other notable Jewish bioethical works will be brought in to broaden perspective and enhance the analysis.

Thesis

Through a focused study of the redefinition of parenthood in Jewish bioethics and medical halakhah, I will demonstrate four ways in which advances in science change Jewish law and ethics. One, greater scientific awareness and deeper understanding influence the development of medical halakhah and Jewish bioethics by demanding greater sophistication and nuance of analysis. Two, while some medical halakhists operating within the narrow confines of Jewish legal analysis may seem to ignore larger questions of epistemology and moral axiology, Jewish bioethicists indeed grapple with religion and science relations, and speak to these overarching considerations in their respective analyses. Three, the epistemological and axiological influence of religion and science relations correlate with greater openness to new technologies, theoretical conceptualizations, and their practical applications. Four, advances in science directly

change Jewish legal and bioethical analyses and outcomes through (at least) four possible methodological mechanisms, derived from the bioethical writings of this dissertation's four exemplars – namely, theoretic holism, innovative interpretation, indeterminate gaps, and realist realignment. Jewish bioethics will thus be shown to inhabit the intricate interrelationship between religion and science and illumine its impact on Jewish law and ethics.

Chapter Overview

General Overview

This dissertation proceeds in two parts. In Part One, “Context and Method: Jewish Bioethics, Epistemology, and Moral Axiology,” I will continue to introduce and establish the context, method, and conceptual scaffolding of this research project. In Part Two, “Application and Analysis: The Identification of Maternity and Paternity in Four Current Cases of Assisted Reproductive and Genetic Technologies,” via introduction, I will begin with an analysis of the halakhic affirmative duty, i.e., mitzvah, to procreate, assessing its implications for identifying the halakhic grounds for parenthood. I will also briefly introduce the initial halakhic and Jewish bioethical discussions concerning ovary transplantation and artificial insemination, since these inaugural inquiries into ART get referenced in subsequent discussions. I will then review the relevant history and science of: 1. In Vitro Fertilization; 2. Gestational Surrogacy; 3. Cloning; and 4. Mitochondrial Replacement Therapy. For each, I will identify attendant Jewish and secular bioethical issues, as well as survey the medical halakhic and Jewish bioethical consideration of the identification of parenthood. I will then rigorously analyze the select Jewish bioethical

exemplars for each case and assess their epistemological and axiological dimensions. I will also chart Jewish bioethical development as the technologies cumulatively progress, more generally, as well as more specifically in light of the progressive writings of the aforementioned exemplars.

PART I: Context and Method: Jewish Bioethics, Epistemology, and Moral Axiology

Chapter One: Defining Parenthood Before and After Assisted Reproductive Technologies

This chapter presents philosophical accounts of parenthood in relation to procreation to provide a conceptual framework and vocabulary for assessing halakhic grounds of parenthood.

Chapter Two: Jewish Bio-and-Genetic Ethics

This chapter will review the Jewish bioethical literature pertinent to this dissertation. It will begin by schematizing “The History and Foundational Models of Contemporary Jewish Bioethics and Medical Halakhah (Jewish Law),” seeking to accomplish two goals: first, it will establish a common intellectual framework and vocabulary, which will be utilized throughout the analyses of Part II; and second, the history and development of contemporary Jewish bioethics and medical halakhah itself will demonstrate how changing epistemologies and axiologies both reflect and facilitate greater and more impactful interactions between science and religion. This chapter will also introduce the Jewish bioethicists selected as focal exemplars for this dissertation, as well as survey “Assisted Reproductive Technologies and Genetic Ethics,” to provide larger bioethical disciplinary context for this dissertation’s narrower bioethical focus.

Chapter Three: Epistemological and Axiological Dimensions of Contemporary Jewish Bioethics

I will more precisely explain what is meant by epistemological and axiological dimensions of contemporary Jewish bioethics and outline my intended method of their investigation: 1. Understand the current science and its history; 2. Locate the Jewish bioethical analysis within a larger bioethical framework. 3. Evaluate the epistemological and axiological dimensions of the Jewish bioethical analysis. I will contextualize this inquiry through a brief survey of Jewish theories of knowledge, halakhic process, past strategies for contending with seeming conflicts between Torah and science, and exploring the interrelationship of ethics and halakhah, with particular consideration of whether there exists an ethic independent of halakhah.

PART II: Application and Analysis: The Identification of Maternity and Paternity in Four Current Cases of Assisted Reproductive and Genetic Technologies

Chapter Four: Grounding the Jewish Bioethical Discourse Regarding Assisted Reproductive and Genetic Technologies

This opening chapter of Part II will ground the Jewish bioethical discourse by briefly exploring the Jewish scriptural sources, religious significance, and scope of the Jewish biblical commandment to procreate, especially regarding the questions of whether utilizing ART leads to the fulfillment of this religious duty, and relatedly, whether there is an obligation to pursue procreative outcomes through ART, and if others have a religious and moral duty to assist. In addition, this chapter will also briefly review early halakhic considerations of ovarian transplants, as well as of artificial insemination with a

woman's husband's sperm (AIH) or with donor sperm (AID).¹¹ Since these two medical therapies were the first assisted reproductive technologies employed to benefit individuals or couples struggling with infertility, their foundational discussion among halakhists undergirds later medical halakhic and Jewish bioethical considerations of the four subsequent cases of ART considered in this dissertation.

Chapter Five: In vitro Fertilization with Husband-or-Donor Sperm

Modern in vitro fertilization, like its much older chronological predecessor artificial insemination, initially rattled the scholarly community of medical halakhists, especially with the introduction of third-party gametes. Jewish bioethics was then a developing field in its earliest stages and new scientific knowledge was slowly being assimilated into the halakhic discussion. In the West, sexual mores were going through radical change. I demonstrate that the imprint of scientific knowledge, as well as of reactive and changing moral-value judgments, may be discerned in the relevant medical-halakhic and Jewish-bioethical discussion. In this case of ART, as in the subsequent cases, I privilege four Jewish bioethicists with a contextualizing oeuvre – namely, Rabbis J. David Bleich, Michael J. Broyde, Elliot N. Dorff, and the writing duo of Dr. John D. Loike and Rabbi Moshe D. Tendler. An intellection orientation is constructed for each exemplar evaluating each one's philosophy and methodology of Jewish law and ethics.

¹¹ The "H" in AIH is decoded as "homologous," rather than "husband," even though it still refers to a woman's husband, as opposed to heterologous artificial insemination, AID, in which donor sperm is used, employing a "D" for "donor."

Chapter Six: Gestational Surrogacy and Ovum Donation

Gestational Surrogacy advanced the complexity of the halakhic and Jewish bioethical consideration of ART by introducing third-party participants, often in an ongoing collaborative reproductive process. While initially the Jewish bioethical and halakhic conversation seemed to prefer a gestational ground for maternity, this conclusion was fraught with two tensions: first, the intentions of the aspiring parents who planned to raise the resultant child were at odds with the gestationally based biological determination of parenthood being made by halakhists; and second, as an appreciation of the molecular-genetic basis of fetal development began to take hold, increasingly new opinions were proffered preferring genetic accounts of parenthood over gestational ones. Finally, as epigenetics came to be recognized as influential, some returned to reconsider gestational accounts, either in a monist or pluralist framework.

Chapter Seven: Cloning and Mitochondrial Replacement Therapy

With the advent of genetic technologies, the prospect of human cloning challenged anew preconceptions of the relationship of procreation and parenthood. Epistemological and axiological orientations, already well trained by previous encounters with ART, impact the ensuing Jewish bioethical analyses, which remained theoretical due to international bans on human reproductive cloning.¹² Jewish bioethics also comes into its own, since, absent practical queries of actual cases, medical-halakhic discussion remains sparse.

¹² See Devolder 2016, 1.

Mitochondrial Replacement Therapy, as currently construed, utilizes cloning technologies to allow a woman with mitochondrial disease to bring offspring into the world without transmitting to them her heritable disease, and thus alleviates human sufferings. Yet, once again, new participants are added to this novel form of collaborative reproduction, deepening questions regarding the grounds for parenthood. The emerging Jewish bioethical discussion of this latest form of ART draws upon the positions developed and lessons learned from the chronologically prior three cases. Jewish Bioethics has reached a certain maturity, and questions of epistemological and axiological orientation are more clearly pronounced and therefore discernable.

Chapter Eight: Conclusion

This chapter will restate the thesis question and purpose of this dissertation project, and summarize the findings of its case-specific research and analysis in support of its thesis. It will review in broader strokes and greater detail: the redefinition of parenthood in the assisted reproductive and genetic technologies; the sociology of knowledge, subjective intuitionism, and embodied experience as they impact upon this study; and inventory four ways advances in science change Jewish law and ethics. The chapter will conclude with an articulation of the implications of this work for Jewish religion and science relations, as well as for Jewish law and bioethics.

PART I

Context and Method: Jewish Bioethics, Epistemology, and Moral Axiology

CHAPTER ONE

Defining Parenthood Before and After Assisted Reproductive Technologies

Philosophers of family and bioethicists propose that the status, rights, and obligations of parenthood may attach based on one or more of the following grounds: genetic, gestational, labor-based, intentional, voluntarist, beneficent, and causal conceptions (Brake and Millum 2014, 26-32). They ask: in light of new assisted reproductive technologies (ART), how does society rethink its definitions of parenthood?¹³ What are the bases and boundaries of reproductive obligations and freedoms? What substantive differences exist between natural and artificial reproduction? What are the connections and constraints between sex, procreation, and marriage? What personal, psychological, social, and societal implications pertain? And, perhaps, most importantly, what judgments and outcomes are in the best interests of the child?¹⁴ For theologians and religious bioethicists, they add: Does sacred scripture or religious tradition identify parental grounds? If so, are they of divine command or communal convention?¹⁵

¹³ Brake and Millum 2014, 1, 22, credit both changing family structures and demographics, in part born of the development and proliferation of ART, as creating a need to interrogate ethical, legal, and public policy questions concerning parenthood and procreation. See Weiler 1996, who charts philosophical transformations and societal changes regarding conceptions of parenthood through the psychological and sociological processes of “differentiation, abstraction, and nihilization.”

¹⁴ See Archard and Benatar 2010; Brake and Millum 2014; Hull 2005a.

¹⁵ For an overview of the philosophy of family, see O’Neill and Ruddick 1979; Blustein 1982; Richards 2010.

Before Assisted Reproductive Technologies

Before the advent of ART, there were two primary paradigms of parenthood: natural parenthood and adoption.¹⁶ Within natural parenthood, paternity and maternity are respectively defined by a man, i.e., the father, whose seed inseminated a woman through sexual intercourse, i.e., the mother, who in turn conceived, gestated, and gave birth to the child. In other words, natural procreation begot natural parenthood. Before ART and maternal genetic identity testing, while it was possible for a natural mother to abandon or be compelled to relinquish her child, at least at the time of birth the identity of the natural mother was clear. On the other hand, before paternal genetic identity testing, i.e. paternity tests, it was possible for the natural father to be unidentifiable, such as in a case of rape, consensual casual intercourse with an unfamiliar partner, or within a context of a woman having multiple male sexual partners.¹⁷ Even within a stable marital relationship, before genetic identity testing, fatherhood is assigned either by maternal assertion and/or

¹⁶ The use of the modifier “natural” to describe a kind of parenthood requires a defending explanation since the claim of “natural” is often considered suspect by sociologists and philosophers, see Bird and Tobin 2017. Calling something a natural kind indicates that its categorization corresponds to the structure of the natural world, and is not merely a social construct based on human action and intention. It is not self-evident that human fatherhood and motherhood fully meets this criterion. However, “biological” doesn’t fare much better since it also may describe parenthood achieved through ART. See also LaPorte 2003.

¹⁷ In Jewish law, a child of unknown paternal parentage is known as a “*shetuki*,” literally, “undisclosed,” and has the legal status of a “doubtful bastard.” A “*mamzer*,” bastard, is prohibited by halakhah from marrying and/or procreating with a non-bastard. Since bastardy is a heritable legal status, halakhah also proscribes a “doubtful bastard” from marrying either a known bastard – in case he is, in truth, not a bastard, as well as a non-bastard – in case he is, in truth, a bastard. See Schereschewsky 1995c, 435-7. Also see Laufer-Ukeles 2014, who argues for greater regulation of ART under the “best interest of children” standard, using the State of Israel as her principal example in which unregulated use of ART can affect the child’s Jewish and civil legal status, including marriageability, due to the state’s privileging of Jewish law in matters of family law.

through marital presumption rather than certain knowledge.¹⁸ Evolutionary theorists and sociobiologists analyze the cost and benefits of such ambiguous paternity.¹⁹

Before ART, therefore, every child has but one natural father and one natural mother. It should be noted, however, that some world cultures expand upon these two primary paradigms and uphold beliefs in partible paternity and maternity. For example, many indigenous South American societies espouse a concept of partible paternity, assigning a primary status of paternity to the man who through sexual intercourse first inseminates a woman post-menstruation, but also accredit to the pregnant woman's other subsequent sexual partners the status of secondary fatherhood (Beckerman and Valentine 2002, 4). This multiple paternity concept theorizes that each sexual partner contributes to a critical mass of semen, called in some cultures "white blood" or "milk," necessary for the healthy development of the fetus. Similarly, partible maternity privileges the birth mother as primary, but recognizes other women who breastfeed the child as secondary mothers. This multiple maternity concept, like that of multiple paternity, theorizes that both gestation and nursing convey needed mother's blood to the developing fetus and child through the umbilical cord and breast milk, respectively (Just and Monaghan 2000, 85-6). While these cultures value collective parenting, sibling kinship over marital bonds, and non-androcentric authority structures, the underlying idea of partible parenthood within these cultures is that each biological contributor to the development of the fetus

¹⁸ See Caro, *Shulkhan Arukh, Even Ha'ezer* 4:26, who says that even in a known case of an adulterous wife, absent clear paternal determination, we credit paternity to the husband since quantitatively the majority of sexual relations are presumed to have taken place between husband and wife.

¹⁹ See Beckerman and Valentine 2002, 3; Gray and Anderson 2010, 115 ff.

and viability of the child earns through his or her causal contribution a parental status (Beckerman and Valentine 2002, 4).²⁰

Judaism preferentially locates procreation within a sanctified monogamous marital relationship,²¹ prohibits sexual relations out of wedlock,²² and stigmatizes children born of adulterous or incestuous sexual encounters²³ (Barilan 2014, 124).

However, in a few instances, Jewish lore recognizes the idea of partible paternity and maternity, making ready modern Jewish halakhic and bioethical consideration of partible parenthood in cases of collaborative reproduction through ART. Consider the story of Goliath, the giant Philistine warrior, who David, as a diminutive youth and not yet king of Israel, felled with a slingshot. The Bible calls Goliath in Hebrew “*ish habeinayim*,” literally rendered as “man of the in-between” (Samuel I, 17:4), the exact meaning of which is uncertain,²⁴ but which the Babylonian Talmud (TB Sota 42b) understands as referring to the notion that Goliath’s extraordinary physical prowess was due to having multiple biological fathers. Goliath’s mother, who the rabbis identify as Orpah the Moabite, sister of Ruth and daughter-in-law of Naomi,²⁵ sometime after her return to her

²⁰ Beckerman and Valentine 2002, 3 ff., argue that their findings regarding partible paternity challenge the “standard model of human evolution,” which posits that monogamy increases male confidence in paternity, thereby favoring paternal investment, i.e. providing food and shelter, to a woman and her child, who the male presumes is his own. For a review of the “standard model,” see Pinker 1997, 488-90; Wilson 1998, 170.

²¹ See *Shulkhan Arukh, Even Ha’ezer* 1:1, “Every man is obligated to marry a woman in order to procreate.” For a contemporary discussion of these values, see Blau 2007.

²² See Maimonides, *Mishneh Torah*, “Laws of Forbidden Sexual Intercourse,” chapter 22; cf. Dorff 2013b.

²³ See *Shulkhan Arukh, Even Ha’ezer* 4:13, “Who is a bastard? [A child of one] who has sexual relations with one of the [biblically forbidden] illicit unions...” Children born out of wedlock, however much discouraged, do not carry the stigma of bastardy.

²⁴ See Stein ed. 2003, 607, whose Jewish Publication Society Hebrew-English TaNaKh (Hebrew Bible) tentatively translates the phrase as “the man of spaces between.”

²⁵ See Ruth 1:1-15.

family in Moab had sexual relations with numerous male partners on the night of Goliath's conception: "What is the meaning of '*beinayim*'? ... Rabbi Yochanan said, 'He was the son of a hundred fathers and one mother.'" (Bleich 2015a, 66-7; Lichtenstein 2014a; Loike and Tandler 2014a, 57n40).²⁶ Despite such extraordinary accounts in Jewish lore, before ART, the primary paradigm of natural parenthood, and the only one recognized by Jewish law, assumed a unique biological mother and a unique biological father.

The second primary paradigm of parenthood before ART was neither natural nor biological, but social and legal – namely, adoption. In adoption, the government, often through court decree, artificially creates a legal relationship between a child and his or her adoptive parent(s) akin to that of natural parents and child, as well as severs the rights and responsibilities pertaining to the child's natural parents. Adoption is an ancient institution, whose earliest written reference appears in the Babylonian Code of Hammurabi and was regulated in the Ancient Near East, as well as in Greco-Roman civilization. Indeed, in Ancient Rome, adoption was understood as a legal change in parenthood (Huard 1956). However, in modern western civilization, until the mid-nineteenth century in the United States, and the 1920s in England, adoption was more the provenance of common law and informal arrangement than judicially regulated custody

²⁶ Rashi, ad loc., s.v. "*Bar Meah*," denies the possibility of multiple fathers and understands the talmudic passage as identifying Goliath as being of obscure paternity: "one was his father, the rest adulterers." Tosafot, ad loc., s.v. "*Meah*," however, entertain the idea that the sperm of multiple men can contribute to a single pregnancy. This is different than the question of superfetation, i.e., a woman's multiple ova can be impregnated by different male sexual partners, either in the case of twins, see Mueller 2015, or months apart within a single state of pregnancy, and see Reichman 2009.

assignments and legally created and recognized kinship relationships.²⁷ Motivation for adoption has also changed. While there has always been a societal need to care for orphaned children, in the twentieth century, new emphasis was placed on the desire to enable both parentless children and childless couples to experience and enjoy a complete family life (Broyde 1988).

Jewish law, however, has never recognized formal adoption as having the legal power to create new kinship relationships that confer upon adoptive parents a halakhic status akin to natural parenthood. Instead, the Talmud recognizes adoption as an act of righteousness and kindness, i.e., *tzedakah* and *chesed*, referring to an adoptive parent as “one who raises another’s child” (Broyde 1988, 2005a; Schereschewsky 1995a). Jewish religious culture primarily uses patronyms, though sometimes matronyms, in its conventional naming practices, such as in the ritual context of being called to the public reading of the Torah, or for documentary purposes, e.g., a *ketubah*, marriage contract, or a *get*, divorce decree.²⁸ In the case of an adopted child, halakhists recommend qualifying the use of the adoptive patronyms and matronyms with the phrase “*hamegado* – who raised him,” as in, for example, “Isaac the son of Abraham who raised him” (Schachter 1982, 104 ff.). An adopted child cannot share in the lineage distinctions of his or her adoptive parents. Thus, adopted children born to a non-Jewish natural mother require

²⁷ Massachusetts passed the first American adoption law in 1851; Britain in 1926. See Herman 2008 who charts changes in adoption culture in the United States over the first seventy-five years of the twentieth century through the stages of regulation, interpretation, standardization, and naturalization. See Keating 2008, 113 ff., for the modern history of adoption in England, especially regarding the Adoption of Children Act of 1926.

²⁸ Jewish law differentiates between documents that serve as evidence, such as a *ketubah* (marriage contract), and documents whose execution effectuates a legal result, such as a *get* (Jewish divorce). See Broyde 2001, 1-25.

conversion. Likewise, if the adoptive father is of priestly or levitical lineage, i.e., *kohen* or *levi*, such familial status, with its attendant rights and responsibilities, cannot be conferred upon an adopted child (Schachter 1982, 95, 98-104; Gold 1997). Similarly, an adopted child has no natural inheritance rights, though, an adoptive parent may choose to will assets and possessions to such a child, as is indeed his or her prerogative toward any non-relative.²⁹

Perhaps the starkest representation of the lack of natural relationship between an adopted child and his or her adoptive family can be seen in Jewish marriage law. Adopted children raised in the same home may marry each other, or may marry the natural children of their adoptive parents, i.e., adopted siblings, since there is no natural relationship. Incestuous relations are limited to natural relatives.³⁰ Similarly, the question arises as to whether in an adoptive context *hilkhot yichud* obtain, i.e., the Jewish laws regulating seclusion of two unmarried individuals of opposite genders who are not immediate relatives.³¹ Some halakhists apply formal standards of seclusion laws independent of social context, and thus prohibit an adoptive parent and adopted child of

²⁹ Some halakhists view adoption through a civil court decree as determinative of legal intent, and thus legitimate a legal presumption that adoptive parents intend to treat an adopted child as a natural child for purposes of inheritance, see Schachter 1982, 95.

³⁰ See TB Sota 43b; Caro, *Shulkhan Arukh, Even Ha'ezer* 15:11. Even adoptive parental custody cannot create an incest prohibition of biblical force between an adoptive parent and adopted child, though other concerns of abuse may pertain, and such unions may still be rabbinically proscribed, see Broyde 1988, 147. Cf. TB Megillah 13a, where the Talmud cites the teaching of Rabbi Meir regarding Esther 2:7, “[He (Mordecai) was foster father to Hadassah – that is, Esther – his uncle’s daughter, for she had neither father nor mother. The maiden was shapely and beautiful; and when her father and mother died, Mordecai adopted her] as his own daughter’ – read not as his own daughter, but as his own household, i.e., as his wife.” Such a reading speaks to the varied ways in which orphaned children were cared for in the ancient world, as well as exponentially increases the level of intrigue underlying the biblical book of Esther’s dramatic narrative.

³¹ See Caro, *Shulkhan Arukh, Even Ha'ezer* 22:1-20.

opposite genders to be secluded absent the presence of the other adoptive parent, arguably creating a logistically difficult and psychologically unhealthy living situation. While other halakhists, taking note of the permissive and positive judgments of biblical and rabbinic examples of adoptive relationships, contextualize the laws of seclusion as not applying to adoptive parent-child relationships (Berzon 1987, 107-12). Similarly, the laws of mourning, such as the liturgical recitation of the mourner's *Kaddish*, being primarily of rabbinic legislation, may be assumed by an adopted child *qua* the parents who raise him or her, while they are not imposed upon an adopted child toward his or her natural parents (Schachter 1982, 94-5; Broyde 1988, 148-9; 2005, 142-5; Wolowelsky 2001).³²

Thus, while Jewish law does not confer legal parenthood upon adoptive parents, it will treat social parents, at times, but not comprehensively so, akin to natural parents. This is because while Jewish law does not principally recognize adoptive parents as legal parents, it does recognize them as moral and spiritual parents. Consider the below talmudic passage whose intent is to impress a moral and spiritual judgment, rather than legal assertion:³³

Whoever raises an orphan in his home, Scripture accounts it is as if he gave birth to the child. Rabbi Chanina learns [the above lesson] from here: "And the women neighbors gave him a name saying, 'A son is born to Naomi'" (Ruth 4:17). But was it Naomi who gave birth? Didn't Ruth give birth? Rather, Ruth bore him and Naomi raised him. Therefore, he is identified as Naomi's child. Rabbi Yochanan says from here: "And his Judahite wife bore Jered, father of Gedor; Heber, father of Soco; Jekutiel, father of Zanoah. There were the sons of Bithiah, daughter of

³² See Lamm 2000, 216-7, who categorizes adopted children mourning "those who have taken them in and cared for them" as "discretionary mourners."

³³ For an overview of the literary sources of Jewish law, see Chapter Two, "Process and Methodologies of Halakhah," p. 89 ff. For their method of citation and abbreviation, and sources of translation, see References.

Pharaoh, whom Mered married” (I Chronicles 4:18).³⁴ But did Bithiah bear Moses? Didn’t Jocheved give birth to Moses?! Rather, Jocheved bore him, but Bithiah raised him. Therefore, Moses was identified as her child. (TB Sanhedrin 19b)

The Talmud then extends further the scope of moral and spiritual parenthood to even those who provide for physical sustenance of others, beyond parental-surrogate nurturing and rearing:

Rabbi Elazar learns it from here: “By Your arm You redeemed Your people, the children of Jacob and Joseph” (Psalms 77:16). Now, did Joseph father [the twelve tribes]? Didn’t Jacob father them?! Rather, Jacob fathered them, but Joseph supported and sustained them. Therefore, they [i.e., the twelve tribes] are called by his name. (ibid.)

Finally, the Talmud then assigns moral and spiritual parenthood to educators who teach a child Torah.

Rabbi Shmuel bar Nachmani said in the name of Rabbi Yonatan: Whoever teaches Torah to his fellow’s child, Scripture accounts him as the child’s parent. As it is said, “This is the lineage of Aaron and Moses at the time that the Lord spoke with Moses on Mount Sinai” (Number 3:1). But in the very next verse it says, “These were the names of Aaron’s sons...” (3:2). [The intent of the Torah here is] to say to you that Aaron fathered and Moses taught them, and therefore they are [also] called by his name. (ibid.).

This superlative evaluation of raising another’s child as a form of moral and spiritual parenthood is indeed practically reflected in natural parent-like obligations of support, care, and governance toward the child, and in reciprocal duties of honor by the child toward his or her adoptive parents in life and thereafter.³⁵ However, the legal mechanism underlying these duties and obligations stem not from a legal status akin to natural

³⁴ The Rabbis interpreted “Jered,” “Heber,” and “Jekutiel” all as alternate names of Moses, and Bithiah, the daughter of Pharaoh, is the Egyptian princess that pulled Moses from the reeds of the Nile.

³⁵ See Wolowelsky 2001.

parenthood, but from the consequences of other legal principles and institutions. Thus, the adoptive parent who raises another's child is viewed in Jewish law, alternatively: one, as an agent of the natural parents who is empowered to fulfill in their stead their duties toward the child (Broyde 1988, 147); two, as an appointed, or *de facto*, legal guardian, i.e. *apotropos*, of the child, who is duty-bound to care for the child's lodging, sustenance, and education, as well as to serve as a trustee for any property belonging to the child (Schereschwsky 1995a, 442; 1995b); three, as a person bound by a promise or oath to provide for the welfare of the child, as if it were his or her own (Silverstein 1974). Thus, as opposed to American law, for example, Jewish law does not fundamentally recognize the authority or power of a governmental agency or court to sever or destroy the bonds of natural parenthood, or conversely to create for adoptive parents a full legal status equal to that of natural parenthood (Broyde 1988, 149-52). Interestingly, in the modern State of Israel, in keeping with contemporary international legal conventions of adoption, the 1960 Adoption of Children Law empowers district courts, and with consent of all interested parties, state-recognized rabbinical courts, to sever pre-existing ties between a child and his or her natural parents, and create new familial ties with adoptive parents akin to natural parents. However, in deference to Jewish family law, which is predominantly determinative of Israeli civil family law, the halakhic prohibitions and permissions pertaining to marriage and divorce continue to apply restrictively to natural parents and permissively to adoptive custodians and their respective relatives

(Schereschewsky 1995a).³⁶ The legal and halakhic status of adoptive relationships has significance within ART, since some parental outcomes through ART may be grounded in natural parenthood, or, alternatively, by way of legal adoption.

After Assisted Reproductive Technologies

With the rise of ART, the complexities of collaborative reproduction have challenged viewing parenthood solely through the lens of the two primary paradigms: natural procreation by a unique woman and man, and adoption. Collaborative reproduction involves many participating actors and agents, thus fragmenting the procreative process, and perhaps even our understanding and definition of parenthood (Margalit, Levy, and Loike 2014). Utilizing third-party gamete providers, employing gestational surrogates, and involving genetic counselors, medical fertility clinicians, and lab technicians, have all inspired philosophers and ethicists to reconsider the philosophical grounds of parenthood. Competing legal claims, courtroom conflicts, and inconsistent judicial rulings have led lawyers, jurists, and legislators to adjudicate the bases of parental rights and responsibilities. Rapidly advancing assisted reproductive technological capabilities, coupled with acute biological, genetic, and genomic understanding, have expanded and textured these new philosophical and legal considerations of procreation and parenthood (Brake and Millum 2013, 1, 22).

³⁶ Such a legal policy by necessity requires open adoption records, which indeed is the case in Israel. See Birenbaum-Carmeli and Carmeli 2010.

In this Jewish “Religion and Science” dissertation, I will demonstrate that parallel processes of philosophical refinement and legal adjudication are similarly taking place within the related disciplines of medical halakhah and Jewish bioethics. While Jewish law tends not to create new legal categories, it will necessarily still contend with new forms of parenthood born of collaborative reproduction, even as it seeks to frame these new forms within the established primary halakhic paradigm of natural procreation and parenthood. The interaction of science and religion helps shape epistemological orientations, i.e., scientific understanding and the role of new knowledge, as well as axiological orientations, i.e., the values undergirding moral and religious judgments. Consequently, Jewish religion and science relations impinge on the resultant Jewish legal and bioethical analyses and their conclusions.

The Philosophical Grounds of Parenthood

Though nuanced opinions on the philosophical and legal bases of procreation and parenthood proliferate in secular and religious Jewish and non-Jewish scholarship, they may arguably be reduced to hinging on two fundamental questions: first, should there be a monist or pluralist standard for deciding parenthood; and second, should the grounds for parenthood be causal or voluntarist?

Monist or Pluralist?

Monist accounts of parenthood assert that there ontologically is, or conventionally needs to be, one necessary and sufficient philosophical property or condition to generate

a parental relationship. Said property or condition defeats all competing claims, despite complex real-life circumstances and the relative worthiness of other considerations (Bayne and Kolers 2003). Thus, for example, armed with the scientific knowledge of molecular genetics as the principal determinant of developmental biology, one may assert that genetics ontologically is, or conventionally should be, the necessary and sufficient property that rightfully determines paternity and maternity. In monist geneticism, the sperm donor is thus always the natural father, and the ovum donor is always the natural mother. Should a person or a couple other than the genetic father or genetic mother seek to raise the child, this then should be viewed as an adoptive relationship, or some other government-sanctioned, legally created, newly socially constructed definition of non-natural parenthood. If more than one man or one woman contribute genetic material, such as in the case of mitochondrial replacement therapy, i.e., “three-parent babies,” or if only one person contributes genetic material, such as in the case of cloning, then one must admit that strong geneticism, even within a monist account, may allow for more than, or less than, two natural parents. Alternatively, in the case of tri-gametic offspring, one would have to weigh and compare the relative merits of the genetic contributions, and identify a principle by which a determination may be made as to whom should be identified as the unique natural mother and father. Thus, in the case of mitochondrial replacement therapy, one may argue that nDNA plays the overwhelmingly dominant role in developmental biology, and one may therefore view the contribution of mtDNA as

relatively negligible.³⁷ The point here is not to advocate for a genetic basis for the determination of paternity and maternity, but to demonstrate a monist standard. The advantages of a monist standard stem from definitional clarity and purported universal applicability. The disadvantages of a monist standard are rooted in definitional inflexibility despite extenuating circumstances, and the problem of parity, i.e. not all accounts of parenthood apply universally, or equally to mother and father. For example, while we can speak of a genetic account of both paternity and maternity within parenthood, we cannot do the same with a gestational account since a man cannot gestate (Brake and Millum 2013, 26).

Pluralist accounts argue that more than one property or condition may sufficiently ground parenthood (Bayne and Kolers 2003). Thus, for example, in the case of gestational surrogacy, instead of debating the relative merits of using a genetic or gestational standard for maternity, one can recognize both properties, possibly among yet other candidates, as sufficient to establish maternity. Here too one may allow for more than, or less than, two natural parents, such as a genetic mother and a gestational mother, in addition to the sperm-donating father. Alternatively, a pluralist account may also seek a unique mother and father, but recognize multiple bases as sufficient to make a maternal or paternal claim. Deciding between competing claims may be circumstantial, and/or arrived at by consensus, contract, or court adjudication. Even though Jewish law only recognizes natural parenthood, medical halakhists and Jewish bioethicists also debate

³⁷ See Weiss 2013, an American-born, Israeli halakhist, who argues by way of the legal principle of qualitative majority that maternal nDNA, and not mtDNA, is determinative of maternity.

whether there should be a monist or pluralist account of parenthood, as will be shown below in chapters five through seven.

While monist accounts may be arbitrarily chosen and conventionally serve as a legal or social construct, more likely, proponents of a particular monist standard will argue the necessity, or, at least, superiority of their asserted standard. Pluralist accounts likewise may point to at least two larger viewpoints. Should definitions of parenthood be seen as culturally conditioned social constructs, then the burden arguably falls upon monists to defend why there should only be a single, hegemonic standard. Just like legal adoption expands the definition of parenthood beyond the biological, so too in a world of assisted reproductive technologies, changing family structures, and shifting demographics we should admit a plurality of grounds for parenthood (Lifshitz 2014).³⁸ At the same time, should one opine that all legitimate definitions of natural parenthood begin with natural procreation, such as in the case of halakhah, then expanded pluralist accounts of natural parenthood would necessarily be limited to technologically separable conditions of natural procreation, i.e., conception, genetic contribution, gestation, and parturition.

Causal or Voluntarist?

Whether one adopts a monist or pluralist account of parenthood, one still needs to qualify exactly what properties or conditions are potentially sufficient to ground parenthood, and thereby morally and legally attach attendant parental rights and

³⁸ For studies of changing family structures in the Jewish communities of North America and Israel, see Wertheimer 2005; Fishman 2015. For articles on unconventional families and the social good, see Narayan and Bartkowiak 1999.

responsibilities. In recent years, philosophers of family, as mentioned above, have identified several such conceptual grounds for parenthood: genetic, gestational, labor-based, intentional, voluntarist, beneficent, and causal (Brake and Millum 2014, 25-32). Reducing them further, they arguably break down into two fundamental categories: causal or voluntarist. These two elementary groupings may at first seem to track with the two aforementioned pre-ART primary paradigms of parenthood: causal with natural procreation, and voluntarist with adoption. While there is some truth to this observation, after the introduction of ART, the grounds and scopes of causal and voluntary accounts of parenthood have extended beyond the more narrowly construed categories of natural procreation and legal adoption.

Causal accounts of parenthood potentially include any biological or non-biological substantive donation or effort that contributes to the existence of a child. Parental candidates therefore include genetic donors, gestational carriers, parturitional actors, procreative facilitators, and if extended beyond the moment of birth, any other contributors of labor and/or resources to the support and development of the child until the child reaches the presumed age or state of self-sufficiency.³⁹ Causation alone, thus, generates too broad a grounding for parenthood, therefore demanding further narrowing, perhaps by differentiating between necessary and unnecessary causes. However, practically, “but for” counterfactuals do not severely enough constrain causal parental

³⁹ Stipulating “until the age of self-sufficiency” is inexact and context dependent. Legal majority may also serve as a *terminus ad quem*. A potentially helpful analogue may be found in adoption laws. Many countries do not allow adoption after age eighteen or twenty-one. In Israel, there is no legal adoption for persons over eighteen, see Schereschewsky 1995a, 441. In America, adult adoption is permitted and usually leveraged for inheritance purposes, see Ratliff 2011.

candidates. Consider, for example, the matchmaker who introduced the natural parents, or an in-law who pressured a newly married couple to begin a family. They too might also be identified as necessary causes, but for whom the child would not have come into existence, at least in a particular case at hand (Blustein 1997, 82-3; Brake and Millum 2013, 31-2). Similarly, fertility clinic doctors and lab technicians, as well as an obstetrician, midwife, or surgeon who performs a caesarian section, play essential causative roles. Further differentiating between proximate and secondary causes may be helpful, though these too can have blurry boundaries. Therefore, it is seemingly best to begin with causal accounts factored out from natural procreation and then build out causal possibilities from there.

Genetic Accounts

Genetic accounts of parenthood directly derive from natural procreation as informed by the scientific understanding of the biological mechanisms of conception, and molecular genetics as primarily determinative of fetal and human development. Genetic accounts ground parenthood in a larger network of familial connections, themselves rooted in common genetic origins. A genetic standard points to a necessary and proximate causal account, one that provides parity for both paternal and maternal claims (Bayne and Kolers 2003; Austin 2004).

Critics of simple causal accounts, like genetics, point out that simple causation does not require intention or informed, voluntary, and understanding consent, thus assigning parenthood to accidental fathers and mothers whose method of contraception

failed them, or who didn't understand the linkage between pregnancy and sexual activity.⁴⁰ Since parenthood is not only a biological or social description, but entails a moral relationship, some argue that it is unclear how simple causation generates moral responsibility. One would have to say that procreating and causing a child to come into dependent and vulnerable existence creates a compensatory obligation of caring for the child's welfare. This view invites several questions, such as: should such procreative costs be minimally construed and require only that which is necessary for the child's survival? Or should they be maximally envisioned, including a duty to love, and all other efforts required to ensure the flourishing of the child? Additionally, if parenthood is to be grounded in compensation for causal harm to the child, do the weighty and enduring responsibilities of parenthood equal the procreative costs initially engendered? And, should a negative conception of parenthood framed as compensation for causal harm, rather than a positive conception born of voluntarist intent, serve as the basis for a culturally valorized parenthood (Brake 2010; Brake and Millum 2013, 32)?

Some theorists wish to ground the genetic account more deeply by claiming it is not a matter of simple causation, but the creation of a child out of one's own genetic material that conveys parental rights and obligations through rights of ownership. The child is a product of parental genetic contribution and thus rightfully belongs to them

⁴⁰ Clearly, accidental pregnancy is much more consequential for a woman than a man. See Millum 2008, who combines causation with intention by proposing a "conventional-acts" account. He solves the philosophical problem of accidental fathers by upholding parenthood as a social institution that assigns paternity and its attendant responsibilities to those who voluntarily commission an act, i.e., sexual intercourse, which conventionally leads to the acquisition of paternal responsibilities. This wouldn't, however, help in the case of stolen gametes.

(Hall 1999).⁴¹ Antagonists to this approach mount four objections: first, property-based foundations of parenthood privilege parental rights over responsibilities, to the potential detriment of a child's welfare (Kolers and Bayne 2001); second, if self-ownership justifies parental claims over their child, the child's own self-ownership should likewise empower the child to defeat such claims (Archand 1990); third, a sophisticated understanding of genetics reveals that genes represent shared information and not substantive contribution, thereby privileging form over matter (Silver 2001; Brake and Millum 2013, 25-6); fourth, environmental factors, i.e., epigenetics, especially during gestation, influence gene modification and expression (Mukherjee 2016, 393-410).

Gestational and Labor-based Accounts

Gestational accounts, on the other hand, argue that beyond the first embryonic cell of conception, the material development of the child accrues to the female gestator, who thus serves as a more formative causal agent (Silver 2001). Additionally, the woman who serves as the gestational actor invests significant biological and extra-biological resources, i.e., "labor," to produce a child, including personal discomfort, distress, and health risks, thereby better grounding the moral parental relationship in responsibility rather than in rights, which is a definition of parenthood to the benefit of the child (Narayan 1999). Furthermore, the identity of the gestational carrier is clear at parturition, and it is arguably of benefit to the welfare of a child to have a readily identifiable mother

⁴¹ Hall 1999 bases her analysis on John Locke's theory of self-ownership, as articulated in his "Theory of [Just] Acquisition" in "Two Treatises of Government."

(Annas 1984). Also, in light of our developing understanding of embryonic development and epigenetics, the female gestational host can be said to also play a genetically determinative role. Therefore, for example, in a case of surrogacy in which the female genetic donor or donors, i.e., ovum or embryo, nDNA and/or mtDNA, are different than the gestational carrier, maternity should still be assigned to the “surrogate mother.” Finally, the experience of pregnancy and gestation within a woman’s body also creates a powerful maternal bond with the developing fetus. For those interested in upholding the principle of parity, however, a gestational standard fails to ground paternity (Brake and Millum 2013, 26, 28).

Framing gestation within a broader “labor-based” account allows theorists to extend causal accounts to include non-biological agents. Custodial care-givers and adoptive parents who invest labor, love, and finite resources into the rearing of a child can earn a parental claim, especially when parenthood is seen primarily as a moral relationship of beneficence toward the child (Millum 2010). Labor-based accounts, beyond gestational, seemingly combine causal factors with intentional and voluntarist accounts. Thus, if several broadly construed, labor-based candidates vie for parental status, how do we adjudicate their competing claims? Do we privilege biological causal agents or non-biological voluntary ones?

Voluntarist Accounts

Voluntarist accounts indeed understand parenthood more as a moral relationship of responsibilities and rights than a biological claim of kinship, thereby focusing on

parental agency rather than biological causality. In an age of ART, proponents of voluntarist or intentionalist accounts argue that older categories of conventional parenthood fail (Margalit, Levy, and Loike 2014). Especially in cases of collaborative reproduction, it is the parents who align the ART medical professionals, arrange the contributing parties, oversee and support the process, all the while intending to bring into the world a child who they plan to raise as their child, regardless of who provides the requisite genetic materials, hosts the fetus through gestation, or achieves the underlying technical feats in the medical office and laboratory (Hill 1991). Staking out an ethical platform, voluntarists privilege obligations assumed voluntarily and autonomously over those imposed heteronomously and therefore involuntarily borne. However, at least three objections may be leveled at voluntarism: first, since accidental parents lack intentionality at the time of conception should they be absolved of their parental obligations?⁴²; second, why should we avoid involuntary obligations for parents when we impose filial and sibling duties upon offspring?; and third, voluntarists cannot totally avoid the imposition of involuntary obligations upon parents since parental duties and expectations are set by law and society and not by individual conscience or volition alone (Brake and Millum 2013, 29-31).

The Halakhic Grounds of Parenthood

Even though Jewish law identifies itself as a heteronomous system of obligations and responsibilities expressed through affirmative duties and prohibited actions,

⁴² See above n40.

intentionality and volition still play robust roles. Thus, non-biological, functional parents, i.e., those who raise another's child, are acknowledged and lauded as examples of moral and spiritual parenthood. At the same time, halakhah does not recognize the ability to socially construct and confer legal status upon non-biological parents; only natural parents can acquire full legal parental status. In a pre-ART world, natural parenthood was a direct outgrowth of natural procreation, yielding a unique father and mother.⁴³

However, with the rise of assisted reproductive technologies, especially collaborative reproduction, medical halakhists and Jewish bioethicists, like society at large, need to look more closely at the grounds of maternity and paternity in our brave new world. As I will demonstrate in Part Two (chapters four through seven) of this dissertation, parallel deliberations of the grounds of parenthood to those cited above will enter into the halakhic analysis and debate surrounding the utilization and outcomes of ART. Among halakhists and Jewish bioethicists, we will find monist and pluralist accounts of parenthood, as well as causal and even voluntarist considerations employed in deciphering parental status. With the arrival of ART, most halakhists and Jewish bioethicists first focused on known biological milestones of pregnancy, i.e., conception,

⁴³ The privileging of a unique father and mother is in step with Rabbinic Judaism's construction of a heteronormative Jewish society of men and women whose individual rights and obligations are based on pronounced binary gender legal classifications. At the same time, rabbinic literature also employs within its logical analysis of gendered topics not only male and female types, but also ambiguously gendered, intersexual types, such as the dual-sexed hermaphrodite, i.e., *andrigonos*, and the non-sexed or indecipherably sexed person, i.e. *tumtum*. See Broyde 1988, 153-7; 2016a; Steinberg 2003b; 2003f. It is a matter of scholarly debate as to why the Rabbis explored how to assign gender classifications based on human sexual dimorphism to hybrid sexes or non-sexes, i.e., male, female, both, or neither. Was it because of these types' contribution to rigorous logical analysis, or because of their actual phenomenological incidence in ancient Greco-Roman Palestine? See Fonrobert 2007. Regardless, it is possible that their frequent mention in talmudic literature on topics of gender open future consideration of parenthood structures within halakhic analysis beyond the simple father-mother duality. Cf. Ben-Ephraim 2004; Gray 2015.

gestation, parturition, to demarcate parental claims. These distinct occasions are clearly identified within older, even ancient discussions of parenthood, such as in the Talmud. However, as exposure to advancing scientific knowledge and technological capability has grown, medical halakhists and Jewish bioethicists have begun to incorporate consideration of genetic grounds for parenthood in their halakhic and bioethical analyses. To what extent such new knowledge impinges will be shown to depend on the relation of religion and science in the epistemology and axiology of the thinker.

CHAPTER TWO

Jewish Bio and Genetic Ethics

The History and Foundational Models of Contemporary Jewish Bioethics and Medical Halakhah (Jewish Law)

The literature of Jewish bioethics has been steadily growing over the past fifty years, primarily in America and Israel. Like in other emerging fields of inquiry, there has been a recognizable pattern to the evolution of its literary corpus. First, general treatises by trailblazing scholars open the investigation.¹ Once a sufficient number of scholars demonstrate interest in the topic of study, multi-author compilations of essays are produced.² While the publication of general treatises and compilations continue to fine tune and deepen the original framework of scholarly research, specialization soon follows greatly expanding the scope of interest and application of ideas. Initial examinations of specific topics within the field preliminarily formulated in short articles are soon developed into full, book-length treatments.³ Individual articles are first published in journals inclusive of more general scholarly interest.⁴ When a critical mass of authors and

¹ Although in 1911, German Jewish scholar Julius Preuss published *Biblische-Talmudische Medizin* (Biblical and Talmudic Medicine), his project better aligns with the nineteenth-century *Wissenschaft des Judentum* scholarly movement focused on textual and historical analysis than with the initiation of Jewish Medical Ethics. See Preuss 1993; Rosner 1977. Jacobovitz 1975 (first published in 1959) inaugurated the field. See below.

² See Rosner and Bleich 2000 (first published in 1979).

³ The earliest example of this phenomenon would be Feldman's (Feldman 1968) book-length treatment of abortion and contraception in Jewish law. A more recent example would be the question of defining death by either cardiac or neurological criteria, see Shabtai 2012.

⁴ For example, *Judaism*, *RJJ Journal of Halacha and Contemporary Society*, and *Tradition*, three prominent American scholarly journals of more general Judaic interest, were primary media of the publication of Jewish bioethics in the 1960s through the 1980s, after which new journals began to proliferate. It should also be noted that more general medical journals and law review journals were also utilized for publication during this time period. While specialized journals soon emerged within both the general and Jewish study of biomedical ethics, it should be further noted that bioethical publications still appear in more general journals and magazines when there is an intention to include a non-professional readership.

topics has been reached, in large part driven by pressing and problematic actual cases, i.e., bioethical casuistry, new journals specifically dedicated to the field of inquiry are inaugurated.⁵ When sufficient research on a broad array of topics has been achieved, encyclopedias are produced.⁶ When concurrent with this literary development conferences dedicated to the field are held, professional societies are started, and college courses and graduate programs arise, the field of inquiry matures into an academic discipline. The development of the field of Jewish bioethics and its literature has indeed followed this trajectory.⁷

Although there has been a modest history of interaction between Jewish law, theology, and medical interventions since Biblical times through the nineteenth century, the field of bioethics, more generally, and Jewish bioethics, more particularly, emerged in the second half of the twentieth century in the aftermath of the Holocaust, along with rapid advances in medical technologies.⁸ Beginning in 1947 at the Nuremberg Doctors' trials, post-Holocaust concerns regarding the ethics of scientific experimentation on humans, eugenics, and the privileging of personal autonomy as a human right, i.e.,

⁵ For example, *Assia: A Journal of Jewish Ethics and Halacha* (Hebrew), and its English language counterpart *Jewish Medical Ethics and Halacha (JME)*, first published in 1989 by the Dr. Falk Schlesinger Institute for Medical-Halachic Research, Shaare Zedek Medical Center, Jerusalem, which itself was founded in the late 1960s.

⁶ See Steinberg 2003a, first published in Hebrew in 1988.

⁷ See Halperin 2004, in which he charts the historical development of Jewish Bioethics in Israel from 1948-1998, which essentially and chronologically tracks stepwise with the American version of the field. The most notable difference between American and Israeli Jewish Bioethics is that in Israel the field has a marked influence on legislation. See Sinclair 2003.

⁸ Newman 1998, 4-14, credits nineteenth-and-twentieth-century liberal Judaism with initiating the critical study of ethics due to Reform Judaism's emphasis on ethics instead of ritual obligation. Interestingly, Jewish bioethics, however, was first cultivated by Orthodox Jewish scholars since it was first perceived as a specialized inquiry of ongoing development of Jewish law in response to actual cases. See more on this below.

informed, voluntary, and understanding consent over medical paternalism, led to the formulation of the Nuremberg Code directing medical research ethics (Grodin and Annas 1992). Subsequent advances in scientific knowledge and technological achievement, for example, artificial life support, plus the increasingly complicated administration of the burgeoning health-care industry, all gave rise to the need for the specialized study of medical and biological applied ethics (Barilan 2014, 8).⁹ In the late 1950s, Immanuel Jacobovitz, former Chief Rabbi of Ireland and rabbi of the Fifth Avenue Synagogue in New York, later Chief Rabbi of England, published the first book of Jewish bioethics, his newly minted Ph.D. thesis, *Jewish Medical Ethics* (Jacobovitz 1975, first published in 1959; Crane 2013, 12).¹⁰ Jonathan K. Crane (2013, 12-15), a professor of bioethics at Emory University, attributes to Jakobovitz two guiding and constraining methodological principles that shaped the first few generations of Jewish biomedical ethics: the primacy of Jewish law and its attendant push to discover within the Jewish legal textual tradition clear and definitive normative conclusions.¹¹

As the more general field of medical and biological ethics diversified not only regarding topics of interest, but also in terms of ethical theories and methodologies,

⁹ Dorff and Crane 2013, 1-3, distinguish between “morals,” which refers to judgments about specific issues, and “ethics,” which refers to theories of morality. Other define “morals” as a tradition of beliefs surrounding right or wrong human conduct, while normative “ethics” refers to the nature and justification of decision-making principles. Many authors in Jewish bioethics, however, are not careful about this distinction conventional in the academic philosophical study of ethics.

¹⁰ Crane 2013, 12, suggests that Jakobovits was inspired by the then emerging model of Catholic medical ethics. In an address in 1958, Pope Pius XII (1958) spoke to medical ethical issues surrounding palliative care and end-of-life treatment. For example, his definition of the doctrine of double effect became highly influential in subsequent twentieth-century medical ethics, see Treloar 2013. Jakobovits (1975 xxxv, first published in 1959), in his introduction, does indeed state: “The Paucity of Jewish works on medical ethics contrasts sharply with the profusion of Roman Catholic literary material in this field.” However, he does not explicitly reference Pope Pius XII’s address.

¹¹ See also Newman 1998, 188-91, 198.

Jewish biomedical ethics likewise followed suit.¹² The involvement of rabbinical scholars from non-Orthodox Jewish denominations, as well as Jewish, university-trained bioethicists, also helped expand the field beyond the predominantly strictly halakic concerns of Orthodox Jewish scholars. It should also be noted, in keeping with the “Religion and Science” thesis of this dissertation (see p. 8 above), that the more general and specifically Jewish expansion of bioethical theory and method ultimately has begun to influence the theories and methods of some legally oriented Orthodox Jewish scholars, as will be demonstrated below, as well as in chapters five through seven.

Surveying the literary landscape of contemporary Jewish bioethics, Louis E. Newman (1998, 188-203), professor of Religion and Jewish Studies at Carleton College identifies three foundational Jewish bioethical models: the legal, covenantal, and narrative.¹³ This tripartite division provides us with a helpful schema within which to review contemporary Jewish bioethical literature. To these three, we need to add two more: feminist Jewish bioethics and judaized bioethics. Judaized bioethics is somewhat of a catch-all category that includes a broad variety of bioethical scholarship by trained bioethicists, medical practitioners, scientists, and lawyers of Jewish heritage who turn, in part or in whole, to the Jewish textual tradition to further develop their philosophical inquiries (Crane 2013, 15). Although the legal model is historically dominant in the field, we will first take up the covenantal, narrative, feminist, and judaized types in order to better appreciate how these models and their own influences have begun to impinge on

¹² For example, see Childress 2009, for a presentation on a variety of methods in bioethics.

¹³ Also see Crane 2013, 12-15, 30-41, who further develops Newman’s models.

the further development of the legal model in the latest generation of halakhically oriented Jewish bioethical research.

Covenantal Jewish Bioethics

Covenantal ethics are based on the idea that each Jewish person, and the Jewish people as a whole, live in dialectical relationship with God to whom Jews are bound by their covenantal commitments. On the one hand, it is affirmed that God has instructed the Jewish people to perfect the world and has equipped them with the resources and power to do so. On the other hand, the application of power usually entails moral decision making, and thus it is a Jewish religious duty to grapple with how the use or restriction of power better enacts and advances Jewish covenantal values and goals.

In a covenantal framework, for example, the safeguarding of human life is a near-absolute value. Given the covenantal value of esteeming all human life and seeking its betterment, how might covenantal ethics then guide a decision of whether or not to abort a fetus? On the one hand, abortion, as the ending of life, even at a prenatal stage, arguably erodes a respect for all life. On the other hand, an abortion may be motivated by the desire to enhance or preserve the quality of life of the mother. A covenantal approach to ethical decision making would therefore recognize a question of abortion as a conflict between two life-affirming choices and seek the best resolution given the particular circumstances (Greenberg 1986).¹⁴

¹⁴ It is interesting to note that while Greenberg himself is an Orthodox rabbi, his ethical methodology is not rooted in the Jewish legal model to be discussed below. Greenberg believes that the Holocaust taught Jews not to let law alone decide the right and the good, but to measure the law against larger covenantal values. His brief analysis of this weighty issue perplexes as he frames the conflict of values as between a general

Additionally, living in faithful covenantal relationship with God requires that Jews aspire to continuity with earlier generations of their faith community who similarly upheld their covenantal commitments to God, Torah, and Israel (Borowitz 1991). Thus, there is always a present need to consult Judaism's historic religious literature to help frame issues within a religio-cultural continuum. At the same time, while Jewish covenantal ethicists strive for a continuity of fundamental covenantal values, changing cultural and historical circumstances may open their eyes to the need for radical changes in their application to real life, such as in redefining Jewish sexual ethics, and reevaluating gender roles and relations (Adler 1998). Put simply, a covenantal-ethical approach to bioethical issues and dilemmas challenges a Jew to define his or her covenantal values and commitments, assess their continuity with the past, reflect upon their potential impact on the future, and thereby make moral decisions pertaining to the present. Needless to say, covenantal ethics presents a potent, but rather loose rubric by which to justify moral decisions.¹⁵ This approach aligns best with Reform Jewish theology, which upholds full autonomy in personal decision making and does not recognize the heteronomous obligations of Jewish law (Marmor 2013). Although the Jewish bioethical literature exercising this methodological model is quite limited, given the relatively large size of the Reform Jewish community within the overall Jewish population, it is a reasonable conjecture that many medical decisions made by American

“weakening of respect for all life,” and the quality of life of a particular mother, for whom an abortion “can be the difference between life and a blasted life” (Greenberg 1986, 145-6). It would seem more apt to frame the conflict as choosing between the respect for the developing life of a particular fetus, i.e., fetal indication, and the respect for the physical and emotional quality of life of a particular woman, i.e., maternal indication. For more on Greenberg's ethics of power, see Greenberg, 1995.

¹⁵ For a cogent critique of the Covenantal method, see Dorff 1995, 163-5.

Jews in consultation with their rabbis more than less follow the basic method of covenantal ethics.¹⁶ The bioethical literature produced by rabbis and scholars of the Reform movement utilize traditional Jewish and contemporary bioethical sources to create persuasive recommendations, but ultimately affirm the right of the individual to make autonomous decisions, preferably in line with Jewish covenantal commitments. The bioethical scholarship of the Reform community includes the works of rabbis Philip M. Cohen Ph.D., William Cutter Ph.D., Walter Jacob D.H.L., Leonard S. Kravitz Ph.D., Mark Washofsky Ph.D., and Moshe Zemer Ph.D.¹⁷ As more women entered the Reform rabbinate, so did their participation in covenantal Jewish bioethics. *The Central Conference of American Rabbis Journal* of the Reform rabbinical association dedicated their Summer 2012 issue to a symposium on Judaism, Health, and Healing, that consistently reflects this overall method and trajectory (Crane 2013, 14).¹⁸

Narrative Jewish Bioethics

At least four twentieth-century intellectual currents merge to give rise to Jewish narrative biomedical ethics. The first is the reclamation of *aggadah* by *haskalah* (Eastern-European Jewish enlightenment) and Zionist thinkers in the beginning of the twentieth

¹⁶ Reconstructionist, Renewal, and other non-halakhic forms of Pluralistic and Post-denominational Judaism that privilege personal autonomy over religious heteronomy, should likewise be subsumed within this typology for the purpose of this schematization. See Sarna 2005, xix-xx, who prefers the term “movement” or “stream” to “denomination” when discussing the Jewish, as opposed to Protestant Christian, community. Jews’ strong ethnic ties historically have resisted strict denominational distinctions, often emphasizing shared peoplehood over differences.

¹⁷ See Jacob and Zemer 1994; 1995; 1998; 1999; Gordon and Washofsky 2004; Cohen 2005; and Cutter 2007.

¹⁸ See Golomb, Prince and Wiener 2012.

century and continuing with the rise of the modern, culturally Jewish, secular State of Israel. Aggadah may best be described as non-legal rabbinic textual source material, but is sometimes appropriately translated as legend and lore. *Midrash aggadah* refers to non-halakhic biblical interpretations.¹⁹ “Rabbinic Narrative” refers to stories about the rabbinic sages from the end of the Second Temple Period through the age of the Talmud.²⁰ The arcane study of Jewish law was seen by these thinkers as behaviorally constraining, removed from real life, and typical of a diaspora mentality. For Zionist and Jewish enlightenment thinkers, lore and legend, story and poetry – all endow the Jewish people with spirit and vitality, a history and a future, and support a commitment to live life fully, not just within the four cubits of the academy, but in the field and on the street. For *wissenschaft* scholars, the academic study of folklore developed during the nineteenth century was applied in the early twentieth century to Jewish folklorist traditions.²¹ Interest in the academic study of aggadah continued to grow throughout the twentieth century (Crane 2013, 22). Twentieth-century advances in literary theory and hermeneutics were likewise applied by late twentieth and twenty-first-century Jewish scholars to this developing field of interest.²²

¹⁹ See pp. 19-20 above for an example of midrash aggadah concerning the special strength of Goliath from the Babylonian Talmud. See Strack and Stemberger 1996, 233-46, 276-359, for a survey of a survey of the extant literary sources of midrash aggadah from the rabbinic and medieval historical periods. See Holtz 1992, 177-211, for an introduction to midrash aggadah’s exegetical method.

²⁰ For an introduction to the history of the Second Temple and Rabbinic periods, see Schiffman 1991. For an introduction to talmudic aggadah, i.e., rabbinic narrative, see Rubinstein 2002. For an introduction to Talmud, more generally, see Solomon 2009, xv-xlvi.

²¹ “*Wissenschaft*” refers to the “*Wissenschaft des Judentums*” movement – i.e., the scientific study of Jews and Judaism that began in the early nineteenth century in Germany by Jewish scholars and continues until today in the academic field of Jewish Studies. See Meyer 2004. Louis Ginsberg’s *The Legends of the Jews* (2003), first published in the U.S. in six volumes from 1909-1938, represents renewed academic interest in Jewish folklore. See Hasan-Rokem and Gruenwald 2014.

²² See Rubinstein 1999; Bakhos 2009.

The second intellectual current may be credited to Christian theologian Stanley Hauerwas. He championed a narrative approach to theology positing that it is our master narratives that provide us with the lenses through which we engage and interpret our world and find meaning within our life experiences (Hauerwas 1974, 45-6; Newman 2008, 194-7). Judaism not only has a master narrative of the Exodus, but also a rich and diverse tradition of religious narrative in the aggadah.

The third contributing current begins in 1984 with the landmark essay, “*Nomos and Narrative*,” by the late Yale Law professor, Robert Cover (1984; 1995) who acknowledged law and narrative’s respective distinctness, but nonetheless argued persuasively for their undeniable interrelatedness. Narrative creates the larger framework in which law is made intelligible (Crane 2013, 23). Cover’s thesis not only influenced legal studies in the United States and beyond, but also piqued the interest of Jewish scholars. Dramatic strides have been made in recent years in the study of the relationship of Jewish legal and narrative texts (Wimpfheimer 2011; Simon-Shoshan 2012; Kanarek 2014). Harvard Law School dedicated a conference to this theme in 2005, the proceedings of which have been published in the Jewish law journal *Dine Israel* (Stone 2007).

The fourth and final impetus came from the rise of Christian and general narrative bioethics. Christian narrative bioethicists followed Hauerwas’s identification of the passion of Christ as the framing story through which to engage and interpret life experiences. Non-religious narrative bioethicists have looked to the personal narratives of the patient or people directly affected by a relevant bioethical concern or dilemma, as

well as beyond casuistry to health-related narratives within the literary traditions of the world (Nelson 1997; Charon and Montello 2002; Charon 2008). This new narrative bioethical approach inspired a new Jewish bioethical methodology which turns not to an analysis of Jewish law, but to engagement with rabbinic narrative as the heuristic guide to dealing with bioethical challenges.

Jonathan K. Crane (2013) currently leads this new narrative approach in Jewish bioethics with his recently published, full-length book treatment of a short talmudic narrative telling of the martyrdom of Rabbi Chananya ben Teradyon. He investigates the history of interpretation of the story and how it has been used to buttress halakhic and ethical positions within the euthanasia debate. His goal is less to ascertain the best interpretation and its proper application within a legal analysis, but to demonstrate through this narrative case study how the innate ambiguities, ambivalences, and pluralism of interpretive meanings in narratives illustrate the ways in which life and art mirror each other. Real life bioethical conundrums, like their narrative analogues, are inescapably fraught with the messiness of life. Crane builds off the previous work in Jewish narrative bioethics on end-of-life decision making by Louis E. Newman (1990) and on the topic of euthanasia by William Cutter (1995; 2006). Laurie Zoloth (1999) of Northwestern University also models Jewish narrative bioethics by applying the biblical story of Ruth with its celebrated values of compassion, inclusion, and loyalty, to the social and biomedical ethical concern of universal health care. On whole, narrative bioethics remind us that we live our lives not as nuanced legal distinctions or pristine halakhic imperatives, but as messy, confusing, and even indeterminate occasions. A narrative bioethical

analysis thus brings human dimensionality to bioethical consideration. It also tracks wells with the clinical practice of medicine, which, at its best, frames patient care as a physician's careful listening to a singular story of a person, in a context of place and time (Groopman 2007).

Feminist Jewish Bioethics

One could argue that although feminist bioethics emerged as a disciplinary concentration in the early 1990s, feminist Jewish bioethics has not yet sufficiently developed to stand as an independent model. Indeed, there has yet to coalesce a critical mass of scholars and scholarship of feminist Jewish bioethics.²³ However, to argue so narrowly would ignore the important feminist contributions being made in academic Jewish Studies and halakhic scholarship pertaining to issues of biomedical and ethical concern, especially as they relate to women's health, sexuality, family purity laws, procreation, reproduction, and parenthood.²⁴ There are, at least, three categories of scholarship that arguably may be subsumed under feminist Jewish bioethics. First, religious Jewish women increasingly are being trained in the advanced study of rabbinic literature and halakhah, across the Jewish denominational spectrum, and especially within Orthodoxy, and have been publishing on topics of Jewish ritual practice and halakhah, including medical halakhah, sexuality, family purity laws, and Jewish bioethics.²⁵

²³ See Donchin and Scully 2015, for an introduction to Feminist Bioethics. See also Messer 2015; Thatcher 2015.

²⁴ "Family Purity Laws" refers to halakhic regulation of intimacy between wife and husband before and after a menstrual cycle. See Zimmerman 2005.

²⁵ Rosenberg 2012 charts the growth of women's Torah learning and concludes her article (pp. 197-200) by engaging the question of how has the nascent women's Torah learning movement contributed new insights,

Women's voices and perspectives are thus being added to a scholarly culture and worldview that until the late twentieth century has been predominately populated by men. Second, the robust disciplinary concentrations of Jewish gender studies and Jewish feminist ethics have applied feminist critique to a myriad of Jewish scholarly disciplines, including procreation and reproduction, viewing Jewish law, history, and textual interpretation through the lenses of power relationships and dynamics, and the contingency of gendered and embodied experience, as part of a social movement whose goals include global justice and equality for women.²⁶ Ronit Irshai's *Fertility and Jewish Law: Feminist Perspectives on Orthodox Responsa* (2012) is a notable contribution of a feminist critique of reproductive halakhah.²⁷ Third, feminist Jewish bioethics as a disciplinary concentration within Jewish bioethics continues to develop.²⁸

Judaized Bioethics

Several professional bioethicists of Jewish heritage write works within general bioethics that are explicitly informed by their knowledge of Jewish studies, or write on Jewish bioethics informed by their knowledge of general bioethics. Baruch Brody (2003)

perspectives, and methods, thereby influencing the predominantly male orbit of Orthodox Torah study. Baumel Joseph 2007 anticipates that this new wave of women's rabbinic scholarship will radically challenge the halakhic status quo.

²⁶ See Donchin and Scully 2015 4, 24-25, for fundamental aspects of feminist critique. For essays on procreation, contraception, fertility and infertility, and women's involvement in birth and death ritual practices, see Millen 2004; Wahrman 2005. Also see Rosenfeld 2008 on formulating a contemporary Modern Orthodox sexual ethic, and Rosenfeld and Ribner 2011 who offer a psychologically informed primer on first experiences of marital intimacy for Orthodox Jewish newlyweds.

²⁷ See also Lasker and Parmet 1990; Kessler 2009.

²⁸ For an introduction to "Feminist Jewish Ethical Theories," see Plaskow 2013. Laurie Zoloff's (2016) Northwestern University research webpage heralds the coming publication of "Second Text: Essays Toward a Feminist Jewish Bioethics."

of Baylor and Rice Universities champions the theory of pluralistic casuistry over and against the rigid “principlism” of some contemporary bioethics. Writing primarily in general bioethics, but at times in Jewish bioethics, Brody uses each of these related knowledge-sets to inform the other. The late Benjamin Freedman (1999) of McGill University likewise employed his Judaic and bioethical knowledge to construct a new Jewish bioethic based on the notion of duty. Laurie Zoloth, mentioned above, likewise fits this typology, as do Michael Grodin of Boston University, Alan Jotkowitz of Ben Gurion University,²⁹ Hava Tirosh-Samuelson of Arizona State University,³⁰ and many others. Jewish scholars of American and Israeli law who study the intersection of bioethics, secular law, and Jewish law, as well as medical practitioners, health care workers, and scientists who also study bioethics and Jewish bioethics also fit within this type. Their contributions can usually be found within the pages of law reviews and medical journals. Daniel B. Sinclair’s (2003) *Jewish Biomedical Law: Legal and Extra-legal Dimensions* models the study of the intersection of law, halakhah, and bioethics, as do the writings of Rabbi Michael J. Broyde (see “Exemplars” below, p. 61).

Jewish Legal Bioethics

Jewish legal analysis dominates the field of Jewish biomedical ethics as its framing method and decisive hermeneutic. As noted above, much of the literature of the field even prefers the term medical halakhah to Jewish bioethics, or at least uses both

²⁹ See Jotkowitz and Glick 2009; Jotkowitz 2010.

³⁰ See Tirosh-Samuelson 2005, 2009; and Tirosh-Samuelson and Mossman, eds. 2012.

terms interchangeably. In this model, Jewish legal discussions, debates, and case precedents from the variegated, multi-millennial, religious, legal, Jewish textual tradition are mined, marshaled, analyzed, and exercised to contend with contemporary bioethical challenges, concerns, and conundrums. Through conceptual analysis of ancient sources, as well as by employing analogical reasoning to apply seemingly unrelated precedents to novel circumstances, the contemporary scholar arrives at a normative conclusion. This was precisely the approach trail blazed by Rabbi Immanuel Jakobovitz when he inaugurated the field of Jewish medical ethics in the 1950s. This approach also finds consistency and continuity with the ongoing Jewish legal tradition. The most notable difference is that what would now be categorized as a bioethical question deserving of its own full analysis and explication had been previously asked and answered as a halakhic query about specific cases whose resolutions can be found scattered throughout halakhic responsa literature. Jakobovitz applied established halakhic research and analysis in a novel way to nascent topics of contemporary biomedical concern.

Two of the most prolific early and ongoing writers on Jewish medical ethics within this model are Rabbi J. David Bleich Ph.D. (see “Exemplars” below, p. 60) and Fred Rosner M.D. (1977, 2000). Rosner is professor emeritus at Albert Einstein and Mount Sinai medical schools, former Director of the Department of Medicine at Queens Hospital Center, and former chair of the Medical Ethics Committee of the State of New York. Rosner has produced nearly eight-hundred publications on Jewish Medical ethics, and Bleich’s literary output is similarly impressive (Crane 2013, 30-34). At the end of the introduction to Rosner and Bleich’s co-edited early compilation of essays in Jewish

Bioethics, Bleich tellingly mandates a bioethical approach of strict legal formalism and positivism.³¹ He concludes that there is only one way to answer bioethical questions: “He must examine them through the prism of halakhah for it is in the corpus of Jewish law as elucidated and transmitted from generation to generation that God has made His will known to man (Bleich 1979a, xxiii).” Numerous articles and books written in Hebrew and English by rabbinical scholars in the United States and Israel, such as rabbis Abraham S. Abraham M.D., Michael J. Broyde J.D. (see “Exemplars” below, p. 61), Mordechai Halperin M.D., the late Moshe Hirschler, Avraham Steinberg M.D., and Moshe D. Tendler Ph.D. (see “Exemplars” below, p. 63), on a vast array of bioethical topics have been produced according to this model.³² Avraham Steinberg’s (2003) multi-volume *Encyclopedia of Jewish Medical Ethics* provides entries for an expansive collection of bioethical topics, each concluding with a short bibliography of secondary sources primarily within the legal model.

To this literature must be added works that are unambiguously halakhic scholarship and not bioethics investigations, despite their addressing issues of medical or bioethical concern and their citation within the Jewish bioethical literature of the legal model. While these works are penned by learned rabbinical scholars, the most important contributions are made by *poskim* (decisors) – that is, the leading talmudists and

³¹ Although legal philosophers distinguish between “soft” and “hard” positivists, for our purposes positivism refers to the understanding that law determines morality, see L. Green 2009. Formalism assumes that clearly formulated legal rulings provide for all valid judgments, without the need for individual discretion in the application of legal rulings. See Korn 2002, nn7,8. Bleich asserts that Jewish law will sufficiently navigate choices between the five fundamental ethical categories: the morally imperative, commendable, neutral, odious, and proscribed, see Bleich 1979a, xv-xvi.

³² See Hirschler 1980; Abraham 1993; 2000; 2003; 2004; 2009.

halakhists of the generation who are renowned for their breadth of Torah knowledge, depth of analysis, and exemplary piety, who publish their halakhic decisions responding to actual cases in collections of responsa. For example, the responsa of twentieth-century poskim, Rabbi Moshe Feinstein (*Igrot Moshe*) in America and Rabbi Eliezer Waldenberg (*Tzitz Eliezer*) in Israel frequently deal with questions of medical halakhah.³³ Thus, arguments and positions in the halakhic literature are weighted not only by their intrinsic worth and ideational persuasiveness, but also by their association with recognized rabbinical authorities. One of Bleich's ongoing contributions for the past forty years to Jewish Bioethics is his topical halakhic literature review in the quarterly rabbinical journal *Tradition* of the Rabbinical Council of America (the largest Orthodox rabbinical association) that frequently deals with issues of bioethical concern. These reviews have been collected and published in seven volumes of *Contemporary Halakhic Problems* (Bleich 1977; 1983; 1989; 1995; 2005a; 2012; 2017a).

Conservative Judaism, like Jewish Orthodoxy, defines itself as a halakhic tradition.³⁴ Two primary methodological differences distinguish Conservative Jewish bioethics from that of Orthodoxy. First, Orthodox scholars use halakhic sources more diachronically in an overall orientation akin to legal formalism and positivism. In keeping with the *Wissenschaft* roots of the Conservative movement that was founded by rabbis who were also academic scholars, Conservative scholars tend to historically contextualize halakhic source material, what is sometimes called the “positive-historical” method.³⁵

³³ See Rosner 1990; Jotkowitz 2015; Jotkowitz and Gesundheit n.d.; Steinberg 1980; Tandler 2001.

³⁴ See Cherry 2013 for an overview of “Ethical Theories in the Conservative Movement.”

³⁵ The “positive-historical” approach was coined and developed by the nineteenth-century Bohemian-German rabbi and historian Zacharias Frankel, was adopted by the late nineteenth-and-early-twentieth-

This approach views Judaism as historically and culturally contingent, recognizes changes in ideas, values, and practices through the sweep of Jewish history, and proactively leverages this knowledge in contemporary halakhic decision making. Second, the Conservative movement is less persuaded by appeals to individual rabbinic authority than by compelling legal argumentation per se. In keeping with this more democratic ethos, the Conservative movement also has the Committee on Jewish Law and Standards, which decides upon binding community protocols, though in practice there is great autonomy exercised by Conservative rabbis and lay members of the movement.³⁶ Rabbis Elliot N. Dorff Ph.D., the late David Feldman Ph.D., David Golinkin Ph.D., Aaron L. Mackler Ph.D., Avram Reisner Ph.D., and Leonard Sharzer M.D. stand out as leading Conservative Jewish bioethicists. Feldman (1968) wrote one of the earliest full book-length treatments of a bioethical issue: *Marital Relations, Birth Control and Abortion in Jewish Law*. Mackler (2012) edited an over five-hundred-page compilation of bioethical essays penned by Conservative rabbis and scholars. Some of the articles, like Feldman's book, are nearly indistinguishable from Orthodox Jewish bioethical scholarship. Others reflect differences in fundamental methodology and authority structures.

century Moldavian-born rabbi and scholar Solomon Schechter, who founded Conservative Judaism in the early twentieth century. See Dorff 1996a, 17 ff. Compare this approach with that of Steven Shapin, and other historians of science, whose scholarly orientation is captured nicely by the title of Shapin 2010: "Never Pure: Historical Studies of Science as if It was Produced by People with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority."

³⁶ For more on the Committee on Jewish Law and Standards, see Mackler 2012, 8-10.

Toward Methodological Holism in Jewish Bioethics

The diversification of Jewish bioethical models not only expands the emerging discipline but also further informs and develops the established models. Interest in covenantal ethics, as well as trends in twentieth-century Jewish philosophy and theology, inspired Orthodox and Conservative scholars within the legal bioethical model to consider more deeply the relationship of law and ethics (see Chapter Three below). Advances in general and Judaized bioethics have raised the level of scholarly inquiry and discourse amongst more parochial writers. They have also challenged the rigidity of established methodologies by renewing the dialogue between Torah and Western moral philosophy. Noam Zohar's (1997) *Alternatives in Jewish Bioethics* models this dialogue. Even methodological historicism traditionally identified with Conservative rather than Orthodox Jewish scholarship has begun to find expression in the later. The articles of Rabbi Edward Reichman M.D. (1998-99; 1993; 1996), Associate Professor of Emergency Medicine and of Education and Bioethics at the Albert Einstein College of Medicine of Yeshiva University, that track the development of medical halakhah with the history of medicine are an important contribution to this effort. Another important historically contextualizing study of medical halakhah is Yechiel Michael Barilan's *Jewish Bioethics: Rabbinic Law and Theology in Their Social and Historical Context* (2014). Medical halakhic and Jewish bioethical writings by Jewish women and feminist scholars will continue to exert a shaping influence, especially on matters of procreation, reproduction, and parenthood.

Lastly, while Jewish narrative bioethics does not construe itself as a halakhically oriented method whose goal is to arrive at normative directives, interest in literary criticism and narrative ethics also has begun to influence legal method (Halbertal 1999). For example, Alan Jotkowitz, an Orthodox Jewish bioethicist at Ben Gurion University, legitimates the use of narrative in halakhic decision-making. He cites the example of how the late, great, twentieth-century halakhic decisor Rabbi Moshe Feinstein arrived at a halakhic protocol for end of life care, in part, through the application of moral principles at play in a talmudic narrative (TB Ketubot 104a) that tells how the handmaiden of Rabbi Judah HaNasi, taking account of his grievous suffering and intending to allow him to die, audibly shattered an urn to distract and thereby interrupt the prayers of Rabbi Judah's colleagues and students that were keeping him alive (Jotkowitz 2013a; 2013b).

Rabbi Ezra Bick of Yeshivat Har Etzion in Israel (1993; 1997) has argued that in novel biomedical cases for which there is no normative halakhic precedent or parallel, rabbinic narrative may be utilized conceptually to reconstruct adjudicating rabbinic principles for normative Jewish legal determinations. For example, in the absence of any talmudic parallel to modern ovum donation, Bick believes that a conceptual analysis of talmudic narratives supports the view that the rabbinic sages viewed pregnancy and motherhood as akin to an agricultural process of nurturing and cultivating the seed of a man, thereby leading to the conclusion that Jewish law favors maternal identification with the gestating woman, who is akin to the seeded ground, rather than with a female ovum donor. Even though Bick limits the use of rabbinic narrative in Jewish legal inquiry to novel cases without conceivable parallel or precedent, J. David Bleich (1994; 1997b,

113-14) rejects the legitimacy of even this narrow application. Bleich counter-argues that there may be halakhic questions without available answers. He writes: “The one thing we must not do is engage in ‘desperate attempts to preserve a semblance of halachic reasoning’ – including the drawing of inappropriate analogies, construction of conceptual models, and derivation of halachic norms from philosophical or *aggadic* notions.”

Jotkowitz, on the other hand, is willing to entertain a more robust and broader narrative-ethical approach within Orthodox Jewish bioethics. Akin to Cover and Crane referenced above, Jotkowitz believes that narrative informs *nomos*, in that narrative constructs our normative universe and makes intelligible the laws that govern it. While he agrees with Bick in utilizing narratives more narrowly to engender conceptual models that more easily align with legal process and methodology, he also sees narrative as generating core values, and thus serving more globally as moral guides, similar to Jon Rawls’s methodology of “Reflective Equilibrium” (Jotkowitz 2013a, 972).³⁷ This approach of applying Jewish narrative bioethics within the legal model also seems to invoke Jewish covenantal ethics, which shares similarities with Rawl’s “Reflective Equilibrium” by emphasizing the need to aspire to religious and moral coherence.

Exemplars of Medical Halakhah and Jewish Bioethics Concerning Assisted Reproductive Technologies

The medical-halakhic and Jewish-bioethical literature regarding the specific assisted reproductive technologies of In Vitro Fertilization, Gestational Surrogacy,

³⁷ Rawls looks to moral coherence in our decision-making process. See Rawls 1999 (Orig. pub. 1971); Daniels 2013.

Cloning, and Mitochondrial Replacement Therapy, i.e. “Three-Parent Babies,” as well as of Artificial Insemination and Ovarian Transplantation, will be cited, analyzed, and critiqued within chapters four through seven. These biotechnologies and their attendant Jewish bioethical concerns, especially regarding the identification of maternity and paternity, will be discussed in depth in this study of Jewish religion and science relations. However, as part of this literature review, it is appropriate to explain why this dissertation focuses specifically on the Jewish bioethical writings of J. David Bleich, Michael J. Broyde, Elliot N. Dorff, John D. Loike, and Moshe D. Tendler. Bleich, Broyde, Dorff, and Tendler are all rabbis who have been both scholars in the academy and active rabbis within the Jewish community. They are therefore recognized masters of theory and application, guidance and practice. Each of these scholars has made prolific contributions to Jewish bioethical literature and medical halakhah, including the ethics of ART. They have also each written on the methodology of Jewish law and ethics, and the relationship of Judaism and science. All consider themselves halakhically observant Jews and halakhically oriented bioethicists. Bleich, Broyde and Tendler are all Orthodox; Dorff is Conservative. Some denominational differences impinge on Jewish religion and science relations and will be highlighted, as appropriate. Loike features among these exemplars because of his scholarly partnership with Tendler on Jewish bioethical analyses of ART, and therefore, Loike and Tendler will primarily be considered together as a team, even though each one’s respective scholarly achievements can surely stand independently. I have chosen these scholars as Jewish bioethical exemplars of “Religion and Science” relations for the four cases of assisted reproductive and genetic technologies primarily

because their respective copious writings form a contextualizing oeuvre that will allow for a more robust and grounded analysis. It is important to note that no women scholars appear in my list of exemplars. This is not due to intentional exclusion, but to the circumstance of the available literature of the current field. Notable books and articles by Jewish women bioethicists and scholars, as well as relevant singular works of importance by other rabbis and scholars, will be referenced, as appropriate, as will feminist critiques of medical halakhah and Jewish bioethics concerning ART.

Rabbi J. David Bleich, Ph.D.

Rabbi J. David Bleich is a *Rosh Yeshiva* (literally, head of the academy, but used as a superlative honorific for a professor of Talmud and Jewish law) at the Rabbi Isaac Elchanan Theological Seminary, an affiliate of Yeshiva University, where he is the head of its postgraduate halakhah institute for the study of family law and rabbinical civil jurisprudence, i.e., *Yadin Yadin Kollel*. He is also Professor of Law at Yeshiva University's Benjamin N. Cardozo School of Law, and the Herbert and Florence Tenzer Professor of Jewish Law and Ethics at Yeshiva University. Bleich holds a Ph.D. in philosophy from New York University, has served as a congregational rabbi at Manhattan's Yorkville Synagogue for almost five decades, and has published widely on Jewish law (1977; 1983; 1989; 1995a; 2002; 2006b; 2012; 2017a), bioethics (1979a,b; 1981a; 1991b; 1998a; 2002; 2006a), the intersection of Jewish and US law, and Jewish

ethics and theology (1993; 2013a), in both English and Hebrew.³⁸ He has also been a Woodrow Wilson Fellow and a postdoctoral fellow at the Hastings Center (Bleich 2016a).

Concerning the bioethics and medical halakhah of ART, Bleich has written on all four cases of ART pertinent to this dissertation over a period of 36 years: “Test-Tube Babies (1979c), “*In Vitro* Fertilization: Questions of Maternity and Conversion” (1997a), surrogate motherhood and the halakhic grounds of maternity (1972; 1981a,b; 1983; 1994; 1995a; 1997a,b; 1998a; 2002), cloning (2006a; Bleich and Jacobson 2015), “Mitochondrial DNA Replacement: How Many Mothers?” (2015a), and “Posthumous Paternity” (2016b). The chronological span of his writings will better allow for gauging development and consistency of ideas. His writings on larger issues of the method and theology of Jewish law will also better frame “Religion and Science” relations in his bioethical and medical halakhic analyses.³⁹

Rabbi Michael J. Broyde, J.D.

Rabbi Michael J. Broyde is Professor of Law and a senior fellow at the Center for the Study of Law and Religion at Emory University, with specialization in family law, as well as law and religion, Jewish law and ethics, and comparative religious law. He received his J.D. from New York University School of Law and was ordained by the Rabbi Isaac Elchanan Theological Seminary. He has served in the past as the director and

³⁸ There are numerous individual articles by Bleich not referenced, some of which, however, were collected into the full book-length works books that have been referenced here. For a recent academic reader of Bleich’s thought on halakhah and philosophy, see Tirosh-Samuelson and Hughs 2015.

³⁹ For a full intellectual portrait, see Resnicoff 2015.

as a rabbinical judge of the Beth Din of America, the rabbinical court associated with the Rabbinical Council of America.⁴⁰ He was the founding rabbi of the Young Israel of Toco Hills, Georgia, as well as of the Atlanta Torah Mitzion Kollel, i.e., institute for advanced talmudic study. He has over 75 publications, including articles, book chapters, and books (Broyde 2016b).

In the areas of family law and ART, Broyde too has published on topics directly relevant to the concerns of this dissertation: the establishment of maternity and paternity (1988), child custody (1994; 1999b), marriage and family structure (2001b; 2005a); assisted reproductive technologies (1999a; 2005b), cloning (1997; 1998a,b; 1999a; 2000), and “Genetically Engineering People: A Jewish Law Analysis of Personhood” (2001a).

Rabbi Elliot N. Dorff, Ph.D. (2016)

Rabbi Elliot N. Dorff is Rector and the Sol & Anne Dorff Distinguished Service Professor in Philosophy at American Jewish University, Visiting Professor at UCLA School of Law, and has chaired several scholarly associations, and was awarded the Journal of Law and Religion’s Lifetime Achievement Award. He has served in several bioethical advisory roles to the US government, including Hillary Rodham Clinton’s 1993 Health Care Task Force, testifying in 1997 and 1999 before the President’s Bioethics Advisory Commission on human cloning and stem cell research, the Surgeon General’s commission to draft a “Call to Action for Responsible Sexual Behavior” in 1999 and 2000, and the National Human Resources Protections Advisory Commission in

⁴⁰ See JTA 2014.

2000 to 2002 to establish renewed federal guidelines on human scientific research subjects. He is also chair of the Conservative Movement's Committee on Jewish Law and Standards (Dorff 2016). Dorff is one of the most prolific writers of Conservative Jewish bioethical literature, philosophy and theology of Jewish law (1977; 1978; 1988; 1989; 1992a; 1996a; 2005b; 2007; 2014; Dorff and Rosett 1988), as well as on topics of Jewish ethics more broadly (2002a; 2003; Dorff and Crane 2013). His *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics* (1998b) is particularly masterful at explicating bioethical discourse, biomedical information, and halakhic considerations in a clear and accessible fashion.

Dorff has written broadly on changing family structures (1996b; 2005a), sexual ethics (2013b), assisted reproductive technologies (1993; 1994a,b,c; 1996b; 2013a), and genetic ethics (2008; Dorff and Zoloff 2015). Specifically, pertinent to this dissertation, Dorff has published on: artificial insemination, IVF, and the ethics of collaborative reproduction (1993; 1994a; 1994b; 1994c; 1996b; 1999; 2002b), cloning (1998); and "Judaism and Germline Modification" (2008). He has also written on Jewish "Religion and Science" relations, including "Applying Jewish Law to New Circumstances" (2014).

Dr. John D. Loike, Ph.D. and Rabbi Moshe D. Tendler, Ph.D.

Dr. John D. Loike is Director for Special Programs for the Center for Bioethics, Co-Director for Graduate Studies in the Department of Physiology and Cellular Biophysics at Columbia University College of Physicians and Surgeons, founder and faculty editor of Columbia University's Journal of Bioethics, and an advisory board

member of the Columbia University Center for the Study of Science and Religion. His academic interests span the realm of bioethics, including special interest in Jewish bioethics, stem cell research, cloning (1999; 2016b; Loike and Steinberg 1998), neuroethics, bioterrorism, tri-gametic offspring and the grounds of parenthood (Loike, Hirano and Margalit 2013; Margalit, Levy and Loike 2014), and science and religion relations, more generally. He earned his Ph.D. in Biology from the Albert Einstein College of Medicine of Yeshiva University and has also published copiously in biology, with research interests in cancer-related inflammation and neurodegenerative disease (Loike 2016a).

Rabbi Moshe D. Tandler is a *Rosh Yeshiva* at the Rabbi Isaac Elchanan Theological Seminary, the rabbinical seminary affiliated with Yeshiva University, and is the Rabbi Isaac and Bella Tandler Chair in Jewish Medical Ethics and Professor of Biology at Yeshiva University (Tandler 2016a). He is the son-in-law and disciple, and was the scientific advisor, of the late Rabbi Moshe Feinstein, who was renowned as the leading halakhic decisor of Jewish law in twentieth-century America. Tandler earned his Ph.D. in Biology from Columbia University. He has written extensively on medical halakhah and Jewish bioethics (1968; 1969), with special focus on beginning-and-end-of-life issues, including Jewish family purity laws (1988), assisted reproductive technologies and infertility, care of the critically ill (2001; Loike, et al. 2010); the neurological criteria of death, i.e., “brain death” (1990; Tandler and Rosner 1989; 1993), euthanasia, and organ donation, for which he is also a staunch advocate and activist. Tandler has also written on the relationship of Torah and science (1994; 2004). He is the spiritual leader of

the Community Synagogue in Monsey, New York. He chairs the bioethical commission of the Rabbinical Council of America, is former president of the Association of Orthodox Jewish Scientists, former chair of the Medical Ethics Task Force of UJA-Federation of Greater New York, and has served on several ethics commissions (Tendler 2016b).

Directly relating to the interests of this dissertation regarding assisted reproductive technologies, Loike and Tendler have collaborated more generally on halakhic bioethical guidelines (2011) and genetic ethics (2014b). More specifically, they have written together on stem cell research, human-animal chimeras, and halakhic criteria for defining human beings (2003; 2007; 2008; 2009), gestational surrogacy (2013a; 2013b); cloning (2014a); and mitochondrial replacement therapy (2015). Their partnered publications, along with their independent scholarship, combine to provide rich insight into developing Jewish bioethical views within the context of religion and science relations.

Assisted Reproductive Technologies and Genetic Ethics

While this dissertation will principally focus on the Jewish bioethical concern of the identification of maternity and paternity in cases of ART, it is important to recognize the range of bioethical concerns engendered by the advancing and converging related fields of assisted reproductive technologies and genomics.⁴¹ A discrete bioethical inquiry does not emerge within a vacuum and thus should be considered within a larger matrix of

⁴¹ Other fields of scientific research and application also participate in this convergence, such as NBIC, i.e., nanotechnology, biotechnology, information technology, and cognitive science (Frankel and Kapustij 2008, 56).

other bioethical issues of relevance. Also, an appreciation of the larger web of bioethical concerns invites more informed deliberation of the advisability of governmental regulation, legislative policy, and professional self-regulation. According to the Centers for Disease Control and Prevention (CDC), in 2014 there were 460 fertility clinics operating in the United States. Although “The Fertility Clinic Success Rate and Certification Act (FCSRCA)” of 1992 requires mandatory annual reporting of ART procedures by fertility clinics to CDC, there is little regulation of ART at both the federal and state levels (CDC 2014; Asch and Marmor 2008).⁴² Similarly, even within religiously observant Jewish communities, per the thesis of this dissertation, bioethical considerations of ART and the establishment of halakhic communal norms arguably best take place within a more comprehensive view of both the science and ethics involved.

Essential Issues in Assisted Reproductive Technology

Reproductive medicine rapidly developed with the opening and operation of fertility clinics in the 1980s. Since then, fertility clinics have demonstrated increasingly

⁴² CDC’s annual report protects consumers of ART by providing data related to the quality and reliability of fertility clinics, their laboratories, and procedures. The Food and Drug Administration (FDA) protects public health by supervising drugs, biological products and medical devices, and the screening and testing procedures of reproductive tissues. The Centers for Medicare and Medicaid Services (CMS), under the Clinical Laboratory Improvement Act (CLIA), regulates all U.S. laboratory testing performed on humans. See ASRM 2010, 5-7. Interestingly, the American Society for Reproductive Medicine (ASRM 2010, 1, 11) claims: “ART is already one of the most highly regulated of all medical practices in the United States.” ASRM highlights the above governmental regulation, as well as reproductive medicine’s professional self-regulation. However, aside from mandatory annual reporting of ART procedures to CDC, and some state-specific regulatory requirements for the handling of reproductive tissues, most of the examples of oversight cited by ASRM are standard to medical practice in the United States. The American Society for Reproductive Medicine website, www.asrm.org, provides a web portal for reproductive medicine professionals to access clinical resources and current research.

successful track records of alleviating infertility through ART amidst concomitant greater numbers of individuals seeking ART services (Wang and Sauer 2006; CDC 2014). There is an expansive literature dealing with ethical issues in the new reproductive technologies, from embryo creation, selection, and disposition, to social and societal issues, such as cost, coverage, and access in light of principles of fairness and distributive justice (Asch and Marmor 2008; Breitowitz 1997; Bleich 2016b,c). Bioethicists also consider the legal and moral claims of procreative rights and liberties, questions of paternity and maternity, and technology-specific concerns such as the use of fertility drugs, sale of gametes, and compensation for gestational services (Hull 2005a; Benatar 2010). Jewish bioethicists, medical practitioners, and rabbinical scholars likewise have produced significant literature on these and also specifically Jewish-themed topics, such as the question of Jewish identity of children born through ART (Feldman and Wolowelsky 1997; Irshai 2012; Mackler 1997b; Schenker 2000, 2008a). As the technologies continue to advance, new ethical issues arise, as we are currently witnessing with cloning technologies, including mitochondrial replacement therapy.

Genetic Testing and Screening

Clinical genetics includes genetic testing and screening. Genetic disease carrier testing has the goal of informed family planning. Preimplantation genetic diagnosis, and prenatal and postnatal genetic screening aim to empower reproductive choice and anticipate potential medical interventions (Brown 1990; Smith 1998; Baily 2008; Press 2008). For example, a person or couple who tests positive as carriers of a genetic disease

may attempt to fertilize healthy embryos and avoid transmitting genetic disease and/or genetic disease predisposition, i.e., being a carrier, to the next generation by using assisted reproductive technologies, such as *in vitro* fertilization and preimplantation genetic diagnosis. Only genetically screened, disease-free embryos would be selected for implantation. This will not only avail the aspiring family in question, but also lead to a reduction in disease incidence, as in the case of Huntington's disease (Die-Smulders 2013).⁴³ Regarding reproductive choice, there is, of course, an expansive literature dealing with the ethics and laws surrounding abortion (Steinbock 2008). Despite the unsettled debate around fetal termination, genetic disease carrier testing and prenatal genetic diagnostics have become medically commonplace and regularly encouraged as part of a medically informed procreative process. The art and science of genetic counseling adds human dimension to this emotionally fraught field.⁴⁴ It should be noted, however, that the current state of genetic testing and screening only relates to a relatively small group of genetic diseases (NIH 2016a). Genetic testing and screening are also necessary prerequisites for the emerging field of pharmacogenomics, i.e., drugs customized to a person's genetic makeup as part of personalized medicine (NIH 2016c).

Concerns about privacy and stigma associated with being identified as either a carrier of or individual with a genetic disease or defect have also raised ethical and legal issues for clinical practice, medical reporting, and insurance coverage (Zoloth 2013).

⁴³ In epidemiological terminology, incidence refers to the rate of new cases of disease, whereas prevalence refers to existing cases.

⁴⁴ For example, see David et al. 2012, "Genetic Counseling for the Orthodox Jewish Couple Undergoing Preimplantation Genetic Diagnosis." Also, see Nelson 1994, 46-64; Kilner, Pentz, and Young 1997, 146-55; Finkelstein and Finkelstein 2000; Barris and Comet 2005; David, Weitzman, Hevre, and Fellous 2012; U. Cohen n.d.

Additionally, many research hospitals and laboratories collect and store biospecimens, e.g., human blood, surgical tissues, etc., which they subject to genetic analysis. Such “biobanks” and their genetic research programs raise questions of legal ownership of biospecimens, as well as concerns about informed consent, privacy, and transparency (Maschke 2008).⁴⁵ In 2008, with the above concerns in mind, the federal government passed the Genetic Information Nondiscrimination Act (GINA). Several states likewise have enacted legislation to protect against genetic discrimination (Press 2008).

Biogenetic Therapies and Enhancements

On April 12, 2003, the fiftieth anniversary of James D. Watson and Francis Crick’s discovery of the double-helical structure of DNA, and a little over a century since the rediscovery of Gregor Mendel’s study of inheritance, the Human Genome Project (HGP) proclaimed the completion of the mapping and sequencing of the approximately three billion DNA base pairs of the haploid human genome’s two sex chromosomes and twenty-two autosomes. This achievement in molecular biology was heralded by scientist and statesman alike as laying the foundation of twenty-first-century science and medicine (Gannet 2014, 1). Progressive understandings of heredity, gene expression, “epigenetic” gene-environment interactions, as well as advances in genetic modification, DNA editing, and synthetic biology, promise new frontiers in assisted reproductive technologies, biogenetic medical therapies, and human enhancements. Concerns of equitable access,

⁴⁵ The best-selling *The Immortal Life of Henrietta Lacks* has made the ethics concerning biospecimens a question of popular consciousness and national interest, see Skloot 2010.

distributive justice, and possible harms persist here too, as with the advent of other medical therapies and biotechnologies (Gannett 2014). Additionally, legal and ethical questions about patenting genomes and genetic sequences arise (Magnus, Caplan and MacGee 2002; Cook-Deegan 2008).

However, in the shadow of the Holocaust, perhaps the greatest bioethical concerns relate to human enhancements and eugenics (Goering 2014). In the 1930s, when the Nazis came to power, they implemented social-Darwinist policies involving compulsory sterilization and state-sponsored population eugenics.⁴⁶ While genocide was perpetrated by the Nazis against the six million Jews of Europe primarily through persistent, efficient mass-execution, the annihilation of world Jewry was first conceived in racial theories of sexual contamination, i.e., *Rassenschande*, which led to eugenic sterilization, then to forced abortions and euthanasia, and finally developing into a comprehensive plan of extermination.⁴⁷ At the same time, the Nazis sought to engender an elite, Aryan race through their systematic “*lebensborn*” program of selective breeding by encouraging and supporting “pure” German marital and pre-marital childbearing. Women’s reproduction was thus at the front and center of the Holocaust (Chalmers 2015). Even seventy years later, the Holocaust and Nazi science still press upon genetic ethics and reproductive bioethics.⁴⁸

⁴⁶ Bruns and Chelouche (2017) have demonstrated that the atrocities perpetrated by Nazi doctors adhered to its own medical ethic based on Nazi moral and political values, which was systematically taught to medical students in Germany during the Third Reich.

⁴⁷ The Nazis likewise murdered between five and six million other people, including disabled persons, Romani (Gypsies), homosexuals, political prisoners, and prisoners of war, some of whose systematic annihilation should also be categorized as genocide, see Berenbaum 1990.

⁴⁸ For literature on Nazi eugenics, science, and medicine, and their legal aftermath, see Kevles 1985; Lifton 1986; Proctor 1988; Grodin and Annas 1992, 2007; Magnus and McGee 2000; Bashford and Levine 2010;

Ethicists differentiate between coercive, “authoritative” eugenics, like those practiced by the Nazis, and voluntary, “liberal” eugenics. They also distinguish between positive-enhancement eugenics and negative-eliminative eugenics. While eugenics certainly has a dark history, contemporary ethicists explore morally permissible forms of eugenics, especially in light of assisted reproductive and genetic technologies. If there is a parental moral obligation to promote healthy children through a loving family environment, proper nutrition, adequate health care, and education, does this obligation likewise extend to ensuring good genes and a good birth? Should scientists and medical practitioners endeavor to eliminate disease, deformity, and disability through genetic testing, screening, engineering, and modification? May parents leverage these technologies to maximize their child’s physical and intellectual excellence or to apply aesthetic preferences? What are the eugenic aims, philosophical justifications, and boundaries of permissible, contemporary genetic therapies, enhancements, and procreative interventions (Caplan, McGee and Magnus 1999; Magnus and McGee 2002; Goering 2014)?

At present, there are, at least, six categories of human genetic engineering discussed in the bioethical and scientific literature: three therapeutic and three non-therapeutic genetic interventions.

Mukherjee 2016, 128-38. For a brief history of the British and American eugenics movement, see Mukherjee 2016, 64-85.

Therapeutic Genetic Engineering

First, somatic cell gene therapy aims to cure genetic diseases, like certain immuno-deficiencies, cancers, or single-gene diseases such as cystic fibrosis, Gaucher's disease, hemophilia, sickle-cell anemia, and thalassemia (Clark 1997). Gene therapy can be accomplished in several ways. To treat certain cancers, for example, defective and/or mutated genetic material, e.g. bone marrow, is eliminated or removed, and replaced with healthy donor material. Similarly, healthy DNA in a gene could be substituted for mutated DNA through "homologous replacement." Alternatively, genes can be forced to structurally reverse mutations, yielding healthy, functioning genes. Certain chemical therapies can also inactivate and thereby neutralize mutated genes. To reach numerous cells, virus vectors can be engineered to "infect" targeted cells with a healthy copy of a gene (The Center for Health Ethics 2016; NIH 2016b). The principal ethical concern here is of unforeseen risk of harm. However, therapeutic, human genetic engineering enjoys wide approbation amongst ethicists and medical practitioners if safety concerns and risks are within reasonable parameters (NIH 2016b). This is because it clearly falls within the medical mandate to promote human health and welfare. Also, since it affects only the patient and not future generations, it does not constitute human germline modification, nor aspire to eugenic aims.

Second, somatic cell gene therapy, reproductive biotechnologies, and molecular biology also come together in stem cell research and emerging stem cell therapies. Stem cells are undifferentiated cells that can be stimulated to specialize into distinct differentiated cell types, e.g., blood, bone, muscle, organ tissue, potentially recreating

essential body parts. Although adults do generate some stem cells, embryonic stem cells are pluripotent – that is, they have the greatest capacity for and scope of cellular differentiation. Induced pluripotent stem (iPS) cells, created by reversing differentiation in reprogrammed skin cells, do not yet adequately serve as substitutions for embryonic stem cells. Stem cells may be used to reverse neuro-degenerative and/or auto-immune diseases. For example, diabetes may be cured by stimulating the growth of new insulin-secreting pancreatic cells (Hyun 2008). The potential for significant therapeutic advances, as well as theological and ethical questions carried over from the abortion debate regarding the status of the embryonic tissue, animate this promising, yet contentious area of scientific research (Nisker et al. 2010; Mackler 2004; Waters & Cole-Turner 2003; Zivotofsky and Jotkowitz 2009; Dorff and Zoloth 2015).

Third, germline gene therapy alters reproductive cells' genetic material so that heritable genetic diseases are not passed on to offspring and resultant offspring are completely free of the mutated genes. The biomechanisms here are similar to those described above for somatic cell gene therapy. However, the risks and potential harms are exacerbated by the transgenerational reach of germline modifications. This eliminative eugenic intervention is ethically justified by considerations of individual welfare and social good when applied with informed, voluntary, and understanding consent (Goering 2014). Utilizing cloning technologies, “three-parent babies” is one of the first genetic therapies seeking approval that can modify the germline, at least in the case of female embryos, i.e., XX nDNA, and therefore has been subject to more vigorous debate (Frankel and Hagen 2011).

Non-Therapeutic Genetic Engineering

The next three categories of genetic engineering represent non-therapeutic genetic modifications with unabashed eugenic aims. First, armed with genomic understanding, parents could utilize ART and genetic engineering to select for positive physical traits they would like to see in their child, for example eye color, hair color, height, thus earning the popular name “designer babies.”⁴⁹ These physical traits are relatively easily identifiable in the human genome. Ethicists ask whether selecting for these traits is any worse than selecting for sex, which is routinely done by contemporary users of ART.⁵⁰ Genetic modification has become commonplace in the pharmaceutical and agricultural industries, i.e., GMOs, though there continues to be professional, political, and public debate regarding its human application (Frankel and Kapustij 2008; National Academies of Sciences, Engineering and Medicine 2016).

Second, more aggressive eugenic genetic engineering would aim to alter complex human traits, such as athleticism, intelligence, and personality, each of which is coded by many interacting genes acting within an environment. At present, such human enhancement is still beyond current genomic understanding. Thus, broad reaching, eugenic, human-genetic engineering is still undeveloped, especially given the field’s uneven self-regulatory bans.⁵¹ Some worry that the lack of cautious approval, along with

⁴⁹ See Andrews 2006.

⁵⁰ For a Jewish discussion of sex selection, see Carmy 2007; Wolowelsky and Grazi 2007; Bleich 2000; Wahrman 2002, 126-40. It should be noted that sex selection can also be utilized to correct a demographically profound imbalance in gender, which may have significant societal consequences.

⁵¹ Mukherjee (2016, 229-35) points to the Asilomar II conference in February 1975 as a watershed in the history of genetic science. The participating scientists faced a crucial choice as whether to self-regulate the boundaries of safe and appropriate experimentation, or to relinquish that role to government regulators.

governmental regulation, will lead to clandestine research (Resnick 1998).⁵² Bioethicists routinely debate the merits and demerits of eugenic enhancements (Almond and Parker 2003, 129-76; Golinkin 1994; McGee 2000b; Juengst and Moseley 2016).

Third, the emerging CRISPR-Cas9 genome editing and engineering biotechnology will likely progress germline modification, along with disease treatment (Ledford 2016; National Academies of Sciences, Engineering, and Medicine 2017). Further, advancements in synthetic biology, i.e., the artificial construction of genomes, herald technological capacities to create radically enhanced human beings, as well as new forms of life, such as human/non-human chimeras (Achenbach 2016b; Garfinkel, Endy, Epstein, and Friedman 2008; Kahn 2012; Loike and Tendler 2003; Pollack 2016; Streiffer 2015). These positive eugenic biotechnological capabilities demand full bioethical study and consideration of legislative and regulatory oversight.

Genetic Ethical Debate

Those who oppose genetic enhancement marshal an array of arguments. Using theological language, some, often from the religious sector, argue that humans should not “play God,” and that scientific hubris often ends in unforeseen disaster (Catalano 2012; Kilner, et al. 1997, 49-74; Nelson 1994; Waters and Cole-Turner 2003). Others see genetic enhancement and the commoditization of reproductive choices as diminishing

Since that time, scientific associations, in general, have chosen to self-regulate, though, at times, government agencies or legislative bodies intrude, with varied outcomes internationally.

⁵² On May 10, 2016, approximately 150 researchers gathered at Harvard University Medical School for a closed-door, no-press-allowed conference on synthesizing a full human genome, thereby raising the possibility of creating human beings with no parents. The secrecy of the conference’s proceedings aroused ethical debate about the transparency of scientific practice. See Achenbach 2016b; Pollack 2016.

fundamental human rights, freedoms, and dignity. It can also lead to hierarchical social stratification based on differential genetics and unfair competition (Annas 2000; Fukuyama 2002; Spier 2002). Yet others argue that genetic enhancement reduces people to genetics, focusing on enhancing children rather than their lives, and further stigmatizes disability (Fletcher 2002; Wolpe 1997). Some bioethicists, however, assert that sound science policy needs to be based on serious discussion of the morality of genetic modification and its actual consequences, but not on specious philosophical objections. They contend that the commonly cited arguments against genetic modification, i.e., the (curtailing of personal) freedom argument, the (commodification of) giftedness argument, the (reduction of) authenticity argument, and the (denial of) uniqueness argument, are all based on an assumption of genetic determinism, which they dispute (Resnik and Vorhaus 2006). The concerns over genetic reductionism, essentialism, and determinism, and their impact on personal identity, freedom, and dignity is a common trope in the literature of the debate over genetic enhancement.⁵³

William Kristol and Eric Cohen (2002) have compiled a collection of op-ed articles, congressional hearing testimonies, and even selections from modern fiction, that give voice to wide-ranging opinion on genetic engineering and germline modification, much of it expressing ethical concern and social fear. It is important to remember that this debate plays out on the street through popular media and in Washington through legislation and political influence, as much as in the laboratory and the academy, and thus

⁵³ Holmes Rolston III (1999) offers a scientifically informed philosophical analysis of the multiple valences and values that comprise genetic identity. The philosophy of identity is a longstanding and well-trodden inquiry that may also be helpful here. See Noonan and Curtis 2014; Olson 2016.

governmental regulation, as well as NIH funding policies, may curtail abuses, as well as impede research and development. While current users of ART are primarily motivated by overcoming infertility and disease prevention, and not motivated by enhancement (Banger and McGee 2006), a survey of American medical students shows that our future doctors on whole do not distinguish between therapeutic and enhancement uses of reproductive biotechnologies, perhaps portending greater acceptance of genetic enhancement in the near future (Meisenberg 2009). Looking to the international scene, some predict that competitive economic and geo-political pressures will likely force the United States to allow these technologies for genetic enhancement (Catalano 2012; Swedin 2006).

The majority of full book-length published works on genetic enhancement by bioethicists seem to argue in favor of allowing this nascent biotechnology. All of them engage and counter the above-cited arguments, and usually encourage regulated, cautious advancement. Some of the most ardent promoters frame their argument as humanity taking responsible control of evolutionary process. John Harris (2007), Professor of Bioethics and University of Manchester School of Law, joint editor-in-chief of the prestigious *Journal of Medical Ethics*, and a member of Britain's Human Genetics Commission, argues along this line in *Enhancing Evolution: The Ethical Case for Making Better People*. Ethicists Ronald Green (2007), Gregory Stock (2002), Glenn McGee (2000a, 2000b), and Russel Blackford (2014), all make similar cases.⁵⁴

⁵⁴ See Doherty and Sutton 1997, and Stock and Campbell 2000, for a full collection of articles on the "ethics of altering the genes we pass onto our children." See also Powell and Buchanan 2011.

Jewish Genetic Ethics

In the literature of Jewish bioethics, there has been a recent increase of interest in genetic ethics, presumably in line, if slightly delayed, with trends within general bioethics. There indeed has been a history of occasional articles published on Jewish views of genetic concern. Late twentieth-century advances in clinical genetic diagnostics and therapeutic interventions moved Jewish medical ethicists and poskim to consider the utilization of these new technologies, often permitting them (Green 1985; Rosner 1991, 181-96; Perlin 1994). Jewish writers on genetic engineering likewise have been cautiously favorable, seeing genetic engineering overall through a therapeutic lens. At times, Jewish writers utilize supportive theological language of applying scientific advances to co-author with God humanity's redemption (Broyde 2001a; Burack 2006; Dorff 2008; Golinkin 1994). Jewish views of even germline modification, including cloning, if done for therapeutic purposes or to alleviate infertility, are generally of cautious and conditional approval (Breitowitz 2002; Broyde 1998a; Cohen 199; Dorff 1998a,b, 2008, 2013a; Golinkin 1994; Lipschutz 1999; Werber 2000). There has been particular interest in the elimination of the so-called Jewish genetic diseases and their attendant ethical questions, as well as regarding using genetics for Jewish genealogy (Wahrman 2002, 87-108, 141-65; Zimmerman 2012). Overall interest in genetic ethics seems to have reached a critical point as Elliot Dorff and Laurie Zoloth (2015), have recently published a multiple-author, five-hundred-page book on Jewish genetic ethics. Our deepening knowledge of the human genome and our increasing ability to alter it as part of a procreative process, whether for the therapeutic treatment of infertility and

disease, or futuristically, as a part of an intentional project of human eugenic and genetic enhancement, emphasizes the need for ongoing serious bioethical consideration, oversight, and regulation, and for the person of faith, a conscious appreciation of the bilateral relations of religion and science.⁵⁵

⁵⁵ For a Christian theological view, see Deanne-Drummond 2005.

CHAPTER THREE

Epistemological and Moral-Axiological Dimensions of Contemporary Jewish Bioethics

Rapidly evolving scientific understandings and technological capabilities, amidst changing moral judgments in larger society, provide a unique window into Jewish religion and science relations in contemporary Jewish bioethics. This dissertation investigates how Judaism's robust textual tradition, creative legal process, and history of legal precedents and religious and moral instruction, respond to and develop in light of scientific and technological advancement. More specifically, as introduced in Chapter One, this exploration is grounded in a focused analysis of epistemological and moral-axiological dimensions of the contemporary Jewish bioethical debate concerning the identification of maternity and paternity, and their attendant halakhic and bioethical considerations, in four current cases of assisted reproductive and genetic technologies: 1. In Vitro Fertilization; 2. Gestational Surrogacy 3. Cloning; and 4. Mitochondrial Replacement Therapy, i.e., "three-parent babies." In this chapter, I will explain more precisely what I mean by "epistemological and moral-axiological dimensions" of contemporary Jewish bioethics and more fully describe my method for their examination.

In philosophy, "epistemology" refers to the study of knowledge, its sources, structure, boundary conditions, limitations, modes of acquisition and dissemination, as well as its justification (Steup 2014). In this study of the interface of Judaism and science within Jewish bioethics, I am more narrowly interested in the question of what constitutes recognized sources of warranted knowledge toward the elucidation of Jewish bioethical inquiries and the resolution of bioethical dilemmas, such as the definition of maternity

and paternity in ART. I am particularly interested in how Jewish bioethics integrates new scientific knowledge and technological capability when such contemporary understandings and capacities have not been anticipated by, and may even conflict with, more ancient Jewish knowledge, such as Torah and talmudic texts and their rabbinic interpretive traditions. In this chapter, I will contextualize this dissertation's study of the epistemic orientation of the representative exemplars of Jewish bioethics (chapters five through seven) with a brief review of Jewish theological theories of knowledge, Halakhic process, and schemata of religion and science relations, more generally, and specific to Judaism in cases of seeming conflicts of Torah and science.

In moral philosophy, “axiology” refers to the identification, evaluation, classification, and assessment of ethical values, of the right and the good, whether in meta-ethical or normative ethical inquiries (Schroeder 2012).¹ In this study, I am more narrowly interested in the adopted and adapted ethical values as expressed or implied in discrete Jewish bioethical analyses of the four aforementioned cases of assisted reproductive and genetic technologies. Since one's moral axiology helps navigate the ethical considerations and consequences of new bioethical challenges, I aim to identify the values at play, evaluate their potential sources (which partially crosscuts with my above-explained epistemological interests), and consider how they orient and impinge upon the pertinent Jewish bioethical analyses. In order to better contextualize the role of ethical values in Jewish bioethics, I will explore the interrelationship of ethics and

¹ In philosophy, more generally, “axiology” refers to the study of values, whether morally relevant or not. The etymology of “axiology” points to this more general usage, since ἄξιος means “worthy.” However, in this dissertation, “axiology” will be used refer to ethical values.

halakhah, with particular consideration of the Jewish theological issue of whether there exists an ethic independent of halakhah.

Finally, I will conclude this chapter by reviewing and outlining my method of investigation. I will explain how I incorporate the above mentioned philosophical and theological considerations into my dissertation's investigative method. I will also present the assessment matrix that I used to research and identify the epistemological and axiological dimensions of the contemporary Jewish bioethical debate regarding the definition and identification of maternity and paternity in the new assisted reproductive technologies.

Contextualizing Epistemological Dimensions: Jewish Theological Theories of Knowledge

The two primary origins of knowledge recognized in the intellectual history of Judaism are revelation and reason. Generally, revelation refers to the divine self-communication of knowledge to humanity, while reason refers to humanity's autonomous generation of knowledge. Of course, theologically, the two are also inextricably linked. Since revelation is experienced by a human prophet, one of whose primary roles is to further communicate the received divine knowledge to others, by necessity the prophet's rational faculties are required to mediate the prophetic process. Human beings will then exercise their reason to interpret, apply, and elaborate upon the prophetic message being received.² Further, some Jewish philosophers more

² In Judaism, the exercise of human reason within the study of divine revelation is itself considered a *mitzvah* (divine commandment). See Maimonides, *Mishneh Torah*, "Laws of the Study of Torah."

fundamentally identify human reason as the “image of God” (see Genesis 1:27) within human beings, thus connecting all human cognition to divine intelligence.³ At the same time, divine knowledge, at its most basic level, is believed to exist independent of human reason, and human reason is understood to be capable of generating knowledge independent of divine revelation. The nature of revelation and its relationship to human reason constitutes one of the main topics in the Jewish philosophical study of the epistemology of religion, especially during the medieval period. The philosophical warrants of belief in God and divine revelation have been of interest to modern Jewish and Christian theology considering the epistemological challenges of modern philosophy, the scientific revolution, biblical criticism, and new bio-cultural understandings of religion.⁴

Prophetic revelation forms the sacred scriptures of Judaism, i.e., the twenty-four books of the Hebrew Bible, also known as *TaNakh*, which serves as an acronym for *Torah* (the five books of Moses); *Nevi'im* (the eight books of the prophets: Joshua, Judges, Samuel, Kings, Isaiah, Jeremiah, Ezekiel, and the Twelve Minor Prophets, which itself includes the prophetic works of Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi (so-called “minor”

³ See Maimonides 1963, Guide 1:26.

⁴ A full elucidation of the themes adumbrated in this paragraph is beyond the scope of this dissertation. For an overview of prophecy and revelation in medieval Jewish philosophy, see Rynhold 2009, 104-130. For an overview of medieval Jewish philosophers, their intellectual history, and areas of philosophical interest, including prophecy and revelation, see Sirat 1996. For a more general philosophical consideration of prophecy, see Davison 2014, and Wolterstorff 1995. For an introduction to the epistemology of religion and modern theological warrants for belief, see Forrest 2014. For an investigation of the impact of the scientific revolution on religion, see Brooke 1991; and Barbour 1997, 3-76. For biblical criticism, see Grassie 2010, 133 ff., and Brettler 2005, 1-37; cf. also Berman 2017. For an explanation of the bio-cultural approach to the study of religion, see Wood 2014.

because of the size of the literary legacy, and not the import of their message); and *Ketuvim* (the eleven books of the writings: Psalms, Proverbs, Job, Song of Songs, Ruth, Lamentations, Ecclesiastes, Esther, Daniel, Ezra-Nehemiah, and Chronicles). Judaism, however, affirms a dual-Torah system comprised of the Written Torah, i.e., the aforementioned twenty-four books of the Hebrew Bible, and the Oral Torah, i.e., the teachings of the Rabbis, continually developing and expanding from ancient times until today through ongoing study, interpretation, commentary, statutory codification, and normative halakhic application. The multi-genre, diachronic, voluminous, and expanding canon of the Oral Torah, now written down, enjoys a privileged epistemological status within Judaism. On the one hand, the rabbis of the Talmud assert, and later rabbis affirm, that the Oral Torah represents an unbroken chain of the transmission and conservation of divine knowledge prophetically received by Moses at Sinai through the generations until today.⁵ On the other hand, throughout Jewish history, the literature of the Oral Torah has been clearly and consistently generative, not merely conservationist. Theologically, the early rabbis justified this generativity as the actualization of the divinely-set, interpretive potential of the Hebrew Bible and of the ancient traditions of the Oral Torah, and thus newly generated rabbinic scholarship is fully sanctioned as part of the Oral Torah tradition.⁶ The epistemic orientation of religious Jewish scholarship, including Jewish bioethics, thus begins with the literary sources and interpretive traditions of the Written

⁵ Contemporary ultra-Orthodoxy tends to espouse a maximalist theology that emphasizes the revelatory origin of the entire Oral Torah tradition. Silber (1994) argues that this maximalist theology is a modern invention developed to safeguard traditionalism, obstruct modernization and assimilation, and better control halakhic innovation.

⁶ See Alexander 2007.

and Oral Torah, and their ongoing interplay of revelation and reason. This certainly holds true for Orthodox Jewish scholarship that asserts a belief in the divine origin of the Written and Oral Torah. It also, arguably, holds true for liberal interpretations of Judaism that embrace modern and post-modern critiques of religion and reject more traditional religious truth claims. The warrants for the liberal-Jewish epistemological privileging of the Written and Oral Torah, though, may vary depending on the theological, cultural, and social bases for understanding religious covenant and commitment.

While there is consensus within Judaism regarding the privileged status of the literatures of the Written and Oral Torah, there has been debate throughout the ages as to the epistemological legitimacy of other forms of rational knowledge, such as philosophy, including natural philosophy – i.e., what we call science. During the medieval period, these debates raged throughout the Jewish communities of Europe, Africa, and Asia, and are collectively known in Jewish intellectual history as “the Maimonidean controversies.”⁷ Moses Maimonides was a twelfth-century Spanish rabbi who lived the majority of his adult life in Fostat (Old Cairo), Egypt, and there rose to great local and international prominence as a Jewish leader, scholar, and physician.⁸ Maimonides’s literary legacy is a vast collection of major works, minor treatises, epistles, and responsa concerning talmudic commentary, rabbinic law, Jewish theology, medicine, and natural philosophy. His three major works are: *Commentary on the Mishnah*, written in Judeo-Arabic and completed in 1168; *Mishneh Torah*, a monumental restatement and

⁷ See Sarachek 1935, and Septimus 1982.

⁸ See Davidson 2005, 3-74, for an overview of Maimonides’s life; as well as Kraemer 2005.

codification of the entire corpus of Jewish law, written in Hebrew and completed in 1180; and *The Guide of the Perplexed*, Maimonides's Jewish theological treatise wrought from both his reconciliation of Aristotelian philosophy with Jewish theology, as well as his own systematic, creative analyses and interpretations, written in Judeo-Arabic, and completed in 1190. All of Maimonides's works, and certainly his oeuvre as a whole, display his native genius, his total mastery of biblical and rabbinic Jewish literature, and that he had been educated in the Hispano-Arabic Jewish cultural synthesis of classical Greek, Islamic, and Jewish intellectual traditions.⁹

Perhaps this can best be exemplified by the structure and content of *Mishneh Torah*, his encyclopedic compilation and reorganization of all of Jewish law, including all laws currently binding, those relating to the era preceding the destruction of the second Temple in 70 CE, and those anticipating the messianic era and the restoration of the Jewish national state.¹⁰ Maimonides divides the entire corpus of Jewish law into fourteen books, each having many topical subdivisions of numerous chapters: 1. Knowledge (theology and ethics); 2. Love (ritual practice directly cultivating God awareness); 3. Festivals; 4. Women (marriage and divorce law); 5. Holiness; 6. Separation (vows and oaths); 7. Seeds (agricultural laws); 8. Worship (Temple service); 9. Sacrificial Offerings; 10. Purity Law; 11. Injuries (criminal and tort law); 12. Acquisition (laws of the marketplace); 13. Judgments (civil law); and 14. Judges (governance).¹¹ It is noteworthy

⁹ See Davidson 2005, 122-537; Stroumsa 2009.

¹⁰ The establishment of the State of Israel has brought to the fore questions regarding the modern application of Jewish law to Israeli law. For example, both Steinberg 2003 and Sinclair 2003 in their surveys of topics in contemporary Jewish bioethics include Israeli statutory law in their presentations and analyses.

¹¹ See Twersky 1980 for a full analysis of Maimonides's *Mishneh Torah*.

that Maimonides's first book, *Sefer haMad'a* (The Book of Knowledge), in this series purporting to be a complete codification of Jewish law, is a tract devoted to matters of belief, theology, and ethics.¹² Maimonides clearly believes that philosophical and theological contemplation is an affirmative religious duty, worthy of standing first and foremost among Jewish legal directives.¹³ In *Mishneh Torah* (*Book of Knowledge*, "Basic Principle of the Torah," 2:1-2) and *The Guide of the Perplexed* (1963, 3:28), Maimonides also champions the idea that the universe, as a creation of God, is a material expression of divine will and knowledge, and thus, should be regarded, like Torah, as a form of revelation. The contemplation of the universe, what Maimonides calls "*ma'aseh bereishit* – the works of creation," often translated as "physics," in contradistinction to "metaphysics," whose study Maimonides also advocates, has great spiritual benefit in that it leads to fear, awe, and love of God.¹⁴

For Maimonides, Torah, physics, and metaphysics have epistemological legitimacy and inspire the interplay of revelation and reason, including through the study of law, ethics, and medicine.¹⁵ In the ongoing Maimonidean controversies, the scholarly elites of the medieval Jewish world divided into camps of those who supported or opposed the theological program and expansive epistemology of Maimonides. In truth, it would be misrepresentative of the great diversity of nuanced Jewish theological views

¹² See Davidson 2005, 231n184, for additional sources on non-legal aspects of the *Mishneh Torah*.

¹³ See Davidson 1974.

¹⁴ The use of "physics" and "metaphysics" here is drawn from the Aristotelian-philosophical lexicon. For more on Maimonides and the sciences, see Langermann 2003; Stroumsa 2009, 125-52.

¹⁵ In his "Introduction to Commentary on the Mishnah," Maimonides differentiates within the Oral Torah between unequivocal truth representing the rabbinic traditions originating with Moses at Sinai, and contingent truths arbitrated by the interpretive methods and decisional protocols of the rabbis. See Hartman 1976, 102-38; Ross 2004, 63.

and epistemological positions to reduce them all to “for or against” the study of philosophy and science.¹⁶ At the same time, the epistemological legitimacy of non-Torah forms of rational thought, such as science and philosophy, and the license to study them in addition to works of Torah, continued to be debated through modern times, and indeed is still a debate within segments of the contemporary Orthodox Jewish community. This perhaps is most apparent when seeming conflicts of Torah and science emerge (see below, “Strategies for Contending with Conflicts Between Torah and Science,” p. 107 ff.).

All Jewish bioethicists, by virtue of the scholarly framework and conventions of the discipline, affirm, at some level, an epistemology that recognizes the legitimacy and authority of Torah traditions, scientific knowledge, and philosophical contemplation.¹⁷ However, the same may not be claimed for all halakhists writing on medical issues, and whose talmudic commentary, responsa, and legal decisions often serve as the Torahitic source material for Jewish bioethicists. This is not to claim that such halakhists are anti-science, per se, but simply that in the epistemological hierarchy of truth claims Torah traditions stand supreme. Medical halakhists, and even some Orthodox Jewish bioethicists, at times, will regard scientific claims, secular ethics, medical recommendations, and bioethical analyses with a strong hermeneutic of suspicion. Therefore, new scientific understandings and technological capabilities, unanticipated by

¹⁶ For contemporary Jewish theologies of the integration of Torah traditions and worldly knowledge, see Lamm 1990; Lichtenstein 1997. For a historical overview of Judaism’s encounter with other cultures and worldly knowledge, see Schacter 1997.

¹⁷ While Reform Judaism embraces personal autonomy over traditional authority, Torah sources still enjoy pride and privilege of place as foundational, thought-shaping traditions, even if subject to modern critique and change.

and perhaps even in conflict with more ancient Torah traditions, present fertile case-studies for Jewish religion and science relations, especially regarding their epistemological dimensions.

Process and Methodologies of Halakhah

Beginning with the *Wissenschaft des Judentum* movement in nineteenth-century Germany until today, there has been a persistent effort to deconstruct and detail the halakhic system.¹⁸ Vered Noam (2007) insightfully identifies a certain irony in the academic study of Jewish law. For those who study Jewish law, historically contextualizing its different layers and establishing rigid principles of methodological procedure, *Halakhah* can get stifled, even trapped within all of the constructed categories, conventions, and boundary conditions. On the other hand, most of those who study, write, and live Jewish law, i.e., primarily Orthodox Jews, do not usually engage in such dispassionate and detached analysis. Their experience of Jewish law is one of native, creative, organic development. Thus, medical halakhists, employing great literary and legal interpretive ingenuity, produce views and positions that emerge out of and are resonant with the whole of their religious-cultural experience, in keeping with their theological and ethical commitments. At the same time, Jewish bioethicists with a wider epistemological embrace of scientific knowledge are likely to be more open to new ways of looking at older issues, such as the definitions of maternity and paternity.

¹⁸ Regarding the origins of *Wissenschaft des Judentum* beginning with Leopold Zunz, see Schorsh 2016.

Any academic study of halakhah first requires a review of its legal literary sources, placing them in the historical context of halakhah's development, as well as a brief introduction to their defining legal methodologies.¹⁹ Biblical and Second Temple scholars study legal texts in comparison to other ancient near eastern legal codes and documents.²⁰ Intellectual historians of the rabbinic, medieval, and modern eras will often analyze the legal method of particular works, schools, or of individual talmudists and halakhists in their historical context.²¹ Scholars of Jewish and comparative law will often look at more discrete principles, methods, and mechanics of Jewish law, as well as engage in comparative topical analyses.²² Others study the role, status, and authority of Jewish folk custom and its relation to the development of Jewish law.²³

Broadly speaking, the primary genres of rabbinic literature, i.e., the aforementioned Oral Torah, are: Talmud, Midrash, talmudic and biblical commentary, legal codification and commentary, and responsa literature. After the Biblical and Second Temple periods, continuing in broad sweep, rabbinic literature and Jewish law developed chronologically within distinct geo-political spheres within three different time periods: the Rabbinic, Medieval, and Modern Eras. Beginning with the Rabbinic Era, from the

¹⁹ A thorough, compact presentation of "The Structure of Jewish Law" comprises the first chapter of Rabbi David Feldman's early landmark study, *Marital Relations, Birth Control, and Abortion in Jewish Law* (1968, 3-20). The most comprehensive review can be found in the third volume of former Israeli Chief Justice Menachem Elon's *Jewish Law: History, Sources and Principles* (1994, vol. 3). Elon's *Jewish Law* also reviews the systemic principles and fundamental concepts of Jewish law more broadly construed (1994, vols. 1 and 2). His edited collection of *Encyclopaedia Judaica* articles on issues of Jewish law pursues a similar exploration, and also provides brief summaries of the topics that Jewish law has traditionally addressed (Elon 1995).

²⁰ See Brettler 2005, 61-72.

²¹ See, for example, Katz 1971; Soloveitchik 2013.

²² See, for example, Broyde 1988 and 2001b.

²³ See, for example, Sperber 1990-2007. A full review of these scholarly literatures is beyond the scope of this dissertation.

end of the Second Temple period in Roman Palestine, circa first century BCE, through the sixth century CE in Palestine and Babylonia, the foundational rabbinic literatures were produced: the Midrashim; the Mishnah, a highly-categorized, literary repository of oral rabbinic legal opinion; and the Palestinian and Babylonian commentaries on the Mishnah known as the Gemara.²⁴ The Talmud, comprised of the Mishnah and its extensive Gemara commentary, primarily deals with Jewish ritual law, and civil and criminal law and jurisprudence, though it also contains non-halakhic sections, i.e., the aggadah, featuring rabbinic narratives.²⁵ Midrash collects hermeneutical interpretations of the Bible and comes in legal and non-legal varieties: respectively, midrash halakhah and midrash aggadah.²⁶

Commentary on the Hebrew Bible and the foundational literatures of the Rabbinic Era, along with the introduction of new literary genres and works, including halakhic responsa and codes, begins to take place during the early medieval, Gaonic Period in Islamic Babylonia, the Levant, North Africa, and Spain (eighth to eleventh centuries),²⁷ through the High Middle Ages (eleventh to twelfth centuries) within the Islamic empire²⁸ and in Western European Christendom, i.e., Ashkenaz.²⁹ Talmudic and biblical commentary expand the rabbinic literary tradition with novel insights and new

²⁴ See Schiffman 1991.

²⁵ There are two Talmuds, each based on the origin of their respective commentary on the Mishnah: the Babylonian Talmud (TB), and the Palestinian Talmud, also known as the Jerusalem Talmud (TY). See Solomon 2009.

²⁶ See Holtz 1992.

²⁷ See R. Brody 1998; Stillman 1998.

²⁸ See Stillman 1998.

²⁹ See Kanerfogel 2012.

methodologies of interpretation of biblical and rabbinic texts.³⁰ Legal codification and its attendant voluminous commentaries aspire to distill the numerous halakhic debates and commentaries on the Talmud and codes into statutory legal determinations. Responsa literature collects the practical legal questions and scholarly rabbinic answers that make up the case law of halakhah.

Following the Spanish expulsion of Jews in 1492, the Early Modern Period in the Ottoman Empire and Eastern Europe (sixteenth to eighteenth centuries) ushered in widespread and extensive Jewish legal codification and commentary.³¹ The production of new talmudic and biblical commentary, as well as legal codification and commentary, continued through the pre-Holocaust Modern period in Western, Central and Eastern Europe (nineteenth through the early twentieth centuries), as well as in Jewish communities in Muslim lands, and continues still today in America and the State of Israel. However, the Modern Era perhaps can best be identified by its proliferation of responsa literature and the establishment of an expansive matrix of case law.³² Statutory law, i.e., halakhic codification, and case law, i.e., responsa literature, together form the basic structure of the halakhic system.

In Jewish law, literatures of earlier eras are generally considered more authoritative than those of later eras. Scholars of the Modern Era, for example, cannot contradict positions taken by Medieval or Rabbinic Era sages.³³ Neither modern nor

³⁰ See Kanerfogel 2012; Greenstein 1992.

³¹ See Twersky 1967, and Davis 2002.

³² See Elon 1994, vol. 4, for the development of case and statutory Jewish law in the civil and rabbinical court systems in the modern State of Israel.

³³ For a history and analysis of the scope, prerogatives, and limits of rabbinic authority, see M. Berger 1998; and Elon 1994, vol. 1, 240 ff.

medieval rabbis have the authority to generate law through midrashic exegesis, as did their Rabbinic Era forebears. This methodological constraint becomes particularly acute when confronting questions answered in earlier times based on pre-modern scientific knowledge.

Among contemporary Orthodox Jewish halakhists, (at least) three pivotal methodological debates impact greatly on the formation and adjudication of contemporary medical halakhah.³⁴ The first debate concerns interpretive autonomy and judicial discretion verses binding precedent and legal formalism. Does a contemporary halakhist have the authoritative license to base his legal conceptions, categorizations, and especially normative determinations on autonomous creative readings of foundational sources, or is he fundamentally constrained by the weight of legal precedent of previous talmudic commentary and responsa case law? This question speaks to the source, scope, freedoms, and constraints of rabbinic authority. Generally, theoretical analysis permits great creative autonomy, but normative application is highly constrained by legal precedent. However, earlier theoretical constructs may ultimately seep into later normative halakhic discussion and determinations. In addition, singular poskim indeed may boldly create new legal precedents by virtue of their legal creativity and acknowledged authority.

³⁴ Ross 2004, 49-99, provides a thorough analysis of halakhic methodologies and process, focusing her attention, in particular, on the roles, rights, and responsibilities of Jewish women in Jewish law. See also Stone 2010.

Professor Tamar Ross of Bar Ilan University (2004, 60-3), attributes this phenomenon to what she calls, “the legal realist position of Ultra Orthodoxy.”³⁵ Legal realism, a jurisprudential theory of the first half of the twentieth century, roots the determination of law in the discretionary power of the judiciary, rather than in the formalities of legal exegesis. In this model of Jewish law, the authority of novel decisions inheres less in the persuasive interpretation and application of rabbinic texts and Jewish law, and more in the charismatic authority of the recognized *posek* (decisor).³⁶ For example, Rabbi Moshe Feinstein, one of the most prolific and widely accepted poskim of the twentieth century, especially for medical halakhah, including issues of ART, was known to make definitive rulings based on his autonomous creative readings and interpretations of foundational rabbinic sources. Although Rabbi J. David Bleich, one of the bioethical exemplars of this dissertation, agrees that a worthy posek may issue an unprecedented decision if his determination does not conflict with an already widely accepted view, he strongly believes that normative Jewish law, in general, must be formalist, and determined by the weighting and weighing of prior legal opinions and precedents of the legal codes and case law (Bleich 1977, xvi-xvii). Bleich’s view brings us to the next debate.

³⁵ Although it should be noted that Ross (ibid.) acknowledges that such legal realism is arguably rooted in the Hebrew Bible, and often attested to in the Talmud, as well.

³⁶ Legal realism and the sociology of halakhah – that is, the study of how halakhah works in actual practice rather than in scholarly theory, adds further insight into halakhic process. The role of charismatic authority, intra-and-inter-denominational politics, and religious coercion through a state-recognized Chief Rabbinate in Israel all complicate legal theory with questions of social compliance and deviation. See Tucker 2014, 425; Ben-Menachem 1991, 1997.

The second methodological debate relates to halakhic positivism versus contextualism. In other words, does contemporary Jewish law build-off precedent, i.e., previously adopted legal opinion within a highly-regulated system of halakhic adjudication, regardless of original intent or new knowledge, or should the purported original reasons and understandings help to decide how best to interpret and apply earlier sources to contemporary situations?³⁷ Ross (2004, 63-70) associates this question and debate with the meta-halakhic ideologies ascendant in Modern Orthodoxy, which identify most elements of the halakhic system as formally fixed due to their unchanging, religious and ethical integrity, while admitting that other elements are socially and historically contextual, and thus subject to revision or change. Ross aligns this model with legal positivism, which comes in strong and weak forms, and in formalist and non-formalist versions. As opposed to legal realism, legal positivism looks not to judicial discretion and subjective evaluation, but to a self-enclosed halakhic system of predetermined rules of conceptualization and analysis, hierarchies of authority with protocols for the adjudication of conflicting opinions, and the democratization of legal process based on persuasion rather than personality.³⁸ Positivism posits that law's essential grounding is in the system of legal rules, categories, and values, while formalists and non-formalists

³⁷ Ross 2004, 63, points out that in the case of halakhah, positivism is used in a figurative sense, since true legal positivism emerged as a rejection of natural law and universal morality in favor of "positing" social institutions, whether governmental, legislative, or jurisprudential, as the source of law.

³⁸ See Yuter 1987. Additionally, the rise of internet-based communication and information distribution has further democratized halakhic discourse and has created new sources of halakhic material, such as online "Q & A" websites. See Steinitz 2011. At the same time, there has been a longstanding, increasingly documented phenomenon of radical differences between publicly published and privately delivered halakhic rulings by poskim, which undermines said democratization by obfuscating the full scope of case law available as legal sources and precedents, see Irshai 2014.

debate the rigidity of the nature of law and its process of deliberation. For the formalist, subjective judgment and contextualization are applicable only in cases of gaps in the halakhic literature, or in supererogatory public policy formulation. For the non-formalist, embedded within the laws of the halakhic system are higher level principles of ethics, political theory, public policy, and religious ideology. The non-formalist, positivist halakhist aims to look beyond the letter of the law, and read between its lines, for these higher level principles, which are then applied to legal precedents, as well as to legal lacunae and ambiguities, such as ART (Ross 2004, 54-5; 64-5). For example, the noted Israeli Jewish educator and posek Rabbi Yoel Bin Nun employs a contextualist-halakhic method that attempts to ascertain the intent and *telos* of a particular halakhic norm or precedent, and then apply anew these higher-level determinations in normative application to the contemporary scene, whether for stringency or leniency (Zuckier 2010). At the other end of the spectrum, Rabbi J. David Bleich rigorously and thoroughly subjects halakhic questions and considerations to formalist, positivist analysis and adjudication (Bleich 1977).

The third methodological debate concerns legal certainty and judicial doubt. For cases in which there are several, perhaps conflicting, halakhic opinions, must the final legal determination try to assimilate as many legal opinions as possible, often resulting in stringency due to redundant accommodation, or may a halakhist responsibly arrive at a novel, certain determination upon which others may rely without concern for conflicting views? In cases of ART, this debate is particularly weighty given that definitions of

maternity and paternity affect religious status and social standing, and thus one individual's halakhic positions and practice affects an interacting communal whole.³⁹

Halakhists within the Jewish Conservative movement also grapple with similar questions. Rabbi Joel Roth, a leading halakhist of the Conservative movement and professor of Talmud and Jewish Law at the Jewish Theological Seminary, in *The Halakhic Process: A Systematic Analysis* (1986), presents a systemic analysis of Jewish law, including a full analysis of halakhic decision-making, the tension between precedent and judicial discretion, the pertinence of historical context, and the source and scope of rabbinic authority. Of interest is his inquiry into extralegal sources within halakhah, including medical and scientific data, and his open approach to new legal sources within halakhah. Roth, like most Orthodox halakhists, adopts a positivist approach to Jewish law, which is especially important to his justifying his religious commitments to Jewish legal obligation in light of his theology of a fully human-mediated Torah tradition (Roth 1986, 9-11). Rabbi Elliot Dorff (2007), one of this dissertation's bioethical exemplars, published his own philosophy of Jewish Law, in which he develops a non-positivist approach that allows for more organic change within the halakhic tradition, especially in light of historical contextualization. His philosophy of law is influenced by covenantal ethics, discerning core Jewish values through "depth theology," and a principled affirmation that Jewish legal positions are decided together by scholar and community. Moshe Zemer (Zemer 1999, Jacobs and Zemer 2002), an Israeli Reform rabbi studies the

³⁹ Such as halakhic determinations that affect socio-religious status, e.g. Jewishness, bastardy, lineage, etc. See Grazi 2005b, 25-8 on the problem of consensus. For a discussion of the public consequences of private choices in secular bioethics, see Fenwick 1998.

pluralism and flexibility of the halakhic system, and advocates for a progressive halakhah to inform and help guide individuals and communities in reflective Jewish decision making. In this way, he follows in the footsteps of Rabbi Solomon B. Freehof, the leading Reform Jewish legal scholar of the twentieth century who sought to move beyond classical Reform and engage the religious literary legacy of Judaism with a philosophy of “guidance, not governance” (Friedman 2013).

All halakhists intrinsically, and many Jewish bioethicists by intellectual and/or religious orientation, espouse an epistemology that privileges the Written and Oral Torah traditions, even amidst great variation in theology, halakhic methodology, and legal philosophy. New scientific knowledge and technological capability, however, will manifest different influences and impacts upon halakhic process and bioethical outcomes depending on their place in one’s epistemology. Thus, studying the epistemological dimensions of medical halakhah and Jewish bioethics opens a new and important window into Jewish religion and science relations, as will be demonstrated in this dissertation.

Schemata of Religion and Science Relations

In the last quarter of the twentieth century, the first generation of scholars of the nascent “Religion and Science” guild within the academic discipline of Religious Studies considered and proposed typological schemata for the possible or actual interactions of religion and science. Alternative typologies and schemata were subsequently suggested in response to earlier proposals. While contemporary scholars of “Religion and Science,” to a large degree, have moved beyond this elementary discussion, considerations of such

typologies and schemata are important intellectual rites of passage for students new to the guild, and may even provide refreshing insight to those mature scholars already steeped in next-generation issues. Viewing Jewish religion and science relations through the lens of the epistemological and axiological dimensions of Jewish bioethics can likewise benefit from a contextualizing review of foundational religion and science typologies and schemata, in particular those of Professors Ian Barbour, Ted Peters, and Willem B. Drees, as well as the alternative perspective of Neils Henrik Gregersen.

Ian Barbour (1997, 77-105) in *Religion and Science: Historical and Contemporary Issues* proposed the first schematization of religion and science relationships. His four-fold typology of “Conflict, Independence, Dialogue, and Integration” was a reductionist effort to collapse religion and science encounters into a memorable and instructive, essentialist, typological schema. Within “Conflict,” Barbour places post-enlightenment scientific materialism and biblical literalism at the extremes. Both these intellectual commitments overreach into the other’s domain, and, thus, end up in conflict. The “Independence” typology represents the post-enlightenment, Kantian truce. It was upheld by Protestant Neo-Orthodox existentialist theologians, such as Karl Barth and Rudolf Bultmann, as well as scientists such as Albert Einstein and Stephen J. Gould, the later having declared science and religion as “NOMA,” i.e., non-overlapping magisterium. Barbour references Langdon Gilkey’s observation that religion and science employ different languages, and thus are stuck in their respective culturally contingent

discourses.⁴⁰ “Dialogue,” which Barbour seems to favor best, allows for the mutual exploration of similarities in philosophical approaches and methodological parallels. “Dialogue” allows for learning and reformulation, but admits that there may be irreconcilable differences. The typology of “Integration” is both old and new. The long history of cosmological argument from Maimonides and Thomas Aquinas in medieval times, to the natural theology of William Paley of early modernity, to the anthropic principle of contemporary thinkers such as Richard Swinburne and Nathan Aviezer, all represent a type of integration of religion and science, albeit one that will theologically only produce an impersonal, creator God.⁴¹ Others advocate for a theology of nature, like Arthur Peacocke, or for a systematic synthesis of science and religion with a new, comprehensive metaphysic, like Alfred North Whitehead and his disciples.⁴² With this four-fold typology, Barbour minimally aims to help categorize discrete religion and science encounters, as well as invite contemplation about which typology more broadly best represents the science and religion relationship.

Ted Peters (1999) in “Science and Theology: Toward Consonance” counts “Eight Ways Science and Theology Battle and Make Peace.” On the one hand, Peters may be suggesting an alternative typology to Barbour. More likely, though, he is beginning a

⁴⁰ Gilkey 1985, 108-16. Gilkey famously distinguished between religion that asks ultimate “why” or meaning questions, and science that asks here-and-now, causes and facts, “what” and “how” questions. This distinguishing trope can be found in many introductory books on religion and science relations. See Gilkey 1993; as well as Rolston 1997, 22-6; and Sacks 2011, 19-56.

⁴¹ Maimonides, *Mishneh Torah, Book of Knowledge*, “Basic Principle of the Torah,” 2:1-2; Aquinas, *Summa Theologiae* Ia2.3; Paley 2008; Swinburne 2004; Aviezer 1990.

⁴² Peacocke 1993; Whitehead 1979; see also Hartshorne 1982.

phenomenological catalogue of types of religion and science encounters.⁴³ He resists Barbour's minimalist schema because he believes that it forces dissimilar types into the same narrow boxes. Peters's eight ways are: "Scientific Materialism," "Scientific Imperialism," "Ecclesiastical Authority," "Biblical Literalism" (all of which arguably collapse into the "Conflict" typology), "Two languages" (which corresponds to Barbour's "Independence" typology), "Hypothetical Consonance" (which in its weaker formulation seems to correlate to "Dialogue," and in its aspirational ideal corresponds to "Integration"), "Ethical Overlap" (which Peter's claims can function even in the "Independence" typology, though it would seem to belong more to "Dialogue"), and "New Age Spirituality" (which best corresponds to "Integration"). Once in phenomenological mode, one can continue to add to the catalogue, for example, as with the new categories of "Shared History," "Political Alliance," and further specialized categories of "Bioethics," "Environmental Ethics," etc.... Peters aims to extend the conversation beyond Barbour's too-rigid classification, but more importantly wants to advocate for hypothetical consonance, which he believes maintains the integrity of each domain, but still allows for conversation and points of contact, crossover, and conflation.

Willem Drees (1996, 39-49) in *Religion, Science and Naturalism*, rejects Barbour, and by implication Peters, as offering an inadequate analysis. He believes that Barbour and others like him have failed to define and consider adequately what is meant by both religion and science. He identifies three epistemological challenges to religion: new

⁴³ See Peters 1999, endnote 5, where Peters admits that his eight ways can be collapsed into Barbour's four types.

scientific knowledge; new ideas about the nature of knowledge, and new appreciations of the world and universe. He places these along a “y-axis.” Along an “x-axis,” Drees emphasizes a more sophisticated understanding of religion, which he essentializes, per George Lindbeck (1984), into three categories: cognitive claims, religious experience, and lived linguistic-cultural traditions. The three new epistemological challenges posed by science to religion and the three categories of religious understanding track with and against each other in a 3 x 3 matrix, a new schema to help explore points of contact and conversation between science and religion.

Table 3.1. Willem B. Drees’s (1996, 40) “A classification for areas of discussion concerning the relationship of religion and science.”

Character of Religion (x-axis) > Challenge (y-axis) v	1. Cognitive	2. Experience	3. Tradition
a. New knowledge	1a. Content: i. Conflicts ii. Separation iii. Partial adaptation iv. Integration	2a. Opportunities for experiential religion? Religious experience and the brain.	3a. Religious traditions as products of evolution.
b. New views of knowledge	1b. Philosophy of science and opportunities for theology.	2b. Philosophical defenses of religious experiences as data.	3b. Criticism and development of religions as “language games.”
c. Appreciation of the world	1c. A new covenant between humans and the Universe?	2c. Ambivalences of the world and implications for the concept of God.	3c. A basis for hope? Or religions as local traditions without universal claim?

Each of the matrix’s nine boxes represents an area of theological and philosophical dialogue through which religion and science relations may be more deeply explored. Drees thus aspires to provide not a typology, but a schema that serves as a research apparatus for reflection upon science and religion encounters. So, for example,

matching new scientific knowledge against religious cognitive claims might indeed break down into Barbour's four-fold typology. However, that is only one box of consideration. Our new knowledge of neuroscience or evolutionary psychology can help us better understand experiential religion. Our new knowledge of linguistics and culture can help us better understand the formation, perpetuation, and activity of religious traditions. New views of knowledge in the philosophy of science may create new opportunities for theological models, as well as permit the consideration of religious experience as scientific data to be analyzed. The critical study of the development of religion is enhanced when deconstructed as the language games of a given tradition. A new appreciation of our world might suggest new ways of envisioning the covenant between God, humans, and our world/universe; have implications for the types of religious experience we seek; and may serve to stretch the ethical scope and help reformulate the goals of religious traditions. In sum, Drees is less interested in typology or phenomenology than in creating a schema of methodological guidelines to help direct constructive reflection on science and religion encounters.

Each of the above-mentioned three thinkers believes that the typological and/or schematic exercise creates meaningful reflection and conversation. Each, coming from a critical-realist perspective, ultimately aspires to a unity of knowledge of which science and religion are a part.⁴⁴ However, there are those who dispute this aspiration of integration or consonance and offer an alternative instead. The socio-historicist and

⁴⁴ Critical realism affirms a correspondence theory of truth and reality, but recognizes that since all data are theory-laden, theoretical truth claims must be evaluated by a complex set of (Kuhnian) criteria, such as: agreement with data; coherence; scope; and fertility. Thus, critical realism is confident in its realism, but humbly tentative and critical in its certainty about specific truth claims. See Barbour 1997, 106-10.

linguistic views of the production of knowledge, along with a holistic appreciation for the cultural ladenness and historical contingency of religious and scientific traditions, has led to a post-modern epistemological critique of both religion and science.⁴⁵ While Barbour, Peters, and even Drees all subscribe to a variation of a critical-realist orientation, others dispute the ability to make such cognitive claims. Mary Gerhart and Allan Russel in *Metaphoric Process: The Creation of Scientific and Religious Understanding* (1984) focus on how science and religion relate through a unified strategy of metaphor which allows for the comparison of known to unknown in the apprehension of the entirely other. The growth of knowledge in both science and religion depends on the mediation of experience by theoretical understanding. The metaphoric process provides the common structure of new explorations and imaginings. While a typologist would say that this constitutes dialogue or consonance, Gerhart and Russel believe that the starting point for consideration is simply a shared rationality.

Niels Henrik Gregersen (Gregersen and van Huyssteen 1998) also believes that there is a growing challenge of cognitive pluralism which undercuts such typologies and schemata.⁴⁶ He proposes a “contextual coherence theory” in which science and theology interface when the consequences of science are interpreted in cultures. Like J. Wentzel van Huyssteen (*ibid.*), he is against philosophical foundationalism and scientific realism, and is less interested in comparative method than in cumulative progress. Contextual

⁴⁵ See Kuhn 1996, 1998; and Wittgenstein 2008.

⁴⁶ For a Jewish epistemology that leverages cognitive pluralism to articulate a theology of Jewish law, see Soloveitchik 1984, 1986; Sacks 1988, 78-9; and Shatz 2016. For the role of theology in Jewish medical ethics, see Jotkowitz 2013c.

coherence theory aims to be realist in the sense of grappling with the pluralistic character of understanding reality and in the avoidance of trying to homogenize knowledge.

Formulating such schemata of the relationship of science and religion, as well as considering their critiques, serve an important heuristic function for those who study and think about religion and science relations. Considering the relationship of these two disciplines with historical perspective, philosophical reflection, religious appreciation, and psychological self-awareness can allow one to be a more focused and disciplined thinker about religion and science, human experience, truth claims, and the search for meaning within the world/universe we inhabit. The beginning of such a project starts with consideration of definitions of both science and religion, identification of positions taken within each about ontological and metaphysical presuppositions, epistemological frameworks, and other religious and cultural biases and commitments. Creating a schema not only empowers scholars of religion and science to reflect upon these issues for themselves, but also to relate the thinking of others to the analytic categories proposed.

We can see these advantageous and helpful processes at play in the very consideration of the three aforementioned early typologies and schemata of religion and science relations by Barbour, Peters, and Drees. Barbour created what he saw as an essentialist typology. As a first-generation thinker, Barbour set the agenda. Peters follows Barbour's typology in broad strokes, but shows greater nuance of position and expands it into eight ways. He probably could have done more because, rather than fundamentally disagreeing with Barbour, he creates a phenomenological study of relations, citing different examples of thinkers for each, as well as identifying their religious,

philosophical, and epistemological commitments. Drees too is inspired by Barbour, but locates Barbour's entire typology in the first box of his matrix regarding the challenge of new knowledge to the cognitive claims of religion. Drees expands the consideration of religion and science relations beyond cognitive claims to larger issues of epistemology, axiology, and experience.

This dissertation is also predicated on the scholarly assumption that Jewish religion and science relations can similarly be assessed through an investigation of the epistemological and axiological dimensions of Jewish bioethics. Points of conflict, independence, dialogue, and integration may be discerned. A phenomenology of interactions may be catalogued, and a multi-valenced analysis of interactions may be undertaken. If religion and science indeed constitute different domains of constructed human thought and experience with fundamentally different epistemologies, then there may indeed be little to no interaction between them; each will stand independently. However, philosophers of science opine that science isn't as epistemically special as commonly thought, and that both religion and science as domains of human knowledge share a common rationality the undergirds the two disciplines.⁴⁷ Scholars of science, and of religion, and of the relationship of religion and science, all look to develop investigative methods and frames of understanding that give insight into the principles, context, complexity, and historical contingency of knowledge claims and their normative applications.

⁴⁷ There is a debate among scholars of how to identify this common rationality. On the one hand, there are foundationalists who turn to rational thinking and/or empiricism to create indubitable premises from which they wage sound argument. Alternatively, there are non-or-post-foundationalists who understand scientific and religious knowledge to be complex forms of social knowing.

Strategies for Contending with Conflicts Between Torah and Science

Within Jewish religion and science relations, the epistemological exploration of theological and legal strategies employed in resolving seeming conflicts of Torah and science is of pertinence to the study of Jewish bioethics. Such an investigation helps provide better understanding of halakhic process, as well as of how Jewish law may respond to changes in scientific understanding and technological capability. Rabbi Natan Slifkin has written several books on the relationship of Torah and science. He identifies five approaches to the reconciliation of ostensible conflicts between them (Slifkin 2003, 2007; Reichman 2004).⁴⁸ First, the “Divine Knowledge Approach” asserts a position of Torah and rabbinical inerrancy. As divinely revealed wisdom, the Torah cannot be mistaken. The rabbinic interpreters of the Torah likewise have been blessed with divine inspiration, and therefore possess superior, if not near-perfect knowledge. Torah truth is eternal, while scientific knowledge is humanly constructed and thus subject to revision and reversal.⁴⁹ Rabbi Moshe Meiselman (2013), who holds a Ph.D. in Mathematics from MIT and is currently a *Rosh Yeshiva* in Jerusalem, is a vocal proponent of this position.⁵⁰ This deep skepticism of scientific and humanistic knowledge, as well as of modern society, limits all biomedical concerns to formalistic and positivist medical halakhah.

⁴⁸ See also Horowitz 1991-2; Steinsaltz 1994; Sprecher 1996; Bleich 2011, and 2017a, 73-100.

⁴⁹ Members of this theological school posit this as an argument akin to the pessimistic meta-induction in the philosophy of science, i.e. we can infer that our current scientific theories will be overturned from past reversals.

⁵⁰ The “Divine Knowledge Approach” can be found among a significant number of Orthodox Jewish thinkers since the advent of the Scientific Revolution and especially as a backlash position in the aftermath of the rise of Reform Judaism. In the context of the reception of Copernicanism, see Brown 2013; Student 2014. For another example of this approach, see Zimmerman 1979.

The second, “Changes of Nature Approach,” dissolves seeming conflicts between Torah and science by asserting that they are both correct. The reason why Torah appears mistaken is because nature has changed since biblical and rabbinic times. For example, talmudic understandings of human and animal anatomy, as well as fetal development, are substantively different than those of our time (Sternberg 1997; Carmell and Goldberger 1998; Reichman 1996, 2008a,b). The Talmud posits, for further example, that seventh-month fetuses are viable, but eighth-month fetuses are not (Reiss and Ash, 1988; Student 2001). According to this approach, the talmudic sages were not wrong; simply, nature has since changed. This strategy originates in the scholastic talmudic commentaries of the *Tosafists* of medieval Ashkenaz (twelfth through fourteenth centuries, Franco-Germany). Rabbi Neriah Gital (1998a) documents and analyzes the application of this approach throughout talmudic commentary and halakhic literature.⁵¹ The benefit of this strategy is that it frees contemporary consideration of biomedical questions from the constraining force of halakhic positions developed through a different understanding of the scientific reality. Gital (1998b), however, cleverly argues that to apply this principle proactively in contemporary Jewish bioethics would require that one actually believes in the “Change of Nature” thesis. If one doesn’t believe that nature has changed in the past 2000 years, then one cannot with integrity take advantage of this liberalizing strategy. However, it is worth considering whether one can indeed apply aspects of this pedigreed approach in

⁵¹ For shorter English analyses see Cohen 1996, and Steinberg 2003d. For a Maimonidean critique of the Tosafist position, cf. Malakh 1998.

contemporary situations in which technological achievement has indeed changed nature, such as in assisted reproductive and genetic technologies.

The third and fourth approaches are the “Different Meaning Approach” and the “Metaphor Approach.” The strategy is similar for both. Either we misunderstand the talmudic sages’ intent and mistakenly conclude that they erred in scientific understanding, or the sages were speaking metaphorically, and not in any realistic capacity. The metaphoric strategy is also marshalled to explain seeming inconsistencies between biblical descriptions of reality and our current scientific understandings.⁵² Both strategies seek to uphold the inerrancy of the sages despite their being at odds with contemporary understandings of science.

The fifth “Empirical Knowledge Approach” admits rabbinic fallibility. The sages were expert in Torah scholarship, not scientific knowledge, and, at their best, shared the scientific understandings of their times. Rabbi Moshe D. Tendler (2004), one of this dissertation’s exemplars, cleverly combines the “Changes of Nature” approach with the “Different Meaning” approach in light of the “Empirical Knowledge Approach,” and says that the “Changes of Nature” approach should be decoded as *our understanding* of nature has changed.⁵³ While this approach admits to progress in scientific knowledge, the question at hand is what to do when halakhic precedent is based on erroneous science. On the one hand, one could argue a realist position that mistakes should be corrected and

⁵² Many medieval and early modern talmudists and halakhists were proponents of metaphoric interpretations of supernaturalistic biblical and rabbinic passages, as well as of passages and positions that defied their contemporary understanding of the world. Slifkin 2003, 2007 details such authorities and cases. See also Lamm 1990; Schacter 1997; Kimche 1999; Sacks 2011.

⁵³ Tendler credits this view to Rabbi Moses Isserles (1520-1572, Cracow, Poland), *She’elot uTeshuvot haRamo* 6. See Tendler 2004; Loike and Tendler 2011, 114, 114n47.

Jewish law reformulated (Sternberg 1997).⁵⁴ On the other hand, one could counter with a strong constructionist stance that halakhah creates its own legal reality. Most contemporary espousers of this position, however, adopt a more nuanced position. On matters of ritual, one should continue to practice per established halakhic positions, even if they were originally conceived in error. For example, *Kashrut*, Judaism's ritual dietary code, should still be followed even if originally formulated based on erroneous science, for example, mistakes in animal anatomy.⁵⁵ In matters of health and medicine, on the other hand, halakhists should pursue the best course of action to safeguard and advance life in light of our best scientific understandings (Rabinowitz 1987). This compromise has apparent precedent, as, for example, by medieval times, talmudic medicine was considered discredited and routinely ignored (Halevi 1997).

However, there does not appear to be a developed protocol as to when and how to change halakhah in light of changes in scientific understanding. At best, there is a recommendation to consider such matters case by case (Student 2001; Dorff 2014). This

⁵⁴ In a published interview with Rabbi Hershel Schachter, prominent *Rosh Yeshiva* at Yeshiva University's affiliated rabbinical seminary, Schachter supported the idea that it is possible for halakhah to change in light of new scientific knowledge: "But if there is a *Halakhah* that is clearly based on a [scientific] mistake, that you cannot interpret differently and is outright incorrect, how can you continue observing it? It's based on a mistake. We believe in *Torah min Hashamayim* (Torah from Heaven) – it's a divine code. If there is a mistake, it's a man-made mistake. *HaKadosh Barukh Hu* (the Holy One blessed be He) doesn't make mistakes." See Bashevkin 2014, 50. See also Neuberger 1991-2; Adlerstein, Fryshman, Brody, Aviezer, and Buchman 2014; and Torah and Science Blog n.d.a,b.

⁵⁵ Even here more nuance is necessary. The subsection of kosher laws regarding meat called *tereifot* – a specific ancient tradition listing kosher-disqualifying anatomical injuries and abnormalities purportedly predictive of the death of the animal within a year, may still formally attach even if anatomically or physiologically erroneous given that rabbinic tradition classifies these laws as "*Halakhah leMoshe miSinai* – laws given to Moses at Sinai." However, see Buchman 2007, who argues that Jewish law should neither epistemologically or legally privilege these laws. Other kosher laws not classified as such, however, may be subject to revision in light of new scientific knowledge. For example, at present, Israeli halakhic authorities are debating whether stainless steel kitchen utensils should be subject to the laws of flavor absorption and expunging in light of empirical testing in a laboratory that demonstrates that stainless steel does neither. See Frank, et al. 2014, 2105; Henkin 2014; and Melamed 2016.

holds true for cases of long-known phenomena in which current understandings need to be reconciled with past conflicting rabbinical understandings. There is little written concerning novel, emergent technologies, and anticipating paradigmatic changes in scientific understanding. Such a protocol would need to formulate a theory and theology of knowledge, including the relationship of law and ethics, a philosophy and a methodology of halakhah, all in light of a philosophically attuned understanding of scientific progress and achievement.⁵⁶ This would be a positive contribution to Jewish bioethics and medical halakhah. In this dissertation, I analyze the epistemological dimensions of the encounter of, and, at times, conflict between, ancient Torah sources and new scientific knowledge in the thought of Jewish bioethicists, as well as how they use both old and new knowledge together to address contemporary bioethical challenges.

Contextualizing Axiological Dimensions: The Interrelationship of Ethics and *Halakhah*

For the Jewish bioethicist and medical halakhist, openness to methodological approaches beyond the strictly legally positivist and halakhically formalist may depend on where one stands regarding the question of whether one thinks that there is an ethic independent of halakhah. Plato famously has Socrates ask in *Euthyphro* (10a): “Is what is holy, holy, because the gods approve of it, or do they approve of it because it is holy?” Divine command theory posits that the rulings of the gods, or God, or mitzvah (commandment), i.e., Jewish law, determine the right and the good (Harris 2003).

⁵⁶ See Fisch 2007, 2008, who begins to consider how Jewish epistemologies and hermeneutics can relate to the philosophy of science.

Alternatively, some thinkers believe that there does indeed exist an independent ethic by which God's commands are valued. Presumably, those who side with a divine command theory will likewise embrace greater legal formalism in responding to life situations, whether they are of a purely ritualistic or of an ethical nature. Part of the challenge of identifying who holds what opinion among halakhists is that the vast majority of halakhists do not ask the question, leaving us with little insight into their overall philosophy of halakhah absent a thorough, independent analysis of their oeuvre. Of those who do ask the question, they tend not to answer it in an either/or fashion but offer highly qualified and nuanced responses.

The question, "Does Jewish tradition recognize an ethic independent of *Halakhah?*," was the topic of an oft-cited 1975 article by the late, prominent rabbinical scholar Aharon Lichtenstein, *Rosh Yeshiva* of *Yeshivat Har Etzion* in Israel (Lichtenstein 1975). Lichtenstein's careful response to the question pivots on a second question: how are we defining "halakhah?" If halakhah refers to the individual laws that comprise Judaism's legal tradition, then the answer is unequivocally yes, there is an independent ethic. Lichtenstein supplies copious and compelling talmudic support for his stance that halakhah is not morally self-sufficient. However, Lichtenstein further states that Halakhah with a capital "H" refers to the system as a whole, which incorporates supererogatory, supra-legal, but not extra-legal, duties. The Halakhah itself mandates going beyond its legal rulings and niceties to pursue larger ethical goals.⁵⁷ For example,

⁵⁷Lichtenstein 2003a, 117, by way of example, cites three strategies in which ethical goals beyond particular legal compliance can be achieved: voluntarily assuming obligation despite personal exemption; disregarding technical exclusions; and most far-reaching, expanding the scope of the law.

the Talmud speaks of the duty of “*lifnim mishurat hadin*” – that is, of going between the lines of the law, or more colloquially, beyond the letter of the law. Halakhah as an overall system and worldview requires, at times, that its adherents uphold its grand moral vision by reading between its lines and going beyond its letters.⁵⁸

Another question, though, needs to be asked: what inspires the moral impulse to transcend the clear regulations of halakhic legislation? If there is an ethic independent of halakhah, what are the sources of ethical insight which can impinge upon halakhic decision-making? Is it an objective or subjective ethic? Is it based on a theory of natural law and morality, or rooted in culture and tradition? Is it a function of act or agent morality? Does ethical intuitionism play a legitimate role?⁵⁹ In the wake of Lichtenstein’s article, there has been a robust dialogue about these questions.

The late Yeshayahu Leibowitz of Hebrew University denied the question in its totality. He believed ethics were outside the purview of Jewish law, which he interpreted more narrowly and defined solely as the submissive service of God. Pointing to Maimonides’s views on the ideal purity of religious motivation, Leibowitz considered any ulterior motivation, even ethical, in the service of God to be tantamount to idolatry. This did not curtail the need for ethics, which he believed governed interpersonal relationships and matters of polity, but just their framing and motivation (Leibowitz 1995, 3-29; Rynhold 2011). The late Marvin Fox of Brandeis University affirmed the role of ethics in Maimonides’s halakhic system; however, he thought that Maimonides

⁵⁸ See Lichtenstein 2003a, 107-9. Although he posits that mitzvot (divine commandments) either have inherent axiological significance, or ritualistically aim to inspire obedience, which itself is religiously and ethically salubrious, he also affirms meta-ethical principles and purposes.

⁵⁹ For an introduction to intuitionism in ethics, see Stratton-Lake 2014.

subscribed to a divine command theory (Fox 1990, 2003). Most others, however, argue that Maimonides acknowledged that Jewish law and ethics were accountable to an independent ethic given Maimonides' rationalist orientation, i.e., God too is a rational agent (Sagi and Statman 1995a, 1995b).

J. David Bleich (1980; 1987; 2013a,b), one of this dissertation's exemplars, asserts that the Talmud recognizes natural law and morality, deems it of objective integrity, and thereby Jewish law developed incorporating the values of objective natural law and morality within its strictures and affirmative duties. Thus, Bleich embraces legal formalism, because while he agrees that there is an ethic independent of halakhah, this is of no practical relevance since it is already entailed within the law. Bleich (1987) also locates manifestations of the ethic independent of halakhah in the Midrash and Talmud's aggadic stories and maxims modelling and championing supererogatory ethical behavior. However, Bleich (1997b) at the same time denies the aggadah any normative application to halakhic decision-making, as stated in Chapter Two. Although Bleich and Lichtenstein agree that Halakhah as a system acknowledges an independent ethic, Lichtenstein allows much greater personal discretion in judging the applicability and scope of supererogatory actions (Lichtenstein 1975; 2003b).⁶⁰

One of the reasons for Lichtenstein granting great scope to and autonomy within the realm of the supererogatory is that he is not only interested in act morality, i.e., what the moral agent does, but also in agent morality – i.e., the ethical character of the agent.

⁶⁰ Several studies explore supererogation within Jewish law, more generally, and "*lifnim meshurat hadin* – going beyond the letter of the law," more particularly. See Berman 1975, 1977; Diamond 1979; Hartman 1985; Hartman 1987; Kirschenbaum 1991; Meir 2012; Shilo 1978; Weiss Halivni 1978. For investigations of morality and halakhah more generally, see Spero 1983; Statman 2010; Rosen 2010.

In other words, by cultivating personal virtue, the halakhist and religious ethicist sharpen his or her abilities to make ethical decisions beyond the letter of the law. For Lichtenstein, much more than Bleich, the cultivation of virtue is accomplished not only by the study of Torah and performance of *mitzvot* (commandments, plural of mitzvah), but also through more humanistic studies and endeavors, thus crosscutting moral axiology with epistemology (Lichtenstein 2006-2007). Agent morality and virtue ethics have roots in Maimonides's ethical system, as well as antecedents in rabbinic literature (Blau 2000). Once we can speak of a virtuous agent and not just a halakhic actor, there is a larger role for moral conscience and intuition. Bleich too affirms basic moral intuition, for example regarding the value of the intrinsic sanctity of life, but writes: "For Jews committed to guiding their conduct on the basis of a divinely revealed corpus of law, the question of the validity of an *a priori* moral cognition is largely irrelevant" (Rosner and Bleich 2000, xxii). However, even given a divinely revealed corpus of law, shouldn't moral intuition have a role to play in the human-mediated interpretation of said corpus over the generations?

The late Orthodox Jewish philosopher, Rabbi Walter Wurzberger uses the idea of moral intuition to create a role for covenantal ethics within a halakhic orientation.⁶¹ In *Ethics of Responsibility: Pluralistic Approaches to Covenantal Ethics*, Wurzberger (1994) adopts the position that human beings can know ethical truths without appealing to revelation, thus making virtue culturally traditioned, and therefore subjective and

⁶¹ In the discussion of covenantal ethics in Chapter Two, this typology was primarily associated with Reform Jewish thinkers due to their embrace of personal autonomy and the abrogation of halakhic obligation.

pluralistic, and not simply a function of objective natural morality.⁶² In order to ensure ethical decision-making in line with Jewish law, he advocates for and frames an ethic independent of halakhah as needing to be conditioned by covenantal ethics. In other words, studying and living life per Jewish law and tradition shapes one's virtue and moral intuition. This covenantal virtue ethic supports an admittedly subjective independent ethic, but one that naturally aligns with the halakhic system, itself a product of Jewish tradition (Shatz 2009).

The relationship of ethics and Jewish law and the question of whether there exists an ethic independent of halakhah continue to inspire dialogue and debate. In 2012, the Association for the Philosophy of Judaism held an online symposium on Lichtenstein's 1975 article (Mittleman and Statman 2012). This question intrigues the student of Jewish legal process and philosophy of ethics and law, in general, but also specifically regarding Jewish bioethics. Rabbi Elliot N. Dorff (2002a, 241-61; 2003, 337-44; 2007, 211-44), one of this dissertation's exemplars, revisits this question in almost every one of his books on Jewish ethics and philosophy of halakhah, including his book on Jewish medical ethics (Dorff 1998b, 395-416). An ethic independent of halakhah is arguably especially of prime importance in Jewish bioethics, as it is precisely in the face of new knowledge and novel technologies unanticipated and without parallel within Jewish law that intuitive and supererogatory morality serves an invaluable function.

⁶² See Wurzberger 1994, chapters one and two.

Axiological Dimensions of Halakhic and Jewish Bioethical Process and Methodologies

Ethical considerations in halakhah consistently interest and may even motivate many of those who engage in the academic study of Jewish law. The late Jewish philosopher Rabbi Eliezer Berkovits constructed a philosophy of Jewish law and a pragmatic program for halakhic reconsideration of pressing contemporary issues, especially regarding gender status and Jewish divorce law, based on the need to frame all halakhic inquiry in ethical relief (Berkovitz 1983; Shatz 2013a).⁶³ Feminist scholars of Jewish law likewise examine Jewish legal questions of tradition and change through the lens of gender-aware ethical sensitivity, utilizing feminist scholarship in halakhah, theology, and critical legal theory (Irshai 2010). Ronit Irshai (2012) has applied this approach to deliberations on fertility-related issues in contemporary halakhic literature. Philosopher Tamar Ross (2004) grounds feminist halakhic critique in a theology of divine ethical concern, and cumulative and ongoing revelation. Ethical concerns often frame the dialectical discussion of tradition and modernity, and of continuity and change in Jewish law (Zohar 2007).

The priority of the ethical as an essential, as well as supererogatory, component of the halakhic system invites questions about the process, principles, methodologies, and mechanics of halakhah, as well as the shaping role of ethics within halakhic process. Given the native, organic development of halakhah within Jewish covenantal communities, which themselves, in varying degrees, participate in larger culture, one

⁶³ Per Shatz 2013b, 254n14, Berkovitz, however, believes that axiological dimensions are all native to internal Jewish judgments.

would expect to see axiological changes over time. It is worth noting, however, that even allowing for such societal influence, natural evolution of moral norms within Judaism may still be at odds with the contemporary ethical sensibilities prevalent in larger society if the later appear to be contrary to Torah ethics. Reactionary religious responses to changing societal ethical judgments and moral norms may likewise yield disjunction.

David Shatz (Shatz 2013b), an Orthodox Jewish scholar of general and Jewish philosophy, distinguishes between Modern Orthodox and *Haredi* (Ultra-Orthodox) legal ideology by pointing to the overt role that values should play in halakhic decisions.⁶⁴ Shatz opines that Modern Orthodox halakhic process should not be strictly constructivist and formalist, but that poskim should be able to use external ethical standards in halakhic decision making.⁶⁵ A Modern Orthodox halakhic philosophy should affirm the following: an ethic independent of halakhah (what Shatz calls, “the validity thesis”), that humans can know ethical truths without revelation (“the knowledge thesis”), that every legal system entails a certain indeterminacy and can produce untoward results (“the jurisprudential thesis”), and that halakhah should seek to reconcile ethically troubling biblical practices and rabbinic pronouncements with contemporary morality (“the reconciliation thesis”).⁶⁶ While Shatz compellingly constructs a philosophy of halakhah

⁶⁴ For an intellectual orientation and reader of Shatz, see Tirosh-Samuels and Hughes, 2016.

⁶⁵ This assertion seemingly goes beyond the validation of ethical intuitionism within halakhic process, in that Shatz affirms that a posek’s personal ethical intuition and ideology may indeed have been influenced by factors external to Jewish law. For examples of the recognized roles that ideology and ethical intuition may play in halakhic process, see Shapiro 2016a, 2016b. Shatz 2013b, 246, justifies this position, in part, by pointing to the talmudic principle, “*’ein ledayan ela mah she’ainav ro’ot* – a rabbinical judge has naught but what his eyes see” (TB Niddah 20b), which recognizes that a posek may yield fallible rulings, but has license to make halakhic determinations based on the resources at his disposal, including ethical judgments.

⁶⁶ Shatz 2013b, 247-50, argues that an ethic independent of halakhah helps resolve legal indeterminacy by allowing for the ethical ranking of legal determinations, as well as checks untoward results. Shatz, 250-2, also explains that ethically troubling biblical passages or rabbinic pronouncements may be reconciled by

that could be leveraged within the legal model of Jewish bioethics, several of his prescriptions may also be used in descriptive analysis of Jewish religion and science relations in contemporary Jewish bioethics.

Methodological Parallels in Contemporary Bioethical Theory

Contemporary secular bioethics operate in three distinctive spheres of engagement and influence: academic, policy oriented, and clinical bioethics. Clinical bioethics aims to provide ethical guidance to discrete bioethical questions or dilemmas. Policy oriented bioethics aspires to establish normative guidelines for clinical application and consistent decision making. Academic bioethics usually deals in theory, with the goal of influencing bioethical policy. Bioethical theory itself can be further subdivided into three groups: high theory, “anti-theory” casuistic particularism (or narrative bioethics), and theory-modest bioethics featuring guiding mid-level norms. High theorists favor top-down, deductivist modes of thinking, which systematically order moral principles and apply them to hypotheticals.⁶⁷ Particularistic casuistry or narrative bioethics recognizes that our moral lives are culturally contingent and messy, and thus sees individual cases and questions of bioethics as fraught with unique particulars, requiring bottom-up consideration (Arras 2013). Jonathan Dancy (2006, 2013), for example, argues for

any of the following apologetic strategies: justifying the law in general ethical terms; limiting its scope and applicability through reinterpretation; judging favorably its larger impact on aretaic ethics, i.e., virtue; or through a Maimonidean-style accommodation, for example by contextualizing the original rule in light of the morality and/or social norms of ancient times.

⁶⁷ Arras 2013 charts the development of bioethics as a contemporary discipline of applied ethics, beginning in the 1970s with the “heroic phase” which aspired to tackle practical challenges with high moral and political theory, e.g. consequentialism, deontology, natural law and rights, and even metaphysics.

epistemological moral-particularism, contending that all sound moral judgments depend on the particularities of a situation in their individualized complexity.⁶⁸ Theory-modest bioethics tries to strike a balance between espousing consistent principles and affirming unique particulars. Beauchamp and Childress's (2009) "Principlism," still perhaps the most utilized approach in applied bioethics, emphasizes four theoretical fundamentals undergirding most particular ethical analyses and judgments: autonomy (stemming from a fundamental respect for person), beneficence, non-maleficence, and (distributive) justice. Similarly, John Rawls's (1971) reflective equilibrium, whether in its narrow or wide interpretations, aspires to find balance between generally espoused moral principles and particular intuitive responses to the situation at hand in order to arrive at a reasoned choice (Daniels 2013; Arras 2013).⁶⁹

Jewish bioethicists, like secular bioethicists, also wrestle with these dialectics of general theory verses particular circumstances, and prescriptive norms verses responsive intuitions. The epistemological and axiological dimensions of medical halakhic and Jewish bioethical analyses and their normative determinations impact upon how best to balance the high theories of halakhah and Jewish ethics, the theory-modest mid-level norms of halakhic codes, and the particular casuistry of the responsa case law and current cases *in situ*. Scientific understanding, legal philosophy, halakhic process and method, the role of ethical principles and intuition, and the particular details of the case under

⁶⁸ See Arras 2013 for other anti-theory types, such as Stephen Toumlin's "strong particularistic casuistry," and Albert Jonsen's "modest casuistry."

⁶⁹ Wide reflective equilibrium (WRE), as opposed to narrow reflective equilibrium (NRE), entails a more developed and wider scope of background theoretical commitments, such as moral and political philosophical views of human agency, personhood, and social systems, see Norman 2013, and Arras 2013.

consideration – all come together to produce an academic analysis, policy position, and/or practical clinical application in Jewish bioethics. The challenge working backwards from a finished bioethical presentation is to tease out and identify each of these essential elements. Focusing on the relationship of religion and science in Jewish bioethical deliberation turns our attention more specifically to epistemology and moral axiology.

Method of Investigation and a Research Assessment Matrix

Four current cases of assisted reproductive and genetic technologies, i.e., 1. in vitro fertilization; 2. gestational surrogacy; 3. cloning; and 4. mitochondrial replacement therapy, i.e., “three-parent babies,” all introduce unprecedented forms of collaborative reproductive processes with varying degrees of novel reproductive outcomes. When considered through the lens of Jewish bioethics, each case, and all of them over time in cumulative progression, offer important windows into Jewish religion and science relations. In this dissertation, I focus more narrowly on the Jewish bioethical debate concerning the identification of maternity and paternity, and their attendant halakhic and bioethical considerations, in each of the four aforementioned cases. For each, I will pursue the following method of investigation: 1. *Understand the current science and its history* by preliminarily providing a scientific and medical orientation; 2. *Locate the Jewish bioethical concerns within a larger bioethical framework*; and 3. *Evaluate the epistemological and axiological dimensions of the Jewish bioethical analysis* of this dissertation’s four Jewish bioethical exemplars introduced in Chapter Two (pp. 58-65):

1. Rabbi J. David Bleich; 2. Rabbi Michael J. Broyde; 3. Rabbi Elliot N. Dorff; and 4. the collaborative team of Dr. John D. Loike and Rabbi Moshe D. Tendler.

In order to analyze the epistemological and axiological dimensions of these exemplars' bioethical analyses, expositions, and determinations, I will seek to answer the following extra-and-meta-halakhic questions:

Epistemological Dimensions:

1. In what ways does the case being studied represent an instance of new scientific understanding and/or unforeseen technological capability?
2. Is the new knowledge tentative, sufficient, or complete?
3. Does the Jewish bioethical scholarship under review display adequate and sufficient scientific knowledge of the case?
4. How does the current scientific understanding align with previous scientific and especially traditional Jewish understandings?
5. Is the new scientific knowledge accepted at least *pro tanto* and integrated as such?
6. What are the epistemological statuses of Torah and science?
7. Is the relationship between them one of conflict, independence, integration, or dialogue?
8. If "conflict," how is the conflict explained or reconciled?
9. Is there a discernable, overarching Jewish bioethical or halakhic methodology being applied to the meeting of new knowledge and ancient tradition?⁷⁰

⁷⁰ This last question invites a return to a consideration of Jewish bioethical models, i.e., covenantal, narrative, feminist, judaized, legal, and methodologically holistic bioethics (Chapter Two, p. 39 ff.), as well as to an evaluation of halakhic method, as described earlier in this chapter.

10. Is it one of high theory, particularistic casuistry, or theory-modest, mid-level norms?

Axiological Dimensions:

1. Are halakhic and Jewish bioethical investigations perceived as synonymous or as two related, yet distinct activities?
2. Does the bioethicist under consideration take into account an ethic independent of Jewish law and believe in its valid application?
3. Are axiological commitments discernably influenced by new knowledge and contemporary ethical or cultural norms?
4. Is there an explicit recognition or inferred awareness that one's clarified moral values and ethics may legitimately help direct both halakhic and bioethical intuitions, examinations, and normative determinations?
5. What discrete values inform the Jewish bioethical analysis and guide its halakhic consideration?

Metaphysical Dimensions:

Although not the focus of my inquiry, it may at times be helpful to take note of the metaphysical dimensions undergirding a Jewish bioethical analysis. Metaphysical assumptions and frameworks crosscut with epistemology and can impact upon moral axiology. For example, the beginning of human life and the status of personhood are metaphysical concerns.

Epistemological and Axiological Assessment Matrix

To help identify the epistemological and axiological dimensions of the Jewish bioethical analyses of the aforementioned exemplars, and for each, respectively, answer the above questions, I have applied the following assessment matrix to their writings during my research (Table 3.1, next page). Of course, one size rarely fits all. Nonetheless, it has served as a helpful heuristic device to aid in and advance my analyses.

Table 3.2. Epistemological and Axiological Assessment Matrix

Case of ART: _____

Exemplar: _____

Paper/Book: _____

From exemplar's perspective	Torah: Written and Oral	Science: ART	Jewish Bioethics	Secular Bioethics
New Scientific Knowledge and/or Technological Capability	Torah and Science relations. Conflict, Independence, Dialogue, Integration Alternate schema?	Rival theories and theory choice. Knowledge is tentative, sufficient, or complete? Accepted <i>pro tanto</i> ? New views of knowledge?	Religion and Science relations Issues of Jewish bioethical concern?	Awareness of issues of secular bioethical concern and their ethical analyses?
Epistemology	Torah truth claims: absolute, contingent, or contextual?	Philosophy of Science: e.g., realist/non-realist Sociology of knowledge	Jewish bioethical model, mode, and method?	Model, mode, and Method: High Theory, Particular Casuistry, Mid-level Norms?
Moral Axiology	Sources of ethical values: Jewishly internal or external? Heteronomous or autonomous? Torah and/or Jewish tradition dependent or independent?	Is scientific theory value-free?	Ethic independent of Halakhah? Self-awareness of ethical intuitions or impulses? Metaethics? Discrete values?	Influence of secular bioethical theory? Discrete values: conflict or consonance with Jewish values? Progressive or conservative vis a vis technology?
Metaphysics				
Grounds of Parenthood	Causal or voluntarist? Monist or pluralist?	How does science influence philosophical deliberations?	Causal or voluntarist? Monist or pluralist?	Causal or voluntarist? Monist or pluralist?
Definition of Maternity				
Definition of Paternity				

PART II

Application and Analysis: The Identification of Maternity and Paternity in Four Current Cases of Assisted Reproductive and Genetic Technologies

CHAPTER FOUR

Grounding the Jewish Bioethical Discourse Regarding Assisted Reproductive and Genetic Technologies

In the United States, bioethical considerations of ART often begin with a discussion of rights, i.e. procreative liberty and the legal and especially women's moral claims for assistance in reproduction.¹ Several Supreme Court rulings have established the right *not to procreate*, whether through the use of contraception, or through the abortion of a pregnancy, due to the substantial burdens upon women of an unwanted pregnancy and child rearing, as well as concerns for personal privacy and the right to self-determination regarding one's body.² At the same time, until the arrival of ART, the United States government had little reason to interfere in or regulate procreative liberty, which is conceived of as a basic human dignity, although societies historically have tended to prefer marriage as the appropriate context through which to exercise this fundamental human right.³ With the advent of ART, numerous legal and moral questions have arisen regarding the right to procreate, including the welfare right to assistance in

¹ See Hull 2005a, 1-53, who begins *Ethical Issues in the New Reproductive Technologies* precisely with the question of procreative liberty and its legal and moral claims. See also Brake and Millum 2013, who discuss procreative autonomy, including the philosophical claims for and against the negative right against interference and the positive right of assistance.

² *Griswold v. Connecticut*, 381 U.S. 479 (1965); *Roe v. Wade*, 410 U.S. 113 (1973); *Planned Parenthood v. Danforth*, 482 U.S. 52 (1976); *Bellotti v. Baird*, 443 U.S. 622 (1979); and *City of Akron v. Akron Reproductive Center*, 103 S Ct 2481 (1983). See Hull 2005a, 18n2. Hull 2005a, 14-6, identifies six grounds for which a person may potentially have a moral duty *not to reproduce* in light of the principles of beneficence and non-maleficence to the resultant child and the social good: 1. transmittable infectious or genetic disease; 2. unwillingness to provide proper pre-natal care; 3. inability to rear children; 4. likelihood of psychological harm to offspring; 5. overpopulation; 6. non-marriage.

³ Consider the "United Nations Declaration of Human Rights," United Nations 1948, Article 16.1: "Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and found a family." One notable exception to procreative liberty in the United States is states' right to involuntarily sterilize intellectually disabled (then called "mentally retarded") persons, i.e., *Buck v. Bell*, 274 U.S. 200 (1927). For a brief history of *Buck v. Bell*, see Mukherjee 2016, 78-85. The coerced sterilization of criminals has similarly been proposed in legal arguments before the Supreme Court.

reproduction, i.e. health insurance coverage, professional medical assistance, and the availability of gamete providers or gestational carriers (Hull 2005a, 9-21).

In Jewish bioethics, with Judaism’s emphasis on covenantal duties, i.e. the mitzvot – divine commandments, considerations of ART begin not with a discussion of rights, but of responsibilities.⁴ The first commandment in the Torah is the charge to procreate: “*Peru urevu* – Be fruitful and multiply” (Genesis 1:28; 9:1). This opening chapter of Part II will ground the Jewish bioethical discourse by briefly exploring the Jewish scriptural sources, religious significance, and scope of the procreative imperative, especially regarding the questions of whether utilizing ART leads to the fulfillment of this religious duty, and relatedly, whether there is an obligation to pursue procreative outcomes through ART, and if others have a religious and moral duty to assist. In addition, this chapter will also briefly review early halakhic considerations of ovarian transplants, as well as of artificial insemination with a woman’s husband’s sperm (AIH) or with donor sperm (AID).⁵ Since these two medical therapies were the first ARTs employed to benefit individuals or couples struggling with infertility, their foundational discussion among halakhists undergirds later medical halakhic and Jewish bioethical considerations of the four subsequent cases of ART considered in this dissertation.

⁴ For example, rabbinic and halakhic literature do not speak of the right *not to procreate*, but of exemptions from the obligation to reproduce. See “The Prohibition of Sexual Intercourse in a Time of Famine,” Irshai 2012, 47-52.

⁵ The “H” in AIH is decoded as “homologous,” rather than “husband,” even though it still refers to a woman’s husband, as opposed to heterologous artificial insemination, AID, in which donor sperm is used, employing a “D” for “donor.”

The Mitzvah of “*Peru uRevu*” – The Commandment of “Be Fruitful and Multiply”

Scriptural Sources and Religious Significance of the Mitzvah of Procreation

The Talmud (TB Yevamot 65b) identifies the scriptural source for the mitzvah of procreation in the verse addressing Adam and Eve, the first persons, immediately following their creation on the sixth day: “And God blessed them, and God said to them, ‘Be fruitful and multiply, fill the earth and master it; have dominion over the fish of the sea, and over the birds of the sky, and over every living thing that moves upon the earth’” (Genesis 1:28).⁶ In another place, the Talmud (TB Sanhedrin 59a) identifies two alternate sources. The first charges humanity, more generally, with procreative repopulation in the aftermath of the world-destroying flood, through the Noahide covenant: “And God blessed Noah and his sons, and said to them: ‘Be fruitful and multiply, and fill the earth’” (Genesis 9:1).⁷ To add this charge to the Children of Israel’s Sinaitic covenant, the

⁶ Maimonides (1138-1204), *Sefer Hamitzvot*, positive commandment 212, and *Mishneh Torah*, *Sefer Nashim*, “The Laws of Marriage,” 15:1, points to this verse as the source of the commandment of procreation. Locating the charge in the context of the first woman and man underscores the rabbinic idea that within each person inheres the capacity to populate, over the generations, a whole world, just as did Adam and Eve, see Mishnah Sanhedrin 4:5; Maimonides, *ibid.*, 15:16. The medieval Spanish Jewish bible commentator Abraham ibn Ezra (1089-1167; ad loc., Genesis 1:24), opines that the verse addressing Adam and Eve is solely a blessing and not a command, since this verse is similar to the blessing at the conclusion of the fifth day of creation addressed to the fish and birds, who are not subject to commandments like willful human beings: “And God blessed them, saying, ‘Be fruitful and multiply and fill the waters in the seas, and let the birds multiply in the earth’” (Genesis 1:22). See also Rashi (1040-1105) and Nachmanides’s (1194-1270) commentaries on Genesis 9:7; and Tosafot (12-14th centuries) Yevamot 65b, s.v. “*veLo*.” However, others, such as Rabbeinu Nissim (1320-1380) in his biblical commentary (ad loc. Genesis 1:28), parse the verse as containing both blessing and commandment: “And God blessed them” – this clearly establishes an orientation of benediction; “and God said to them” – this refers to the additional valence of commandment in the verse. For a full discussion of the scriptural source of the commandment of procreation, see Ciment 2010, 188-9.

⁷ The Noahide covenant refers to the prohibitions and affirmative duties that God imposed upon Noah, his family, and their descendants after the flood. The apocryphal book of Jubilees 7:20-8, as well as the New-Testamental book of Acts 15:1-31, refer to “Noahide laws,” which likely parallels this rabbinic tradition. The second-century-CE rabbinic Tosefta (Avoda Zara 9:4) lists six prohibitions and one affirmative duty comprising the “seven mitzvot of the Children of Noah”: 1. denial of God; 2. blasphemy; 3. murder; 4, illicit sexual relations; 5. stealing; 6. eating the limb of a living animal (prohibitions); 7. the establishment of just laws and courts (affirmative duty). The Talmud (TB Sanhedrin 59a ff.) cites this Tosefta and

Talmud cites a second source. In recounting the revelation at Sinai to a new generation, Moses, in his deuteronomic farewell oration, recalls God instructing him after the giving of the commandments: “Go say to them (i.e., the Children of Israel), ‘You shall return to your tents’” (Deuteronomy 5:27). The Talmud understands this verse allusively and euphemistically charging the people to return to their marital beds to procreate. The talmudic sage Rava (TB Yevamot 62a) discovers further grounds for a commandment of procreation in the prophetic words of Isaiah (45:18): “For thus says the Lord who created the heavens; God Himself who formed the earth and made it; He has established it, He created it not in vain, *lashevet yetzarah – He formed it to be inhabited*; I am the Lord; and there is no one else.” Through the populating of the world, humanity partners with God in the ongoing creation of the world thereby progressing its intended purpose. Additionally, the Talmud (TB Yevamot 62b), cites the opinion of Rabbi Joshua that the procreative imperative applies in one’s old age, just as in one’s youth, based on a metaphoric reading of a verse in Ecclesiastes (11:6): “In the morning sow your seed, and in the evening, do

provides the halakhic midrashim through which several of them are exegetically derived from the verses of Genesis. It is interesting to note that the commandment of procreation is not included in this list of seven Noahide commandments. The Talmud (TB Sanhedrin 59b) asserts that any commandment explicitly charged to the Children of Noah, but not repeated to the Children of Israel at or after Sinai, became incumbent solely upon Israelites, and was no longer binding upon gentiles. Other rabbinic voices, however, demur, and expand the list of Noahide laws beyond the seven enumerated above. The Talmud, for example, cites the opinion of ‘Ulla (TB Chulin 92a,b) who claims that there were thirty commandments included in the Noahide covenant. Although the Talmud doesn’t identify all thirty, Rabbi Menachem Azaria de Fano (1548-1620) in *Asarah Ma’amarot (Ma’amar Chikur Din 3:21)* reconstructs the identity of all thirty, and indeed includes the commandment of procreation among them. See Tosafot Sanhedrin 59a s.v. “*Veha priyah verivyah*”; Maimonides, *Mishneh Torah, Book of Judges*, “Laws of Kings” 8:11; 9:1-10:6; Bleich 1997c; Broyde 1997b; Lichtenstein 1986; and Novak 1983.

not withhold your hand; for you do not know which shall prosper, either this or that, or whether they both alike shall be good.”⁸

The Scope of the Mitzvah of Procreation

The Mishnah (Yevamot 6:6) reads: “A person should not refrain from [the mitzvah of] being fruitful and multiplying unless he has children. The House of Shammai say: [‘Children’ is minimally defined as] two males; and the House of Hillel say: a male and a female, as it says, ‘male and female He (i.e., God) created them’” (Genesis 1:27).⁹ According to the House of Hillel, the minimal measure of the fulfillment of the commandment mirrors its original context and intent: a male and a female offspring have the capacity, like Adam and Eve, to populate the world.¹⁰ According to the House of Shammai, apparently once the world has been populated, the minimum contribution of two male offspring constitutes the basic requirement of procreation, regardless of whether or not daughters have also been born.¹¹ When a person has reached the minimal measure of procreative accomplishment, the obligation to reproduce detaches. In contradistinction

⁸ This section on the commandment to procreate was influenced by a self-study, professional education unit prepared for Yeshiva University’s Center for the Jewish Future by Rabbi Joshua Flug, see Flug 2012a,b,c.

⁹ The Talmud (TB Eruvin 13b) establishes the rule that the law always accords with the House of Hillel. TY Kilayim 8:4 notes three exceptions to this rule; Tosafot Sukkah 3a, s.v. “*Deamar*,” note an additional six exceptions.

¹⁰ This symbolically holds true despite brother and sister being proscribed by incest laws from actually mating themselves.

¹¹ The Gemara (TB Yevamot 61b-62a) in its commentary on this Mishnah cites explanations for the House of Hillel and the House of Shammai’s respective positions. Either the House of Hillel bases their view on the original charge in Genesis to Adam and Eve, or by the divine *telos* for creation as described by Isaiah 45:18. The House of Shammai models their measure on the example of Moses who had two sons, and subsequently, per rabbinic biblical interpretation, withdrew from engaging in sexual relations with his wife Tziporah. Alternatively, based on the example of Adam and Eve, who after Cain murdered Abel, had only one additional child, a son, Seth. Further opinion in the Gemara asserts that it is actually the opinion of the House of Shammai to require a male and a female, and reduces the House of Hillel’s minimum measure to one male or one female, see TB Yevamot 61b.

to these minimums, the aforementioned teaching of Rabbi Joshua to procreate in both one's youth and old age seemingly mandates an ongoing obligation, though many authorities rank Rabbi Joshua's imperative as a second level obligation, either of rabbinical, as opposed to biblical force, or as supererogatory, in fulfillment of an independent quasi-obligation of "*shevet* – inhabitation," per Isaiah, which goes beyond the basic minimal biblical requirement of procreation as debated by the Houses of Shammai and Hillel.¹²

The same Mishnah (ibid.) also teaches: "A man is commanded regarding [the mitzvah of] being fruitful and multiplying, but not a woman. Rabbi Yochanan ben Beroqah says: regarding both of them it (i.e., the Torah) says: 'And God blessed them and said to them, 'Be fruitful and multiply'' (Genesis 1:28). Although procreation naturally requires the participation of a woman in addition to a man, the halakhah somewhat surprisingly follows the anonymous first opinion of the cited Mishnah obligating only the man, despite Rabbi Yochanan ben Beroqah's competing opinion of equal obligation.¹³ The Gemara justifies the exclusion of women from the commandment of procreation based on midrash halakhah (rabbinic hermeneutical exegesis):

How do we know this? Said Rabbi Ila'a in the name of Rabbi Elazar ben Rabbi Shimon: [juxtaposed with the command to be fruitful and multiply,] Scripture said: "fill the earth and conquer it" (Genesis 1:28). It is the way of a man to

¹² Rabbi Joshua's statement is one of several sagacious interpretations of Ecclesiastes 11:6, and may be intended more as wise counsel than legal prescription. See Irshai 37-47, for a full survey of interpretations and normative applications of Rabbi Joshua's statement. Irshai frames the whole question of procreative obligation in light of the duty of Torah study, alleging that minimal obligations allow greater opportunity for participation in elite, rabbinic study culture, while maximal obligations limit such opportunities.

¹³ See *Shulkhan Arukh, Even Ha'ezer*, 1:1,13. It should be noted that per the formalized rules of the adjudication of competing halakhic opinions in the Mishnah, the halakhah is usually decided in favor of the anonymous first opinion, which is often attributed to the rabbis, or to Rabbi Judah the Patriarch, the scholar to whom the compiling of the Mishnah is attributed.

conquer and not the way of a woman (thus, teaching her exclusion by implication). But Scripture wrote: “conquer it” (in the plural)? This implies two (i.e., both male and female were obligated)! Said Rav Nachman bar Yitzchak: it is [actually] written [in the singular], “conquer it.”¹⁴ Rav Yosef said: We learn it from: “I am El Shaddai. Be fruitful and multiply (singular verbs)” (Genesis 35:11); it does not say: “Be fruitful and multiply (plural verbs).” (TB Yevamot 65b)

Despite the formal textual reasons for exclusion of women from the mitzvah of procreation provided by the Talmud, talmudic and biblical commentators, as well as Jewish historians and feminist critics have sought to provide the underlying explanations for this counter-intuitive, normative, halakhic position. Rabbi Meir Simchah of Dvinsk (1843-1926), in his biblical commentary *Meshekh Chochmah* (ad loc. Genesis 9:1), explains that since pregnancy and parturition carry life-threatening risks, the Torah, whose ways are the “ways of pleasantness” (Proverbs 3:17), did not obligate women in procreation. The medieval, Spanish, talmudic commentator Rabbeinu Nissim (1320-1380) nonetheless posits a woman’s ability to voluntary fulfill the biblical imperative (for men) to procreate, assuring her religious significance of, and heavenly reward for, her non-obligatory reproductive efforts.¹⁵

Today, some historians and feminist scholars look to a larger patriarchal frame of rabbinic culture to explain the seeming privileging of male spirituality through greater mitzvah obligation, including procreation, and the consequentially legislated subservience and depersonalization of women by relegating them to functional utility for

¹⁴ While biblical Hebrew distinguishes between plural and singular nouns and verbs, biblical Hebrew is written without vocalization making it sometimes difficult, absent context, to identify a word’s number. Thus, while the vocalized reading of the word “*vektivshuah* – and conquer it” in Genesis 1:28 is in the plural, per the simple contextual reading, the actual written form of the word is morphologically in the singular.

¹⁵ Responsa of Ran, no. 32.

men's fulfillment of their religious duties.¹⁶ Ronit Irshai (2012, 30-5), however, argues for a feminist reading of women's exemption from the mitzvah of procreation as creating greater flexibility in what today we would call family planning. A women's exemption from the mitzvah allows her the option of contraception, saving her from difficult pregnancies and dangerous labors, and further grants her the discretion to limit the number of children she bears. She asserts these practical outcomes while remaining agnostic about the original motivation of the rabbis in excluding women from the procreative commandment (ibid., 34). Irshai (ibid., 53-110) contends that over time, and especially in contemporary Orthodoxy, restrictions on contraception and a maximalist theology of family building, rather than planning, has substantively reduced such flexibility.

The Mitzvah of Procreation: Action or Result Oriented?

Talmudic commentators of the later Modern era in their conceptual analysis of the mitzvah of procreation have pinpointed the nature of the mitzvah as hinging on the following dialectical investigative question: Is the religious obligation to procreate action or result oriented?¹⁷ In other words, is the mitzvah to try to have children by engaging in lawful sexual relations whatever the outcome (i.e., action oriented), or is the mitzvah

¹⁶ See Daube 1981, 57; and Wegner 1988, 42, 171. Others, however, argue that while rabbinic society was certainly patriarchal, the rabbis esteemed women and women's spirituality, and championed their material and spiritual welfare, see Hauptman 1998, 140-41.

¹⁷ Babad 1998, *mitzvah* 1; Ciment 2010, 188, 1:4. For the history and dialectical methodology of modern, conceptual talmudic analysis, see Adler 1989, and Blau 2006.

actually to produce offspring (i.e., result oriented)?¹⁸ The answer to this question produces a marked practical difference – namely, if the mitzvah is action oriented then a couple struggling with infertility fulfills the mitzvah of procreation simply by trying to have children, despite the negative outcome. While fulfillment of the mitzvah per se will not satisfy their desire for children, it does have potential halakhic ramifications as to the duty, or even permissibility, to pursue ART. A myriad of secondary issues may also pivot on whether there is a halakhic obligation to pursue ART including the expenditure of personal financial resources, emotional investment, and the obligation upon others to assist.

Two perplexing talmudic hypotheticals inspired this conceptual analysis and led to this demarcating dialectical question. The first considers the case of a convert to Judaism who procreated and produced children while still a gentile. Upon conversion, does his having had children in his gentile past automatically yield fulfillment of his newly assumed mitzvah to procreate, or must he procreate anew? The second concerns a Jew whose children have died. Does his fulfillment of the mitzvah survive their deaths or do their deaths nullify his fulfillment and obligate him anew? The Talmud records the following debates:

It was stated: If he had children while still an idolator and then converted – Rabbi Yochanan said: “He has fulfilled [the mitzvah of] ‘Be fruitful and multiply.’” And Reish Lakish (Rabbi Shimon ben Lakish) said: “He has not fulfilled ‘Be fruitful and multiply.’” Rabbi Yochanan said that he fulfilled ‘Be fruitful and multiply’ since he already has them; Reish Lakish said that he has not fulfilled ‘Be fruitful and multiply’ since a proselyte who converts is likened to a newborn child (without former familial

¹⁸ Similarly, if an act is required, does this need to be a sexual act or is a medical procedure sufficient? In other words, is an act of artificial insemination sufficient to fulfill the *ma'aseh mitzvah* – the mitzvah action of procreation. See Steinberg 2003c, vol. 1, 63, and 63n49.

connections). ... It was stated: If he had children and they died – Rav Huna said: “He has fulfilled ‘Be fruitful and multiply.’” Rabbi Yochanan said that he has not fulfilled ‘Be fruitful and multiply.’ Rav Huna said that he fulfilled ‘Be fruitful and multiply’ in accordance with Rav Assi, for Rav Assi said that the son of David (i.e., the messiah) will not come until all the souls have been bodily ensouled, as it is said, “[For I will not always contend, I will not be angry forever,] for the spirit that enwrappeth itself is from Me, and the souls which I have made (Isaiah 57). Rabbi Yochanan said that he has not fulfilled ‘Be fruitful and multiply’ since “*lashevet yetzarah* – He formed it to be inhabited,” and [since they died] there is no inhabitation. (TB Yevamot 62a)

Rabbi Yosef Babad (1801-1874), in his commentary *Minchat Chinukh* (1998, 2, section 14) on the medieval *Sefer Hachinukh*'s enumeration of the six hundred and thirteen mitzvot of the Torah, explains these debates in light of the aforementioned dialectic. The mitzvah of procreation is unlike other mitzvot whose fulfillment is their activity, for example waving a *lulav* (palm-frond) on the festival of *Sukkot*, or eating *matzah* on the night of Passover. The mitzvah of procreation is result oriented, i.e., about populating the world, or depleting the heavenly reservoir of souls. The mitzvah to procreate attaches at marriageable age and persists until one attains exemption of further obligation by having the minimal requisite number of children.¹⁹ Should those children die then the exemption disappears and the obligation returns. Should a person with children convert, then although he did not fulfill the mitzvah of procreation while not Jewish, since non-Jews are not obligated in the Sinaitic covenant, upon becoming Jewish

¹⁹ Although, technically, a young man becomes obligated in all the mitzvot upon reaching the age of majority and physical maturity, usually estimated as age thirteen, the halakhic tradition recognizes that marriage is best delayed until a later age of maturity. In charting the chronology of a recommended life-course, Mishnah Avot (5:25) counsels: "...eighteen [years of age] for marriage..." Maimonides, *Mishneh Torah, Sefer Nashim*, "Laws of Marriage" 15:2, advises age seventeen, which confuses his supra-commentators, leading some to believe that he may have had an alternate textual tradition of the above-cited Mishnah, see *Maggid Mishnah*, op. cit. *Shulkhan Arukh, Even Ha'ezer* 1:3, rules: "It is a mitzvah upon every man to marry a woman at age eighteen, and whoever advances to marry at age thirteen [performs] the choicest mitzvah..." For a world history of marriage, including marriageable ages, see Westermarck 1922; Coontz 2005.

he is exempt from his newly attached obligation to procreate by virtue of the fact that his biological children currently populate the world.

Rabbi Moshe Feinstein (1895-1986) in his responsa *Igrot Moshe* (1973, *Even Ha'ezer* 2:18) alternatively posits that the mitzvah of procreation is action oriented – that is, one must engage in sexual relations that in normal circumstances have the capacity to lead to conception and produce children. Feinstein’s primary prooftext is the aforementioned Mishnah (Yevamot 6:6) which reads: “A person should not refrain from [the mitzvah of] being fruitful and multiplying unless he has children...” It does not read, as one might expect, “How many children is a person required to produce?” Instead, it requires a person to engage normally in marital relations – “a person should not refrain” – until the requisite number of offspring satisfies the obligation. A person with children, even if produced before conversion, thus doesn’t have the affirmative duty to engage in procreative sexual relations.²⁰ According to Feinstein, therefore, a couple struggling with fertility challenges is not required to pursue ART since they have fulfilled their obligation through their normal sexual efforts at conception, regardless of their success.

Infertility, Jewish Theology, and Assisted Reproductive Technologies

According to a midrash (Pesikta deRav Kahana 20:1), seven biblical women (six personalities and one personification) struggled with infertility: Sarah (Genesis 11:30), Rebecca (Genesis 25:21), Rachel (Genesis 29:31; 30:1-2), Leah (Genesis 29:31,35; 30:9),

²⁰ The rabbis of the Talmud believed that non-procreative sex is still a marital obligation, and of personal benefit and human need, independent of reproductive purpose, and thus should be engaged in by an infertile or post-fertile couple. See, for example, the extended talmudic discussion in TB Yevamot 61b-62b.

the Wife of Manoah (Judged 13:3); Hannah (I Samuel 1:2); and Zion (Isaiah 54:1).

Another midrash (Genesis Rabbah, “*Ki Tavo*,” *parashah* 7) attributes infertility’s primary cause to divine providence: “Rabbi Yochanan says: Three keys are in the hand of the Holy One blessed be He and no other creature controls them, not an angel nor a seraph, and they are: the key to the resurrection of the dead, the key to infertility, and the key to rain ... The key to infertility, as it says: “And He (God) opened her womb...” (Genesis 29:31).²¹ This accords with another talmudic tradition that depicts God as the third, silent partner in every process of reproduction:

Our Rabbis taught: There are three partners [in the creation] of a person: The Holy One blessed be He, the father, and the mother. The father seminates the white substance, from which are derived the bones, nerves, fingernails, brain, and the white of the eye. The mother seminates the red substance, from which are derived the skin, muscle, hair, and the black of the eye. The Holy One blessed be He provides the spirit, the breath, the facial features, vision for the eyes, hearing for the ears, speech for the mouth, movement for the legs, understanding, and intelligence. When the time comes for a person to depart this world, God takes his contribution, leaving behind the contributions of the mother and father.²² (TB Niddah 31a)

²¹ See TB Ta’anit 2a for a parallel tradition: “Rabbi Yochanan said: Three keys are in the hand of the Holy One blessed be that do not pass into the hand of an agent, and they are: the key to rain; the key to life; and the key to the resurrection of the dead...” Tosafot, TB Niddah 16b, s.v. “*Malakh hamemuneh ‘al haheyayon*,” note a contradiction between these sources that assign sole providential control over conception and TB Niddah 16b: “Rabbi Chanina bar Papa expounded: The angel appointed for conception is named Leila, i.e., night. He takes a drop (presumably of semen), and stands it before the Holy One blessed be and says: ‘Master of the Universe, this drop, what will be regarding it? Mighty or weak? Wise or stupid? Rich or poor?’” Tosafot, per their dialectical methodology of reconciliation of conflicting sources, answer that there is an angel appointed for conception, but not for parturition, which is more accurately what is solely superintended by God. Tosafot qualify, though, that on rare and extraordinary occasion God may choose to entrust the keys of these three powers to others, as seemingly is the case in the biblical texts Tosafot cite. Alternatively, Tosafot Rosh, ad loc., say that God solely superintends conception, after which angels may become involved. The upshot of these commentaries is to safeguard a theology positing God’s sole providential power over matters of fertility.

²² This Rabbinic view accords with that of Hippocrates (Greece, fifth century BCE) who believed that both male and female emit seed, each making a unique contribution to the resultant child. See Grazi 2005b, 7. For a fuller treatment of “The Rabbinic Conception of Conception,” see Reichman 1996. Also, see the below section “Early History of Assisted Reproductive Technologies,” pp. 141 ff.

Rabbi Yitzchak asks in the Talmud (TB Yevamot 64a): “For what reason were our forefathers infertile?” He answers: “Because the Holy One blessed be He desires the prayers of the righteous.”²³ Rabbi Yitzchak thus presents a theodicy regarding infertility, at least for the biblical patriarchs and matriarchs, in which suffering is justified by its spiritual benefit and character shaping influence. Infertility is thus perceived and conceived of as a religious challenge, as much as a medical problem. It is worth noting that each of the seven cases of biblical infertility identified by the aforementioned midrash ends with the divinely blessed, even if complicated, joyous arrival of a child or children. Outside of biblical narratives, both historically and in contemporary cases of infertility, not every narrative happily concludes with the birth of a child.

Judaism has long recognized the divinely sanctioned license to heal, and does not see medical interventions as subversions of the divine will (Bleich 1979).²⁴ The Talmud (TB Bava Kamma 85a) locates the permission to heal in the verse, “And he shall cause him to be thoroughly healed” (Exodus 21:19), which speaks to the tort liability of providing medical care to someone a person injured: “From here [by implication] the physician is granted license to heal.” A midrash (*Midrash Temurah*, 11:580-1) compares medicinal healing to farming, teaching by analogy that God expects humanity to engage nature, even intervene in natural processes, to yield desirable, life-sustaining outcomes.²⁵ Maimonides (*Commentary on the Mishnah*, Nedarim 4:4) understands the obligation to

²³ Note that Rabbi Yitzchak asks about the infertility of the forefathers, not foremothers!

²⁴ See Rashi, ad loc., TB Bava Kamma 85a, s.v. “*Natnah Reshut*”; Tosafot, ad loc., s.v. “*Shenitnah*”; Rashba, ad loc., s.v. “*Verapo Yerapeh*.”

²⁵ For a Jewish theology of human-divine partnership in creation, including technological mastery of natural processes, see Soloveitchik 1965, 1984.

proffer medical care as being entailed in the religious and moral duty of rescue, as demanded by the verse, “And you shall return it to him” (Deuteronomy 22:2), which the Talmud (TB Sanhedrin 73a) applies to all types of lost property, and which Maimonides extends to including the restoration of health. Nachmanides (1194-1270) further locates the duty to cure or provide for healing from the foundational ethical and religious principle, “And you shall love your neighbor as you love yourself” (Leviticus 19:18). Rabbi Joseph Karo (1488-1575), in *Shulkhan ‘Arukh (Yoreh De’ah 336:1)*, the authoritative code of Jewish law, sums it up as follows: “The Torah gave permission to the physician to heal; moreover, this is a religious precept and it is included in the category of saving life; and if the physician withholds his services it is considered as shedding blood.”

Infertility is understood to be an exceedingly difficult spiritual, psychological, and physical malady. Many narratives in the Bible seem to assume female, rather than male, deficiency as accounting for infertility. Regarding the biblical matriarch Sarah’s infertility, Rashi (1040-1105), in his bible commentary, explains the unusual usage of the Hebrew root meaning “to build” in Sarah’s request of Abraham to take her maidservant as another wife: “And Sarai said to Abram: Behold now, the Lord has prevented me from bearing; please come into my maidservant, perhaps I will be built up through her...” (Genesis 16:2). Rashi (ad loc.) comments: “This teaches that one without children is not built, but in ruin.” Similarly, the Talmud (TB Nedarim 64b) hyperbolizes: “Rabbi Yehoshua ben Levi says: ‘Any person without children is considered as without life.’” After all, the biblical matriarch Rachel herself had said to Jacob: “Give me children, or I

shall die” (Genesis 30:2). Arguably, seeking for one’s self, or assisting another’s, treatment of infertility fulfills the duty to heal, restore health and life, and manifests loving oneself, or loving another as oneself (Billet 2005, 75).²⁶

Early History of Assisted Reproductive Technologies

From classical Greco-Roman times through the early centuries of the scientific revolution, many incomplete, and often erroneous, conflicting hypotheses and asserted factual claims abounded regarding human anatomy and physiology, including reproductive organs and processes. While Hippocrates (460-370 BCE) theorized that both the male and female contributed semen that mixed and then developed into a fetus in utero, Aristotle (384-322 BCE) saw reproduction through an agricultural lens, believing that a woman solely provided the fertile ground that ripened the male seed into a child. Hippocrates believed that the reproductive seed derived from material collected from the entire body, i.e., the pangenesis doctrine. Aristotle, on the other hand, thought that the male seed was composed of congealed blood, i.e., the hematogenic doctrine. Per Aristotle, the male seed provided the form and propelling movement, while the menstrual blood provided the material substance. Other Greek thinkers subscribed to the encephalomyelogenic doctrine which posits that the male seed originates in the brain and travels by way of the spinal cord to the reproductive organs. Early rabbinic literature, along with

²⁶ These beliefs and values motivate contemporary Jewish organizations assisting those struggling with fertility challenges, such as Machon Puah (www.jewishfertility.org and www.puahonline.org); Yesh Tikvah (www.yeshtikva.org); and A Torah Infertility Medium of Exchange (www.atime.org). See also Nishmat’s “Jewish Women’s Health: A Guide for Health Professionals” list of Jewish infertility support organizations: www.jewishwomenshealth.org/article.php?article=62. See also Kumer n.d. at Chabad.org.

Galen (130-200 CE), seemingly aligned with the view of Hippocrates (Reichman 1996, 35-41).

In the seventeenth century, the natural-philosophic theorizing and experimentation of William Harvey, Jan van Horne, Jan Swammerdam, Neils Stensen, Regner de Graaf, and Francesco Redi led to the idea that all female life forms, including human beings, generate eggs. For the next one hundred and fifty years, theories of embryonic development divided into the new Harveian “ovist” views and the older, Aristotelian “spermist” views, which were supported by Leeuwenhoek’s discovery of spermatozoa in 1677 with his newly invented microscope (Clift and Schuh 2013, 21; Cobb 2006a, 2012; Snyder 2015, 278-8.).²⁷ Some subscribed to an embryological theory of epigenesis believing that organs and limbs developed sequentially. Others embraced notions of preformation, believing that within the female egg (ovists), or within the male sperm (animalculists/humunculists), there exists a tiny person who enlarges during gestation (Reichman 1996, 36).

Until the nineteenth century, with the development of cell theory, Mendelian genetics, and ongoing research in selective breeding and disease inheritance, the equal contribution of egg and sperm to embryonic formation *was not* the regnant theory of either group. It was only in 1827 that Karl Ernst Von Baer observed mammalian ova under the microscope, leading Matthias Schleiden and Theodor Schwann to propose as part of their cell theory that both sperm and eggs have similar reproductive function.²⁸ In

²⁷ Harvey had declared, “*Ex Ova Omnia* – everything from the egg,” see Lopata 2009.

²⁸ Reinier De Graaf first described the egg follicle in 1672, but it was only in 1827 that Karl Ernst Von Baer microscopically observed ova and reported his finding and its description, see Reichman 1996, 35.

the 1830s, heredity studies in both agriculture and medicine supported equivalent roles for egg and sperm, and paved the way for Mendel and Darwin's future discoveries (Cobb 2006b). In 1876, Oscar Hertwig microscopically observed the fusion of egg and sperm nuclei during fertilization, substantiating the new view of conception featuring equal contributions of egg and sperm (Clift and Schuh 2013, 21). From the 1870s until the 1950s, it was believed that the primitive ova present in infant ovaries degenerated and were replaced with definitive ova during and after sexual maturation. In 1951, Solly Zuckerman (1951) refuted this theory and posited that in mammalian ovaries no postnatal oogenesis occurred. This has remained the dominant theory, though in 2004, Joshua Johnson, Jonathan Tilly and others challenged this dogma by proposing that ovarian stem cells do allow for postnatal oogenesis. This new theory is still highly controversial, and thus the biological timeframe for oogenesis remains unsettled (Wu, et. al. 2017; Johnson, et al. 2004; Greenfield and Flaws 2004; Gura 2012).

In pre-modernity, therefore, the treatment of infertility involved religious ritual and personal prayer, unfounded medicinal treatments, and folk remedies (Grazi 2005b, 6-14).²⁹ Jewish law required a man to divorce his wife after ten years of infertile marriage, presuming that the likely cause of infertility inheres in the wife.³⁰ It was only in the

²⁹ On the role of Jewish prayer in contemporary medical situations, see Loike and Tendler, 2016. It is worth noting that Grazi 2005b, 11, a Modern Orthodox Jewish physician, editor of *Overcoming Infertility: A Guide for Jewish Couples*, explicitly states, akin to Reichman 1996, 1998, and 2003, that rabbinic literature should be understood within its historical context, in light of the then regnant scientific theories.

³⁰ See TB Yevamot 64a ff. which explains that a childless marriage need end in divorce to allow the husband, who is commanded by the Torah to procreate to fulfill his obligation. See Maimonides, *Mishneh Torah*, "Hilkhot Ishut," 15:8; and Shulkhan Arukh, *Even Ha'ezer* 154:10. Cf., Rama, *Even Ha'ezer* 1:3, 154:10, however, who rules that nowadays couples are not accustomed to divorce due to sustained infertility. If it is clear that the cause of infertility lie with the husband, all agree that there is no duty to divorce.

nineteenth and twentieth centuries that an adequate knowledge of reproductive anatomy and processes, including ovulation, and ovum and sperm function, was achieved through the evolution of reproductive theory, accompanied by developments in modern scientific method, technological advances in microscopic observation, and safe surgical technique (ibid., 14-9). Thereafter, the cause of infertility could also be better ascribed to either the man or the woman. During this time of medical and scientific progress, new techniques of assisted reproduction were developed. In 1785, John Hunter performed the first artificial insemination of a woman utilizing her hypospadiac husband's sperm (Ombelet and Van Robays 2015). A century later, in 1884, William Pancoast was the first to use donor sperm, which he collected from "the best looking medical student in the class," to inseminate his patient without the prior knowledge of her husband (Yuko 2016). Artificial insemination's basic technique of collecting several seminal emissions and then using a syringe for direct insemination of the combined seminal fluid into a woman's vaginal tract or uterus remained essentially unchanged until the HIV/AIDS epidemic of the 1980s required safer protocols (Steinberg 2003c, 59-60; Grazi 2005b, 14).

Ovarian Transplants

In 1895, Dr. Robert Tuttle Morris submitted a letter to the editor of the *New York Medical Journal* reporting the first two cases of "ovarian grafting." The first patient, age twenty, had never menstruated, and after an ovarian graft from a donor into the fundus of her uterus began to menstruate. The second patient, age twenty-six, was infertile due to scarred and obstructed ovaries and fallopian tubes as a result of longstanding, septic tubal

disease. Morris harvested a small piece of the patient's own diseased ovary and transferred it to the interior stump of one oviduct. A month after the procedure, the patient became pregnant, but then miscarried in the third month (Morris 1895b). In 1902, Morris excised polycystic sclerotic ovaries (he called them "cirrhotic") from a twenty-one-year-old woman who had stopped menstruating at age nineteen. He transplanted segments of ovaries obtained from another thirty-three-year-old patient into slits of the peritoneum, parallel with the oviduct. Four months later, the woman started menstruating again. In 1905, she became pregnant, and in 1906 she gave birth to a healthy girl (Morris 1906; 1906-7).³¹ Subsequently, she successfully bore two other children (Morris 1935, 216). Reports of Morris's ovarian transplantations and their successful treatment of infertility were published in the United States, France, and England, and circulated internationally. Morris's achievement spurred much ethical and legal debate, including the question of the definition and identification of maternity in this case.³² Morris is remembered as a pioneer in human ovarian transplant, and credited with advances in understanding of the endocrine function of the ovaries and its role in women's general and reproductive health (Simmer 1970).³³

³¹ Morris himself recognized that it was possible, though unlikely, that ovarian tissue remained in his patient after her 1902 oophorectomy which may have been responsible for her subsequent pregnancy. This doubt was raised from time to time over the years as a challenge to his transplantation achievement, see Simmer 1970, 320, and 320nn1,13,46,72.

³² See Recihman 1998, 35-7.

³³ Ovarian transplantation continued through the 1920s and then ceased due to its limited success. Morris's hetero-transplant in 1902 is the only known case which led to a successful pregnancy before 2009, see Simmer 1970, and Reichman, 1998, 36-7. However, gonadotoxicity of chemotherapy for cancer patients has led to a renewed interest in ovarian transplantation. Dr. Sherman J. Silber has performed several successfully transplantations of ovarian tissue from a monozygotic twin into her sister, and new techniques in the viable cryopreservation of reproductive materials has led to elective ovarian resection, cryopreservation, and auto-transplantation of ovarian tissue. See Reichman 1998, 53-4; Silber, et al. 2005; Lee 2007.

Ovarian Transplants and Medical Halakhah

Although artificial insemination as a fertility treatment preceded ovarian transplants by over a century, the halakhic consequences of ovarian transplants were discussed first in 1907 in the Austro-Hungarian biweekly Torah journal, *Wajlaket Jozsef*, in a question posed by Rabbi Jacob Gordon of Southport, England.³⁴

I submit a question for which I am in doubt as to its halakhah. The physicians have discovered a stratagem to transplant the reproductive organs from a woman into an infertile woman who will then be able to bear children. Is it permissible to remove the reproductive organs from a mother and transplant them into her daughter? And if you say that it is indeed permissible, what is the rule regarding the status of a firstborn child who needs to be a womb's first issue, and here the womb is of another woman? And, in general, who should be considered the mother of the child, the first or second woman? (Gordon 1907)

The question is first responded to by Rabbi Eliezer Chaim Deutsch (1850-1915, 1907a), *Av Beit Din* (Chief Rabbinical Justice) of Bonyhad, Hungary, and father-in-law of the journal's editor, Rabbi Josef Schwartz. He responded to the concern of whether the husband of the woman who receives a uterine transplant harvested from her mother transgresses an incest prohibition of cohabitation with one's mother-in-law. Citing numerous rabbinic sources, he answers that no such transgression occurs for two reasons: first, one cannot commit incest with a body part, only with a living person; and two, once transplanted, the donated material is assimilated into and takes on the identity of the recipient.

³⁴ Gordon's question was also addressed during this same time period by rabbinic scholars in another Hungarian Jewish periodical, *Tel Talpiyot*, and later by the Romanian rabbi Betsalel Ze'ev Safran (1866-1930). Independently, Rabbi Yekutiel Kamelhar (1871-1937) of Chicago, attended a medical conference in Chicago in 1910/11, during which he learned of Morris's ovarian transplant and responded with his own halakhic analysis. In the 1930s, the Eastern European Torah journal *Habe'er* also featured an exchange of halakhic scholarly opinion on the topic. See Reichman 1998.

It is worth noting that both questioner and respondent seemingly got wrong the facts of Morris's renowned ovarian transplantation. Gordon at first speaks more generally of transplanting "*klei leidah*," literally "vessels of birthing," perhaps best translated as "reproductive organs." Then Gordon specifically speaks about the transplantation of a "*rechem*" – "womb." Beginning with the Mishnah (Niddah 2:5), early rabbinic literature recognized basic female anatomy as the uterus, vaginal canal, and bladder: "The Sages drew a parable regarding a woman: The chamber, the corridor, and the upper chamber." Although medieval and early modern talmudists and halakhists often became familiar with the medical theories of their time, it is unclear whether Gordon had specific knowledge of the ovaries and their function.³⁵ Further, it would appear that Deutsch's answer assumes that sexual relations between the husband and his transplant-recipient wife involves direct physical contact between the male member and the transplanted organ, which would be incorrect regardless of whether the transplanted tissue was ovarian or uterine.³⁶

³⁵ Neither the ovaries nor the fallopian tubes are mentioned in the Bible or the Talmud, see Steinberg 2003a, vol. 3, 1111. The existence of the ovaries, however, was known to some medieval and modern talmudists (Reichman 1996, 37-41). See, for example, Nachmanides's commentary on Leviticus 12:2, in which he references a woman's "*beitzim*," literally eggs, but usually an anatomical term for testicles to which Nachmanides here compares a woman's ovaries. See also Maimonides, *Mishneh Torah*, "Laws of Forbidden Intercourse," 5:4. For studies of rabbinic anatomy in the context of advancing medical knowledge, see Reichman 2008a,b, and 2010. Reichman 1998, 1n1, also significantly points out that before technologies of mass communication, news of changes in scientific knowledge and technological capability could take decades, even centuries, to disperse. Gordon (1908, 75), however, writes: "[News] of this new phenomenon (transplantation) has already been publicized in all of the journals of our country (England) and the United States, and with my own eyes I have read of this matter." Thus, assuming Gordon indeed is referring to news of Morris's ovarian transplantation, then it is hard to understand how he got the facts wrong, or why he would choose to simplify or change the facts in his rabbinical correspondence.

³⁶ Reichman 1998, 38, posits that Deutsch understood that the entire female reproductive tract, including external genitalia, was transplanted.

In a letter to the editor published in a later issue of the journal, Rabbi Benjamin Aryeh Weiss, *Av Beit Din* of Czernowitz (1841-1912), submits his own responsum to the question of the maternal identity of the resultant child. He writes:

I am deeply skeptical of this rumor [of reproductive organ transplantation]. Nonetheless, if the matter turns out to be true, it is certainly forbidden to do so *a priori*, even in the absence of danger (i.e., medical risk), since [the procedure] entails the sterilization of the first woman, which minimally is forbidden by rabbinical force, and according to some by Torah law. However, if they went ahead and did it, in my humble opinion the child is the son of the second [woman] in all respects. In my opinion, the source which opens to [determine] this halakhah is the ruling explained in TB Sota 43b regarding the grafting of a fledgling tree onto a mature tree with regard to the mitzvah of ‘*Orla* (literally, “uncircumcised” fruit). (Weiss 1908)

The Torah (Leviticus 19:23) prohibits the consumption of a tree’s fruit until its fourth year of producing fruit. In the case of a graft, the branch harvested from a fledgling tree assumes the identity of the body, i.e., the mature tree, to which it has been attached, and thus its fruit would be permitted immediately. By legal analogy, any human organ-graft or transplantation assumes the identity of its new host, and thus the organ recipient would be the mother of any child subsequently born. Weiss’s responsum aligns with the previously published position of Deutsch. Weiss, however, directly speaks to the question of maternal identity, and introduces a supportive halakhic argument by way of a legal analogy to agricultural law.

The late prominent and prolific Jerusalem posek and medical halakhist Rabbi Eliezer Waldenberg (1915-2006) cites Weiss’s published responsum (post-1908), and applies its rationale to an implanted embryo conceived through IVF with a donated ovum, thus identifying the gestator as the resultant child’s mother arguing that the embryo should be considered akin to a graft, and assumes the identity of its host (Waldenberg

1990, 15:45; and 1992, 19:40).³⁷ Rabbi Aviad Trop, however, disputes the application of Weiss's argument in the case of IVF with ovum donation. He avers that a maternal relationship with the ovum donor was established in vitro at the time of conception, and thus accrues to the egg donor, and that relationship cannot be subsequently defeated at the time of embryo implantation (Trop, 2000, 106; Hollander 2011, 51-2). The above cascade of sources demonstrates how a halakhic discussion made in the context of incomplete or inaccurate scientific knowledge establishes a legal precedent upon which subsequent medical halakhists will draw in another context, in this case regarding a more advanced assisted reproductive technology. Waldenberg is not wrong in connecting the two cases on the basis of the identification of a foreign body with the host into which it is assimilated. However, Trop rightfully distinguishes between organ transplantation and IVF. After all, the sperm donor still maintains a paternal relationship with the embryo despite its assimilation into the body of the woman who gestates and gives birth to the child.

Several methodological questions arise here. First, may a halakhic discussion that deals with a question based on erroneous facts be subsequently cited as a halakhic precedent? Second, if our scientific knowledge changes, what impact should this have on previously formulated halakhic argumentation and rulings? For example, should Weiss's original analogy to tree grafting still hold once our scientific knowledge has progressed to understand that any ova produced by a transplanted ovary were all prenatally generated

³⁷ Waldenberg 1990, *Tzitz Eliezer*, vol. 7, section 48, chapter 5, n16, also cites Weiss 1908 and post-1908, perpetuating the reference to a presumed factual, but, in fact, nonexistent earlier case of uterine transplantation. See Reichman 1998, 51-2.

and existing prior to the ovary's transplantation, containing the nuclear and mitochondrial DNA of the original donor.³⁸ Should transplantation and bodily assimilation continue to defeat this newly understood scientific fact? Logical and halakhic arguments might indeed be applicable if adapted to the new circumstances and knowingly applied to a new set of facts and the bioethical and medical halakhic questions that they trigger.³⁹ These questions specifically speak to the epistemological dimensions of the medical halakhic discussion of reproductive organ transplantation of the early twentieth century. While open and responding to the new medical knowledge of their times, the rabbinical scholars primarily relied on the anatomical knowledge provided by Torah sources, and, presumably, their rabbinical education. Further, Deutsch (1907b) doubted the veracity of the report of a successful reproductive organ transplantation, going so far as to advance a rabbinic proof as a basis for his incredulity. The Talmud (TB Yevamot 64b) attributes the matriarch Sarah's infertility due to a congenital malformation that left her without a uterus. If uterine transplantations were possible, Deutsch argues, surely God would not have had to resort to miraculous intervention to restore her fertility. Underlying Deutsch's doubt is arguably a championing of Torah knowledge as superior to scientific knowledge, thus yielding suspicion of progressive medical claims.⁴⁰ The axiological

³⁸ This would even hold true for Johnson, et al. 2004, who propose the possibility of postnatal oogenesis given that the ovarian stem cells present in the ovary contain the nDNA and mtDNA of the original donor.

³⁹ Reichman 2003, cites the case of a successful human uterine transplantation performed in April of 2000, and reported in the medical literature in March of 2002. Gordon's aforementioned question of 1907 that mistook a report of ovarian transplantation for uterine transplantation might now have become a newly relevant, factually grounded medical question based on older halakhic discussion. For more on uterine transplantation, human uterus transplantation into animals, and artificial uteruses, see Margalit, Levy, and Loike 2014, 125-9, 126n72.

⁴⁰ Although many of Morris's contemporary colleagues likewise doubted his claim of successful ovarian transplantation, their doubts were rooted in their contemporary medical knowledge. Even Weiss's (1908) expressed doubts seemingly spoke to the unlikelihood of the claim, rather than an epistemically principled

dimensions of the exchange likewise appear to be solely shaped by halakhic concerns of sterilization of the donor, medical risk and injury to both donor and recipient, and the potential for incestuous or adulterous sexual relations, without apparent reference to or influence of the concurrent ethical discussion taking place in the medical community.⁴¹

Dr. Edward Reichman, a rabbi, physician, Jewish bioethicist, and medical historian, advocates for interfacing medical history with halakhic research in addressing contemporary questions of medical halakhah and Jewish bioethics. He recommends a two-pronged methodology involving what he calls a “contextual and a comparative historical approach.” The contextual approach requires that each halakhic source relating to medicine be contextualized in light of the scientific knowledge of its time. Equipped with this understanding, sources can then be compared and applied to current questions avoiding imposing our current scientific understandings in analyzing older sources, as well as preventing the misinterpretation of older sources and/or their incongruous application to contemporary issues (Reichman 1998, 31-32). While Reichman does not apply his methodology to axiological dimensions of Jewish bioethical and medical halakhic inquiries, he does directly address epistemology.

suspicion. Reichman 1998, n62, observes: “This reasoning seems to negate the notion of advancement in medicine and science...” Gordon (1907, 75) takes Deutsch to task for this, arguing that nature has changed and medicine has advanced.

⁴¹ Reichman 1998, 37, rightfully points to significant overlap in the interests of both the medical and halakhic communities: “It will be evident that the rabbinic authorities shared many of the same factual, legal, and ethical concerns as their medical counterparts.”

Artificial Insemination

Although experimentation in artificial insemination occurred in the late-eighteenth, nineteenth, and early-twentieth centuries, especially in animal husbandry, human artificial insemination only became a widespread assisted reproductive therapy in the second half of the twentieth century with greater access to and cultural acceptance of donor sperm, along with advances in the freezing and banking of sperm. Artificial insemination is primarily helpful in cases of male-factor infertility. While AIH can be used to achieve pregnancy in cases of male-factor subfertility due to a husband's physiological or psychological dysfunction, more often AID or AIHD is needed in cases of severe oligospermia (low sperm count), azoospermia (no sperm in seminal fluid), or for men with Y-chromosomal linked genetic diseases (Ombelet and Van Robays 2015).⁴² Only with the rise in use of AIH and AID during the late 1950s and later did questions regarding their permissibility and other attendant halakhic issues get addressed to poskim, generating a halakhic literature on the topic. Among the issues discussed were: the *mitzvah* of procreation; questions of adulterous relations in the case of AID and AIHD; the definition and identification of maternity and paternity; the status of the resultant child *vis a vis* Jewishness, bastardy, and classification as a priest (*kohen*), levite, or firstborn; and issues of sperm procurement and onanism.⁴³ Additionally, the halakhic

⁴² AIHD was a commonly used technique in which seminal fluid from both the husband and the donor were mixed and used to inseminate a woman. If paternity is never tested, the resultant child may be psychologically thought of as possibly being the offspring of the husband. Fertility specialists have since developed a technique to isolate and harvest sperm directly from the testes, i.e., intracytoplasmic sperm injection (ICSI), for use in IVF, reducing the need to use donor sperm in both artificial insemination and IVF, unless the husband's male factor infertility is absolute. See Steinberg 2003e.

⁴³ See Cohen 1987.

analyses were layered with moral-axiological concerns including: modesty and immorality; the spirituality of marital intimacy; effects on family structure; the psychological health of husband, wife, child, and donor; and the fear that collaborative reproduction will lead to extramarital sexual relations or cultural assimilation (Steinberg 2003c, 64; Sinclair 2003, 68-95). Some of these, like the psychological aspects, go beyond the strict halakhic concerns raised in the early-twentieth century, and indicate an expanded epistemology and moral axiology, arguably due to the cultural paradigm shifts within society regarding psychological awareness initiated by Freud and others.

Bathtub Insemination

Even though artificial insemination is a modern fertility treatment, medical halakhists found ready material with which to begin their analysis in the ancient legal analogue of “bathtub insemination,” a legendary case of achieving pregnancy without sexual relations. The Talmud raises the question of whether a *kohen gadol* (chief priest), who by Torah law must marry a virgin (Leviticus 21:13), is allowed to marry an ostensible virgin who became pregnant:

They (the rabbis) asked Ben Zoma: A virgin who has become pregnant, what [is her permissibility] to [marry] a chief priest? Are we concerned for [the opinion] of Shmuel? For Shmuel said: “I am capable of intercourse many times [with a virgin] without causing bleeding (i.e., shallow penetration will not rupture the hymen, and thus even though she has an intact hymen, she is in fact not a virgin, and thus forbidden).” Or perhaps [the scenario] of Shmuel is uncommon, and we suspect that perhaps she became pregnant in a [public] bath (into which a man previously emitted semen)? But didn’t Shmuel say that any semen that is not shot like an arrow cannot inseminate? Originally, [when it was emitted into the bath,] it also shot like an arrow. (TB Chagigah 14b-15a)

While a woman with an intact hymen who had engaged in sexual relations would be prohibited in marriage to a chief priest, a woman who inadvertently became pregnant through bathtub insemination is still considered a halakhic virgin, and thus permitted to a chief priest in marriage.⁴⁴

Jewish lore recounts one famous case of alleged bathtub insemination. The *Alphabet of Ben Sira*, likely a medieval work attributed to Shimon Ben Sira (second century BCE), author of the apocryphal work, *The Wisdom of Ben Sira (Sirach)*, tells the story of Ben Sira's conception.⁴⁵ Ben Sira's mother is said to have been the daughter of the biblical prophet Jeremiah, who was coerced by wicked men into spilling his seed into the waters of the public bath, in which Jeremiah's virgin daughter subsequently bathed. Seven months later, Ben Sira was birthed as the firstborn son of a virgin mother. The *Alphabet of Ben Sira* even points out that the numerical values of the Hebrew letters spelling both Jeremiah and Sira are equal, presumably confirming their relation (Reichman 1996, 45).

There are many reasons for scholars of previous generations to discount this wondrous story. First, aside from *The Alphabet of Ben Sira*, this narrative does not appear anywhere in rabbinic literature. Second, the prophet Jeremiah lived in the seventh century BCE; Ben Sira in the second century BCE. Third, *The Wisdom of Ben Sira* offers a different parental genealogy for him. Nonetheless, this story was widely known, cited,

⁴⁴ The institution of the chief priesthood only existed until the second Jerusalem temple was destroyed by the Romans in the year 70 CE, after which the chief priesthood became defunct absent a temple service.

⁴⁵ The book of Ecclesiasticus, alternatively known as Sirach, Wisdom of Sirach, Wisdom of Ben Sira, etc., is not part of the Jewish Bible, though it is considered biblical for some Christians, like Catholics and Eastern Orthodox, for example. For Jews, it is considered part of the apocryphal writings. See Brettler 2005, 11; and Schiffman 1995, 124-5. Regarding the Alphabet of Ben Sira, see Reichman 1996, 45.

and most importantly for contemporary halakhic considerations of ART, nowhere is it asserted or even questioned that Ben Sira had the status of a *mamzer* (bastard), even though such would be the case for a child born of even inadvertent, incestuous sexual relations between a father and daughter.

The story of Ben Sira's conception and the idea of non-sexual insemination earned further standing as a legitimate halakhic source and potential legal precedent for artificial insemination by the late-thirteenth-century French Tosafist, Rabbeinu Peretz ben Elijah of Corbeil. Rabbeinu Peretz, in his glosses to *Sefer Mitzvot Katan*, Rabbi Isaac of Corbeil's enumeration of the six hundred and thirteen mitzvot, rules that a woman may sleep on her husband's bed sheets even in her menstrual state, during which time sexual relations would normally be proscribed, but she may not sleep on the sheets of a man other than her husband lest she become impregnated by the residue of another man's seminal emission.⁴⁶ The seventeenth-century *Av Beit Din* of Vilna, Rabbi Moses ben Isaac Judah Lima, in his commentary, *Chelkat Mechokek* (1:8), on *Shulkhan Arukah, Even Ha'ezer*, moves the discussion from a question of prohibition to one regarding the affirmative fulfillment of the *mitzvah* of procreation: "There is [cause] to be in doubt [in the case of] a woman who became impregnated in a bathtub, whether the father fulfills the *mitzvah* of procreation and if [the child] is called his son for all matters..." Rabbi Samuel ben Uri Shraga Phoebus, a Polish contemporary of Rabbi Moses, in his commentary *Beit Sh'muel* (1:11), aspires to resolve Rabbi Moses's doubt and prove that a

⁴⁶ If a woman while still halakhically in her menstruant state, i.e., before ritual immersion in a *mikvah* (ritual bath), were to become impregnated through her husband's semen-soiled sheets, the child would not even be considered a "*ben niddah* – the child of a menstruant."

child resulting from a bathtub pregnancy is fully the son of the sperm provider. He refers back to Rabbeinu Peretz of Corbeil's concern about a woman lying on bed sheets of a man other than her husband, and to a commentary on this ruling made by the prominent sixteenth-century Polish halakhist Rabbi Joel Sirkis in *Bayit Chadash (Yoreh Deah*, section 195). Sirkis explains that the reason a woman should not lie on the bed sheets of another man is because if she becomes pregnant, then the resulting child, whose halakhic father would be unrecognized, might inadvertently marry his or her paternal sibling.⁴⁷ Note, however, that the articulated concern is not that her pregnancy would constitute a transgression of adultery, thereby marking the child with the halakhic status of bastardy.

Purported reports of inadvertent artificial insemination circulated in Jewish, Christian, and Muslim communities, and were discussed by scholars from medieval times through the eighteenth century (Reichman 1996, 44-50; Emanuel 2011). While these discussions centered upon inadvertent conception through non-sexual insemination, the rabbinic textual source material pertaining to bathtub insemination found new relevance in the second half of the twentieth century with the advent of ART. Post-facto determinations, especially in cases of inadvertency, however, can often be quite different than *a priori* deliberations.

The topic of artificial insemination engendered robust analysis and debate by leading halakhists in the second half of the twentieth century. The issue of contention, however, never explicitly focused on the question of whether reproduction through any

⁴⁷ Cf. Rabbi David Halevi Segal in *Turei Zahav, Even Ha'ezer* 1:8, who disputes Sirkis's argument.

means other than natural procreation should be considered anathema to the divine will.⁴⁸ Here moral axiology plays a shaping role. Judaism's life-affirming emphasis on health and procreation, combined with social and psychological sensitivity to the cultural pressures in the observant Orthodox community to have children and produce large families, as well as a positive approach toward new technology led to halakhic rulings largely supportive of conceiving through artificial insemination, when necessary, at least when using the husband's sperm.⁴⁹

Artificial insemination using donor sperm, on the other hand, became the subject of a bitter debate in the early-1960s between two prominent rabbis and halakhic authorities in New York City: Rabbi Moshe Feinstein, and the Chassidic Rabbi of the Satmar sect, Rabbi Yoel Teitelbaum. Feinstein (Responsa *Igrot Moshe* 1961, *Even Ha'ezer* vol. 1, section 71) permitted a couple whose husband was infertile to utilize AID, provided that the donor sperm originate from a non-Jewish man. He reasoned that absent sexual intercourse there is no transgression of adultery, per the aforementioned talmudic passage (TB Chagigah 14b-15a) and ruling of Rabbeinu Peretz. The sole concern then is lest the resultant child grow up and inadvertently marry an unrecognized

⁴⁸ Sinclair 2003, 72-6 contrasts the strong naturalism found in Catholicism, perhaps best represented by the Catholic doctrine known as the "inseparability principle" – i.e., it is forbidden to separate procreation from marital sexual relations. While Judaism does not espouse a strong naturalism, Sinclair identifies what he calls a weaker form of naturalism in some early Jewish bioethical writings on ART. He believes that this reflects moral discomfort with some implications of ART, as well as serves as a note of caution lest technological exploitation lead society astray. He also briefly identifies similarities between Jewish and Islamic legal approaches to ART. For a review of naturalism, natural law, and Judaism, see Bleich and Jacobson 2015, 362-8.

⁴⁹ Regarding procreative social pressures in the Jewish community, see Jakobovitz 2005. For Judaism's positive attitude toward technology, see Sinclair 2003, 72n17, who credits Jewish law as abiding by the principle that if something isn't prohibited then it is permitted. See Rabbi Israel Lifschitz, *Tiferet Yisrael* 1887, *Yadayim* 4:3.

paternal sibling, thereby leading to an incestuous union and any offspring born of the inherently illicit marriage having the status of a *mamzer* – a bastard. However, children born of a Jewish woman and a non-Jewish father do not share halakhic lineage, and thus, halakhically unrecognized siblings who inadvertently marry would not technically transgress a prohibition of incest, and any resultant offspring would be free of the taint of bastardy.

From 1961-1965, the American Torah journal *Hamaor* published numerous responsa disagreeing with Feinstein, and often attacking him *ad hominem*, primarily on moral grounds (Sinclair 2003, 80-81n42). Teitelbaum (*Responsa Divrei Yoel* vol. 2, 1983, *Even Ha'ezzer*, nos. 107-10), also hotly disagreed with Feinstein. His primary critique regards the halakhic definition, scope, and purpose of the biblical prohibition of adultery. Adultery is not only a transgression of illicit sexual relations, but also one of introducing lineage confusion. Nachmanides, in his commentary on the Torah (ad loc., Leviticus 18:20), uses this explanation as a possible reason for the particular formulation of the biblical text (ibid.): “And with the wife of your fellow, do not lie carnally *lezer’a* – to seed, and [thus] defile yourself with her.” Nachmanides suggest that the use of the infinitive “to seed” provides the reason for the prohibition. The resulting child will have unknown paternity, and thus abominations (i.e., incest) may ensue. *Sefer Hachinukh* (*Yitro*, no. 5), the fourteenth-century Spanish enumeration of the six hundred and thirteen mitzvot, likewise cites this reason in explaining the seventh of the Ten Commandments, i.e., “Thou shall not commit adultery” (Exodus 20:13). Thus, for Teitelbaum, AID constitutes adultery since it intentionally introduces lineage confusion and any resulting

children should be considered bastards. Teitelbaum interprets Rabbeinu Peretz as dismissing the taint of bastardy only as a post-facto determination, since the pregnancy was achieved absent any intent, unlike in the case of AID. Teitelbaum also appeals to Jewish mysticism claiming that adulterous artificial insemination causes great unseen damage to the world. Finally, Teitelbaum fundamentally disagrees with Feinstein's halakhic methodology. As mentioned in Chapter Three, Feinstein was renowned for arriving at halakhic conclusions based on primary rabbinic sources, without lending too much weight, if at all, to later authorities and the legal precedents established through their writings. Feinstein (*Igrot Moshe* 1964, *Even Ha'ezer*, 2, no. 2) defends his definition of adultery as being principally concerned with forbidden sexual relations. Avoiding lineage confusion may be an exegetical rationale, but does not transform clear, normative, halakhic precepts. Furthermore, Nachmanides's commentary on the Torah, as well as mystical concerns, are not admissible as bona fide halakhic source material.

Feinstein writes:

All my opinions are based solely on Torah knowledge and are completely free of external ideas. The laws of the Torah are true whether they be strict or lenient. There is no halakhic legitimacy in the use of external ideas or inclinations of the mind, even if they lead to protective strictness. The idea that a strict ruling is more pure or holy than a lenient one is false. (ibid.)

After a book was published in Brooklyn in 1965 carrying a forged retraction of Feinstein, he published a third responsum (*Igrot Moshe* 1973, *Even Ha'ezer*, vol. 4, no. 32) affirming the stated positions and halakhic argumentation of his previous two responsa (Sinclair 2003, 80-5).

In assessing the two sides of this halakhic debate, it is important to note its epistemological and axiological dimensions. Feinstein asserts a purely halakhic orientation that responds to advances in technology. While he clearly aims to assist an infertile Jewish couple in actualizing their desire to birth and raise a child, and create a family, he explicitly disavows external epistemological and axiological factors in his legal method, be they mystical, moral, aggadic, or policy concerns. Teitelbaum, on the other hand, embraces a wider-scope Jewish epistemology and halakhic methodology that legitimates the use of extra-halakhic sources of knowledge, such as mysticism and non-purely halakhic rabbinic commentary. Furthermore, both he, and other rabbis opposed to Feinstein, apply extra-legal, moral concerns to guide the formation of their policy opinions and legal determinations.

While prominent Israeli halakhist Rabbi Shlomo Zalman Auerbach (1958) and Holocaust survivor Rabbi Yechiel Yakov Weinberg of Switzerland (*Seridei Eish* 1977, vol. 3, no. 5), agreed with Feinstein's halakhic rationale for his permissive ruling, as did most halakhists on theoretical grounds, in practice, the majority of prominent authorities rejected Feinstein's leniency on meta-halakhic, moral grounds (Steinberg 2003c, 66; Sinclair 2003, 86-7). Weinberg (*ibid.*) argued that the introduction of a stranger's sperm into a married woman should be considered "an ugly abomination of Egypt." In introducing the biblical litany of forbidden sexual relations, the Torah says: "You shall not copy the practices of the Land of Egypt where you dwelt, or of the land of Canaan to which I am taking you..." (Leviticus 18:3). Rabbi Jacob Breisch (*Responsa Chelkat Ya'akov* 1992, vol. 1, no. 17) of Switzerland concurs, and adds that AID offends general

religious sensibility, and if the Catholic Church prohibits on moral grounds, Jews should not appear any less concerned with morality.⁵⁰ Finally, Rabbi Eliezer Waldenberg (*Tzitz Eliezer* 1990, vol. 3, no. 27), reintroduces the concern of lineage confusion, though unlike Teitelbaum, he does not posit it as a halakhic objection per se, but as a spiritual and moral concern. The Talmud (TB Yevamot 42a) asserts that God's presence indwells only among those with certain and unadulterated lineage.

The history of medical halakhah and science demonstrates that they have always been in dialogue, though at times that dialogue has broken down into conflict or aligned in integration. The relationship of Judaism and science often is shaped by epistemology and moral axiology. Both epistemology and moral axiology indeed play a normative and determinative role in medical halakhah and Jewish bioethics. Now that we have grounded the Jewish bioethical discourse regarding ART through analyses of the *mitzvah* of precreation and the theological challenge of infertility, the need to view discrete halakhic views through the lens of the history of science, and halakhic responses to early treatments of infertility, we can now enter into an analysis of the epistemological and axiological dimensions of the contemporary Jewish bioethical debate regarding the definition of maternity and paternity in current assisted reproductive and genetic technologies.

⁵⁰ See Sinclair 92n91. Sinclair also believes that underlying Breisch's discomfort is a sense that the whole enterprise is immodest. Matters of reproduction and procreation should be private, and not publicly pursued or discussed. For Breisch's (1992) full discussion, see responsa *Chelkat Ya'akov, Even Ha'Ezer*, sections 12-21.

CHAPTER FIVE

In Vitro Fertilization with Husband or Donor Sperm

This chapter, focusing on in vitro fertilization (IVF) and embryo transfer (ET), begins our analysis of the epistemological and axiological dimensions of the contemporary Jewish bioethical debate concerning maternal and paternal identity and the new assisted reproductive technologies (ART). As previously explained at the end of Part I, “Context and Method: Jewish Bioethics, Epistemology, and Moral Axiology,” (see Chapter Three, pp. 121-5), my method of investigation is: 1. understand the current science and its history; 2. locate the Jewish bioethical concerns within a larger bioethical framework; and 3. evaluate the epistemological and axiological dimensions of the Jewish bioethical analysis regarding maternal and paternal identification. Thus, I begin this chapter with the history of IVF and ET, the science of conception and infertility, and the clinical practice of IVF/ET assisted reproductive treatment.

After briefly reviewing general and Jewish bioethical concerns relating to IVF/ET, I will then turn to each of the four Jewish bioethicist exemplars of this dissertation. For each, I will provide an epistemologically and axiologically informed intellectual orientation by introducing their philosophy of halakhah and Jewish ethics as it relates to their bioethical methodology. I am particularly interested in highlighting their theoretical understandings of and approaches to: legal interpretation and judicial discretion; the roles of change, innovation, and historical contextualization in the development of halakhah; views on legal

certainty and judicial doubt; the relationship of law and ethics; and the relationship of religion and science – in other words, all the relevant philosophical and methodological issues reviewed in Part I of this dissertation. I will then present each one's views on the question of maternal and paternal identity when IVF/ET is employed, and subsequently analyze their epistemological and axiological dimensions. I will also highlight apparent religion and science interactions.

Regarding maternity, this chapter will only consider the IVF scenario in which the ovum contributor is also the gestator and birth-mother, and intends to raise the resultant child. Gestational surrogacy will be fully examined in the next chapter.

Regarding paternity, this chapter considers IVF/ET cases involving both the husband's and third-party donor sperm.

The History and Science of In Vitro Fertilization

The history of IVF presents a fascinating study into the development of late-nineteenth-and-twentieth-century biomedical technologies. IVF's history highlights the evolving, interdependent processes of basic scientific research, scientific theory development, and clinical application, all set within a complex human context of professional competition, personal intrigue, interactions of science and religion, legislation, litigation, and the power politics of research funding. For IVF to become a successful, assisted reproductive technology for human beings, at least four scientific challenges had to have been mastered: 1. the harvesting from women of sufficient numbers of cytoplasmically and meiotically mature ova; 2. the ability to fertilize said ova

in vitro; 3. the successful culturing of preimplantation embryos; and 4. techniques of embryo transfer into women capable of gestation. Each of these challenges, in turn, demanded advances in scientific understanding and clinical medicine born of ongoing laboratory research, animal trials, and ultimately human experimentation. The history of IVF thus entails the modern history of cell biology, embryology, endocrinology, gynecology, immunology, laboratory technology, urology, reproductive medicine, surgical techniques, among other disciplines. Since IVF creates life in the laboratory and separates procreation from sexual intercourse it also engenders intense ethical debate and deep concerns regarding its potential social impact on the normative institutions of marriage and family, including concepts of motherhood and fatherhood, as well as religious considerations of the metaphysical status of the embryo (Bavister 2002; Biggers 2013).

Historians of IVF credit its inception to Samuel Leopold Schenk, an embryologist at the University of Vienna, who in 1878 fertilized rabbit ova in vitro (Bavister 2002, 182; Grazi 2005b, 16). Twelve-years later, in 1890, British embryologist Walter Heape successfully transferred IVF rabbit embryos to a doe rabbit that subsequently birthed healthy offspring. Heape and other investigators continued to develop animal IVF and ET techniques through the 1970s. In the 1930s, IVF/ET succeeded in rats, sheep, and goats; in the 1940s in mice and cows; in the 1950s in pigs; and in the 1970s in horses (Westmore 1984, 2 ff). Among scientists and historians of medicine, however, there is significant controversy as to whether Schenk, Heape, and others' early attempts at IVF/ET were indeed successful. Changing standards of research confirmation and peer

review lead some to credit the first IVF of mammalian ova to Harvard biologist Gregory Goodwin Pincus and E. V. Enzmann's in 1936. They successfully harvested an ovum from one doe rabbit, achieved IVF, and then ET to an unmated, second doe rabbit that subsequently gave birth. Following this recognized achievement, in 1937, an anonymous letter to the *New England Journal of Medicine* extolled the potential of IVF/ET in helping overcome human infertility: "What a boon for the barren woman with closed (fallopian) tubes!" (*The New England Journal of Medicine* 1937). The author of the letter was later revealed to be John Rock, a Harvard-based gynecologist who in the 1940s, along with his laboratory assistant Miriam Menkin, worked to fertilize human oocytes in vitro. In 1944, Rock and Menken claimed that they successfully achieved the first human pre-embryo conceived through IVF. Ten years later, Landrum Shettles of Columbia University likewise claimed to have successfully fertilized human ova in vitro by duplicating Rock and Menkin's protocol.

In the 1950s, however, advances in the understanding of gamete physiology led scientists to doubt all previous claims of IVF. Researchers had already increasingly become aware of the biochemical role that the female endocrine system plays in the necessary maturation of ova for fertilization. It was only in 1951, though, that American reproductive biologist Min Chueh Chang and English embryologist Colin Russell Austin independently discovered that mammalian spermatozoa also require biochemical conditioning. For fertilization to take place, the acrosomal head of the sperm needs to be destabilized so that its enzymes can break down the zona pellucida, i.e., the outer membrane of the ovum, allowing for fusing of both gametes' haploid nuclei. This process

of spermatic “capacitation” occurs in the vaginal tract through changes in pH and biochemical concentrations. It may also be simulated in vitro, but without this spermatic conditioning fertilization is not seemingly possible, thus the incredulity toward earlier claims of successful mammalian IVF (Bavister 2002; Biggers 2013, 8-9).

In the 1960s, British physiologist Robert G. Edwards began to synthesize the findings of previous twentieth-century basic research regarding the role of hormones in the ovulatory cycle and in the maturation of oocytes, the fertilization of oocytes in vitro with capacitated spermatozoa, the culturing of the developing pre-embryo in specially formulated chemical media, and the successful transfer of embryos into a woman’s uterus. In 1968, Edwards began to collaborate with British gynecologist Patrick Steptoe who was developing laparoscopic surgical techniques to view inside the pelvic cavity for reproductive diagnostic purposes, as well as to retrieve oocytes through a pipette needle technique known as aspiration. Edwards and Steptoe diligently worked for over a decade with hundreds of patients, without the support of government funding, before their increasingly refined technique achieved the first IVF/ET human birth.¹ Louise Brown, born on July 25, 1978, was the world’s first “test-tube baby.”² Although in 1980, the

¹ In September of 1973, Landrum Shettles of Columbia-Presbyterian Hospital in New York City attempted human IVF for Doris and John Del-Zio. However, Shettles did not inform the hospital of his intentions, nor did he follow proper protocols regarding human experimentation. Upon learning of his rogue attempt, Shettles’ department chair, Raymond Vande Wiele, interrupted the IVF process, thereby irreversibly ruining the attempt. Later, Doris and John Del-Zio successfully sued the hospital and Vande Wiele for intentional infliction of emotional distress, see Henig 2004. See Biggers 2013, 12, regarding a controversial claim of an IVF/ET baby being born in India 67 days after Louise Brown that went unrecognized by the scientific community.

² The origin of the phrase “test-tube baby” is unknown, often credited to the press in the 1930s. The term, however, was first used in relation to artificial insemination, not IVF, and graced the title of Dr. Hermann Rohleder’s 1934 book entitled: *Test Tube Babies: A History of the Artificial Impregnation of Human Beings*. Additionally, technically Louise Brown was conceived in a Petri dish and not in a test-tube.

success rate of IVF/ET was only 16.55%, by 1983 it had risen to 30%, and continued to rise even higher as IVF/ET progressed (Steinberg 2003g, 572). To date, more than five-million children worldwide have been born through IVF/ET (Knapton 2016).³ In 2010, Edwards was awarded the “Nobel Prize in Physiology or Medicine” for the development of IVF (Biggers 2013, 16ff).

The Science of Natural Conception

For conception to occur naturally *in vivo*, i.e., in (something) alive, many physiological processes must precisely align. Oogenesis occurs during female fetal development, equipping a newborn female with two to four million oocytes in her ovarian reserve. Sexual development during female puberty leads to menarche (the onset of menstruation). There are at least five essential, interconnected physiological processes within the menstrual cycle, whose length can be twenty-four to thirty-four days: the endometrial cycle; the pituitary hormone cycle; the sex hormone cycle; the ovarian cycle; and the ovulatory phase – all of which are required for fertility.

For the first five to seven days of the endometrial cycle, the vascular and glandular cells of a woman’s uterine lining lose their physiological integrity, resulting in the menstrual flow. During this time, the hypothalamus secretes gonadotropin-releasing hormone (GnRH), a neuroendocrine agent that triggers the pituitary gland to release

³ Although early-on, there was significant concern regarding the longterm health impacts of IVF/ET upon children born of its technology, longitudinal studies primarily indicate that IVF/ET creates healthy outcomes for families facing fertility challenges, see Sutcliffe 2002. However, Louis Brown, the oldest IVF-born person is only 39 years old and some scientists assert that it is too early to gauge completely the longterm health implications of IVF, see Knapton 2016. Longitudinal studies of people conceived by IVF thus continue.

follicle-stimulating hormone (FSH), which, in turn, stimulates the maturing of an egg follicle within the ovary. The renewal of hypothalamus pituitary hormone cycle also restarts the sex hormone cycle, in which the ovarian follicle secretes estrogen, causing the uterine lining to once again increase in vascularity and glandular cells during the proliferative phase. About midway through, at days thirteen to fifteen, the pituitary gland triggers a surge of luteinizing hormone (LH), which causes the matured vesicular follicle to burst, releasing the oocyte into the fallopian tube, i.e., ovulation. During the luteal phase of the ovarian cycle, the follicular cells originally surrounding the oocyte, i.e., the corpus luteum, begin to function as a gland, producing progesterone which induces the continuing building-up of the endometrial lining of the uterus with more vascular and glandular cells thereby increasing blood supply and providing the nourishment necessary for implantation (ASRM 2015; Chudnoff 2011).

Sexual intercourse allows the male's ejaculate containing between forty million and one billion spermatozoa to enter the female vaginal tract. During ovulation, changes in the pH and chemical concentrations of the cervical fluid will capacitate the sperm.⁴ Spermatogenesis takes place in the male reproductive tract over a period of approximately 74 days, beginning at puberty and continuing throughout life. A man's testes produce about two hundred million spermatozoa daily. If sexual intercourse takes place during a woman's ovulatory phase, the newly hyperactivated, capacitated, motile spermatozoa will make their way up her cervical canal, into the uterus, and then up into

⁴ The *halakhot* (laws) of *taharat hamishpachah* (family purity laws) which prohibit any physical contact between husband and wife during the five days, on average, of menstruation, and for seven more "clean days," maximize fertility by permitting the sexual reunion of spouses following the wife's immersion in a *mikvah* (ritual bath) at the time most likely coinciding with ovulation, see Tendler 1988, 8-12.

the fallopian tube where male and female gametes will mix, allowing the enzymes of the capacitated spermatozoa to weaken the zona pellucida, i.e., outer membrane of the oocyte. When a single spermatozoon binds with the oocyte, fusing both cells' haploid chromosomes, a cortical reaction blocks further spermatozoa from also binding with the oocyte, thus avoiding lethal polyspermy (Gadella 2010). The fallopian tube's cilia and mucous secretions propel the zygote, i.e. fertilized egg, toward the uterus, during which time the zygote begins to undergo cellular cleavage on day one, dividing and doubling its pluripotent stem cells until it becomes an eight-cell compacted morula on day four. Beginning on day five, the inner and outer cells of the morula begin to differentiate, yielding a blastocyst, which on day eight attaches to the mucosa in the uterus. Continuing to divide, the blastocyst's inner group of cells become the embryo, and its outer group of cells develop into the placenta, that conducts nourishment between the developing the embryo and the endometrial lining. The embryo achieves full uterine implantation by day fourteen after conception (Chudnoff 2011). The growing placenta supplies additional pregnancy hormones that maintain the uterine environment. However, should conception fail to occur, then there is a rapid decline in both estrogen and progesterone levels, triggering the destabilization of the vascular and glandular cells of the endometrium, leading to menstruation and the beginning of a new cycle (Tendler 1988, 12).

Obstructions to Natural Conception, Infertility, and IVF/ET

Given the above-described complexity of female and male reproductive physiology, there are many conditions that may interfere with natural conception. First, a

woman's fertility may be affected by: anatomical abnormalities, such as: damaged or blocked fallopian tubes⁵; peritoneal factors, such as endometriosis, i.e., the abnormal growth of uterine tissue outside of the uterus; an abnormally shaped uterus or cervix; polyps, myomas (fibroids), or tumors; among other conditions. Second, there may be an ovulatory disorder that interferes with one or more of the aforementioned parts of the menstrual cycle. Polycystic ovary syndrome (PCOS), and hypothalamic and/or pituitary dysfunction, all cause hormonal imbalances that disrupt aspects of the menstrual cycle and ovulation. For example, hyperprolactinemia, i.e., too much pituitary produced prolactin, reduces estrogen production, thereby negatively affecting the endometrial cycle. Third, ovarian abnormalities, such as diminished ovarian reserves and premature ovarian failure, also called primary ovary insufficiency, can result due to an autoimmune response, or through toxic exposure, such as chemotherapy (Mayo Clinic 2016a; ASRM 2012).

For men, anatomical obstructions and abnormalities can also impair fertility, such as undescended testicles and varicocele veins, i.e., enlarged testicular veins, both of which raise the body temperature of the testes, impeding healthy spermatogenesis. Other causes of abnormal spermatogenic male-factor infertility are toxic exposures through occupational hazards, medications, and chemotherapy; disease impact, such as from mumps; Y-chromosome micro-deletions and other genetic anomalies; and metabolic and

⁵ A preliminary fertility evaluation often include a diagnostic hysterosalpingogram (HSG), a special x-ray of the female reproductive tract in which catheter-injected dye fills the vaginal tract, cervix, uterus, and fallopian tubes, revealing their morphological structure and identifying any obstructions, scarring, or other types of abnormality or damage, see ASRM 2012, 7-8. Uterine abnormalities can also be identified through hysteroscopy or a saline sonohysterogram (SHG), see ASRM 2012, 11.

hormonal dysfunction. Abnormal spermatogenesis can create conditions such as oligospermia, i.e. low sperm production; teratospermia, i.e., deformed sperm; and astenospermia, i.e., non-fully motile sperm. Azoospermia denotes the absence of any sperm, though this condition may be caused by anatomical obstructions which sometimes can be surgically corrected. Varicoceles and undescended testes also can often be surgically repaired. Disease and infections can be treated, though fertility may not be restored. Metabolic and hormonal dysfunction may be treated through medications and/or hormonal injections. Erectile dysfunction and premature ejaculation, among other sexual dysfunctions, may be treated through medication and/or counselling. In cases of severe sexual dysfunction, anatomical abnormalities and obstructions, as well as abnormal spermatogenesis, different assisted reproductive techniques of sperm extraction can still collect sufficient fertile spermatozoa for IVF (Mayo Clinic 2016b; Turek 2016).⁶

Age, general health, and lifestyle choices can likewise affect both male and female fertility. Couples who are unable to achieve pregnancy after one year of trying are medically considered to be struggling with infertility, though individuals thirty-five years or older will often seek treatment sooner. A preliminary fertility evaluation of a woman struggling with infertility will consider anatomical as well as endocrinological causes.

⁶ Testicular sperm extraction (TESE), an early technique of the 1980s, surgically removes testicular tissue from which spermatozoa are subsequently isolated and harvested. Testicular fine needle aspiration (TEFNA) extracts testicular fluids, in which fertile spermatozoa may be present. Microdissection (micro-TESE) is like TESE in that testicular tissue is surgically removed, however, much less tissue is required. Consequently, there is much less injury and scar tissue, see Bernie, Ranjith, and Schlegel 2013. A testicular biopsy, sperm mapping, and a sperm chromatin structure assay (SCSA) can help identify which method of sperm retrieval will be best for a given situation (ASRM 2008a,b; Turek 2016).

35% of all female infertility problems are due to tubal or peritoneal factors.⁷ 25% are due to ovulatory problems. In 40% of infertile couples, the male partner is either a contributing or sole cause of infertility. 10% of infertility cases are idiopathic, i.e. there is no easily identifiable reason for the inability to achieve pregnancy. Often, separate male and female factors both contribute to a couple's infertility, and in a minority of cases, infertility is caused by the mixing of otherwise healthy gametes, i.e. through an immunological reaction of sperm and a woman's naturally occurring, anti-sperm antibodies (ASRM 2012).⁸

IVF/ET was first identified as an ART for female tubal-factor infertility. However, over time it was recognized that it can assist any number of the above-cited causes of both female and/or male-factor infertility, as well as to avoid transmitting genetic disease, especially when combined with other ARTs.⁹ For example, in cases of

⁷ Although fallopian transplantation, replacement, and surgical repair are possible, IVF's relatively non-invasive procedure with excellent rates of successful outcomes has made fallopian surgery essentially obsolete, see Sotrel 2009.

⁸ The CDC's 2013 National Summary (2013) identifies that IVF accounted for >99% of ART usage. Of the almost 200,000 IVF cycles reported, 13% had a patient diagnosis of tubal-factor; 14% ovulatory dysfunction; 32% diminished ovarian reserve; 9% endometriosis; 5% uterine factor; 33% male factor; 15% other factor; 13% unknown. 12% of infertility cases were female-factor only; while 17% were known to have both female-and-male-factors causing infertility.

⁹ When IVF/ET success rates were still relatively low, and longterm health outcomes were completely unknown, three other early ARTs were practiced. In the 1980s, gamete intra-fallopian transfer (GIFT), was performed for a female with normal, healthy fallopian tubes and for a male with healthy sperm. In GIFT, an oocyte is retrieved transvaginally by needle aspiration from a woman, and her male partner's sperm sample is collected and washed (explained below). The gametes are then combined in a catheter, though kept separate by an air bubble. The gametes are then directly deposited into the fallopian tube, enabling a more "natural" process of conception. It was then speculated that GIFT may be healthier than IVF/ET. Additionally, some Catholic theologians licensed GIFT as morally acceptable since conception occurs naturally, unlike in IVF, which is religiously and morally disapproved of by the Catholic Church due to the Church's theological insistence on reproductive naturalism, see Haas 1998; Congregation for the Doctrine of the Faith 1987 and 2008; Paul VI 1968; and Pius XII 1958. Zygote intra-fallopian transfer (ZIFT), unlike GIFT, is a form of IVF, with fertilization of a harvested oocyte by collected and washed spermatozoa occurring in vitro. However, rather than culturing the zygote in vitro until it matures into an embryo that can be transferred directly to the uterus, in ZIFT, the zygote is transferred surgically through laparoscopy directly into the fallopian tube where it will naturally mature into an embryo and travel to the uterus for

male-factor infertility, such as severe teratospermia or obstructive azoospermia, IVF can be combined with assisted reproductive techniques of sperm extraction and specialized IVF, such as intra-cytoplasmic sperm injection (ICSI), in which a single fertile spermatozoon can be directly injected into the oocyte by a fine needle under a microscope (Boulet, et al. 2015). In cases for which there is a significant probability of genetic disease transmission to offspring, IVF can be combined with preimplantation genetic diagnosis (PGD), in which pre-embryos and blastocysts are subjected to genetic analysis for embryo selection and implantation.¹⁰ In cases of anticipated infertility, such as a fertile woman with cancer who requires chemotherapy or radiation treatments which will potentially leave her infertile, she may choose to have oocytes harvested now and cryopreserved for IVF later, or IVF now with the resultant embryos cryopreserved for later implantation (Steinberg 2003g, 573).¹¹ Since IVF, for the most part, is accomplished without surgery and has proven to yield excellent rates of successful and healthy reproductive outcomes, even more cost-effectively than intrauterine insemination, IVF has become the most utilized assisted reproductive technology (CDC 2013, 2014; Bower and Hansen 2005).

implantation. Tubal embryo transfer (TET), is similar to ZIFT, except that the zygote is allowed to mature into a pre-embryo in vitro before laparoscopic transfer to the fallopian tube. Since IVF/ET outcomes have proven to be just as good as, if not better than ZIFT and TET, and since IVF/ET doesn't require surgery, ZIFT and TET are rarely performed today (ASRM 2015, 12-3; Steinberg 2003g, 574; Toner 2002).

¹⁰ Polymerase chain reaction (PCR), florescent in situ hybridization (FISH), multiplex fluorescence in situ hybridization (m-FISH), are all current technologies for PGD. Which method of genetic analysis is used depends on the discrete concerns raised by prior genetic screening. See Demko, Rabinowitz, and Johnson 2010; Anderson 2010. Current research is exploring PGD by single-cell genomic sequencing, see Van der Aa, et al. 2013. For the ethics of selective reproduction, see Wilkinson 2010.

¹¹ Oocyte, spermatozoa, and embryo cryopreservation techniques have been improving, especially within the past few years for oocytes with the advent of vitrification, a flash freezing technique that works better for cells with higher fluid content, see ASRM 2015, 12; Edgar and Gook 2012.

The Clinical Process of IVF/ET

When IVF is recommended to overcome infertility, there are several steps to the process: ovarian stimulation, ova retrieval and sperm collection, fertilization, embryo culture, and embryo transfer (ASRM 2015).¹² For a woman struggling with infertility, ovarian stimulation begins with hormonal therapy. To maximize IVF cycle opportunities, fertility drugs are used to induce the ovulation of several follicles at once through a process called controlled ovarian hyperstimulation.¹³ It has been believed that such hormonal therapies carried with them increased risks of adverse long term health impacts, such as ovarian, endometrial, and cervical cancers. However, recent longitudinal systematic reviews and meta-analyses have concluded that there have been no significant associations of hormonal fertility therapies with these cancers (Siristatidis 2013). Risks of ovarian hyperstimulation syndrome (OHSS) and other side effects still obtain (Mayo Clinic 2016a).¹⁴

After ovulation, oocytes are retrieved by transvaginal ultrasound aspiration. An vaginal ultrasound probe identifies the location of the follicles, and a pipette needle

¹² This brief schematization will note the major milestones of an IVF treatment process. For a full, step-by-step description of the process, see Wood and Trounson 2012; Gurevich 2016; ASRM 2015.

¹³ Multiple follicles are induced because not all oocytes will fertilize, or develop normally, and sometimes an inventory of embryos is desired for multiple cycles of ET. There are numerous hormonal agents that may be utilized for ovarian induction, each differentially indicated for specific goals and/or circumstances, and each having attendant health risks. Medications for ovarian stimulation include: Clomiphene citrate (Clomid or Serophene); letrozole; human menopausal gonadotropins (hMG: Pergonal or Repronex) for luteinizing, urinary FSH (Metrodin), recombinant FSH (Gonal F and Follistim), and human chorionic gonadotropins (hCG: Ovidrel, Novarel, and Pregnyl). Medications used to prevent premature ovulation include: gonadotropins, such as GnRH agonist (Lupron), and GnRH antagonist (Antagon, Ganirelix, Orgalutran, and Cetrotide). See Gurevich 2016; ASRM 2014; Grazi 2005c, 283-96.

¹⁴ Oral contraceptive pills are often used in IVF pre-treatment to reduce the incidence of OHSS and ovarian cysts, see Karande 2014. GnRH agonists and antagonists also reduce the risks of premature ovulation, see ASRM 2014, 6.

connected to a suction device is inserted transvaginally, i.e. through the vaginal wall, to retrieve the oocytes directly from the ovarian follicles. The oocytes are temporarily incubated in an IVF culture medium or cryopreserved for later use.¹⁵ An embryologist will evaluate harvested oocytes for maturity and viability. If they have not matured enough, they still may be able to be conditioned through in vitro maturation (IVM), as well as preimplantation assisted hatching (AH), a pre-ET micromanipulation in which the zona pellucida is punctured to assist the hatching of the embryo (Gurevich 2016; ASRM 2015, 10).

A sperm sample must be collected either from the husband/male partner or through donation.¹⁶ Sperm can be collected through masturbation, post-coital vaginal collection, use of a sterile condom during sexual intercourse, or by electronic stimulation of the prostate by a pulsator (Jakobovits 1993; Bleich 1995b). If necessary, sperm can be extracted from the testicle, epididymis, or vas deferens. Cryopreserved, “banked” sperm previously collected or donated can be thawed for current use. All sperm collections are “washed,” i.e. motile sperm are separated from non-motile sperm and spermatic mucus by density gradient centrifugation.

Fertilization is accomplished in vitro by gametic mixing, or when necessary, by ICSI.¹⁷ Zygotes are matured in culture until the pre-embryo or blastocyst phase, when

¹⁵ While 95% of pre-IVF hormonal treatment yields at least one oocyte, on average between eight and fifteen oocytes are usually harvested, see Gurevich 2016.

¹⁶ Sperm donors are tested for infectious disease, as well as are screened for medical and genetic history. Donor sperm is frozen for at least six-months before use in order to allow for a post-latency period re-testing of the donor for infectious disease, see ASRM 2015, 14.

¹⁷ In the case of gametic mixing, an embryologist places each oocyte into a separate culture dish with approximately 10,000 washed sperm, which is then incubated for twelve to twenty-four hours to facilitate

they may be subjected to preimplantation genetic diagnosis, cryopreserved, or implanted into the woman through embryo transfer by way of a catheter, i.e. a long, thin sterile tube, through the vaginal tract, past the cervix, and into the uterus. Sometimes the recommended fertility protocol indicates the redundant implantation of several embryos in order to maximize the possibility of some implantations taking hold for full gestation. High-order multiple pregnancies (three or more) add risk to the viability of the pregnancy with each additional implantation, and incur other health risks as well. If too many embryos begin to develop into fetuses, there may be need for multifetal pregnancy reduction. Unused viable embryos can be cryopreserved for future cycles, or they can be donated. After implantation, a regimen of progesterone supplementation for the woman helps build the uterine environment for gestation (Gurevich 2016; ASRM 2015, 11; Grazi 2005d).¹⁸

If a woman cannot produce viable oocytes, donor eggs may be fertilized by her husband/partner's sperm in vitro and implanted within her uterus for gestation. If neither she nor her husband/male partner can produce viable gametes, but she has a uterus, donor embryos can be used. Donor eggs and embryos will be considered in Chapter Six, "Gestational Surrogacy."

fertilization, see Gurevich 2016. Approximately 60% of U.S.-based IVF is through ICSI, see ASRM 2015, 8.

¹⁸ Depending on the age of the female patient, miscarriage rates are 15% for women under 35; 25% for women ages 40-42; and 35% for women over age 42. Patients are also monitored for the possibility of ectopic pregnancy, see Gurevich 2016.

Issues of General and Jewish Bioethical Concerns Relating to IVF/ET

Although the ART of IVF/ET is practiced worldwide today in developed countries, numerous bioethical questions have been raised concerning IVF/ET ever since the first IVF child was born almost four decades ago. In the first ten years of IVF/ET (1978-1988) in the United States, more than seventy-four ethics committee statements were produced regarding its usage (Walters 1988). Since spousal IVF is similar in intent, and in some ways, practice, to the earlier ART of AIH, these two ARTs share common bioethical and religious concerns. Both raise questions of procreative liberty, privacy, and governmental regulatory control. Both evoke the question of whether infertility is a disease, and the distributive justice discussion of the right to health care, cost, coverage, and access.

However, IVF is also sufficiently different from AI as to raise novel issues. IVF more strongly introduces the question of the metaphysical, moral, and legal status of eggs, sperm, and embryos. Who owns fertilized embryos and are they subject to contract agreements and/or court assigned custody? Are they property or progeny? May unused embryos be discarded, destroyed, donated, or be subjected to medical research? May embryos be created *a priori* for non-procreative, research purposes, such as stem cell research? IVF also entails greater health risks due to the required hormonal manipulations, and, at times, minor surgical interventions, raising the old question of the elective assumption of health risks. IVF/ET sometimes entails PGD and embryo selection, raising questions of eugenics and morally acceptable criteria for embryo selection. IVF/ET also sometimes involves high-order embryo implantations that may

later lead to the need for fetal reduction, returning the conversation to bio-and-religious ethics concerning pregnancy termination.

Ethicists have also looked beyond individual interests to societal needs. Should society be taking better responsibility for children needing adoption and foster care rather than developing technologies that ignore the plight of these children in favor of creating new children for homes that may otherwise have been primed for adoption and foster care due to infertility? Do individuals need to set aside their personal hopes and desires for the public welfare and national and global interests? Social debate has also been triggered when IVF is used to produce children for non-traditional family structures, such as single mothers or same-sex couples. Similar questions arise regarding whether there should be age limits on child bearing through ART, or limits on the number of IVF-cycle attempts. Is it in the best interest of society or of newborn children themselves to have parents past their mid-life? Third-party gamete donation further complicates the ethical and legal issues involved in the selection and sale of gametes, and the rights and responsibilities of third-party reproductive collaborators (Asch and Marmor 2008; Hull 2005a, 95-160; Steinberg 2003g, 581-3).

Jewish bioethicists, being attuned to general bioethical scholarship, likewise engage these issues. Medical halakhists and poskim, being of a Jewish-legal orientation, tend to focus on issues of more exclusively Jewish-religious concern, such as: Is IVF halakhically permissible or not, and why? Does IVF fulfill the mitzvah of procreation? What are the halakhically permissible methods of semen procurement given prohibitions of masturbation? Is there a need for rabbinical supervision of gametes, beyond standard

IVF clinic operational protocols, in order to guarantee the avoidance of lineage confusion resulting from misidentifications and mix-ups, not unlike the rabbinical supervision of production required in the kosher food industry?¹⁹ Is fetal reduction or selective termination permissible? The more narrow interests of medical halakhah, in turn, also affects the focus of Jewish bioethical interests, especially for Jewish bioethicists of a legal orientation.

Ronit Irshai (2012, 264-8) argues that medical halakhah and legally oriented Jewish bioethics tend to ignore the larger bioethical concerns, as well as pertinent gender considerations, due to two primary factors: first, the literature is largely generated by men, who are unattuned to women's perspectives and feminist critique; and second, the pronatalist views of traditional Judaism incline to permit "all reproductive technologies ... in that sense, they consider the end to justify all the means." While Irshai substantiates her critique of a male-gendered perspective dominating much of legally oriented bioethics and medical halakhah, and indeed demonstrates the pervasive pronatalism of medical halakhah and legally oriented Jewish bioethics, her claims also overgeneralize. Of the four male exemplars of this dissertation, only three permit and encourage the ARTs discussed. Further, the progression from prohibition to allowance regarding ART tracks with changing social mores in larger society and their influence on Jewish cultural attitudes and ethical reformulations. Irshai's cogent critique notwithstanding, many

¹⁹ For more information on rabbinical supervision within the food industry, see Fishkoff 2010; Lytton 2013; Horowitz 2016.

factors shape the epistemological and moral-axiological dimensions of Jewish reproductive law and ethics.

IVF and Parenthood: Epistemological and Moral-Axiological Considerations

Besides essential questions of the halakhic permissibility of the different ARTs, a foundational question that consistently emerges from the Jewish bioethical and medical halakhic literature concerns parentage. In each of the available ARTs, with due consideration of the specific circumstances, collaborative parties, and reproductive materials utilized, medical halakhists and Jewish bioethicists ask: who is the resultant child's mother and father? We now turn our attention to the epistemology and moral axiology guiding what halakhic and bioethical considerations are taken into account to answer this foundational question. In particular, I will analyze the Jewish bioethical writings of the four Jewish bioethical exemplars introduced in Chapter Two (pp. 58-65): 1. Rabbi J. David Bleich; 2. Rabbi Michael J. Broyde; 3. Rabbi Elliot N. Dorff; and 4. the collaborative duo of Dr. John D. Loike and Rabbi Moshe D. Tendler.

Rabbi J. David Bleich's Epistemological and Axiological Orientation

Rabbi J. David Bleich and his voluminous scholarship have had far-reaching, shaping influence on the development of medical halakhah and Jewish bioethics over the past fifty years. Bleich's mastery of rabbinic literature and Jewish law, his training in philosophy, and his expertise in comparative U.S. and Jewish law, have come together in his comprehensive, extensively detailed and annotated, legally oriented, Jewish bioethical

writings.²⁰ A recently published intellectual profile of Bleich states: “Rabbi Bleich’s scholarship is remarkably broad ... Bleich demonstrates a detailed knowledge of such diverse fields as chemistry, commerce, comparative religion, grammar (in several languages), history, medicine, philosophy, and secular law (e.g. Roman, English and American). In each instance, and with apparently equal ease, Bleich adduces apt Jewish and secular sources, both ancient and modern” (Resnicoff 2015, 6). Bleich’s capacity for clear understanding and felicity of lucid expression allows him to translate, make accessible, and thereby popularize the arcane concepts and dialectics of talmudic commentary, Jewish legal codes, and especially Jewish responsa literature. Besides teaching in several schools of Yeshiva University, including its affiliated rabbinical school and law school, Bleich has served on numerous governmental and non-governmental panels and committees, and is often consulted by rabbis, health-care professionals, jurists, ethicists, and religiously observant Jews (Resnicoff 2015, 6-7). Bleich is self-reflective about his faith commitments, as well as his philosophy and methodology of Jewish law and ethics, and has written extensively about them.²¹ His writings demonstrate that he is a steadfast, consistent thinker over time, expanding on earlier formulations but rarely changing them. In order to assess the epistemological and

²⁰ Bleich’s scholarly interests are remarkably broad, extending beyond bioethics to any and all matters of Jewish law and their intersection with contemporary law and society, including business law, family law, Jewish ritual law, etc... See Resnicoff 2015, 6. He is particularly interested in novel phenomenon and circumstances, and their halakhic adjudication by poskim, thus his column on “Survey of Recent Halakhic Periodical Literature” in the journal *Tradition* and their collection in his, to date, seven-volume *Contemporary Halakhic Problems*.

²¹ See Bleich’s introductions to *Contemporary Halakhic Problems*, vols. 1-7, 1977, 1983, 1989, 1995, 2005, 2012, and 2017a; Bleich 1979a; 1980; 1987; 1988; 1993; 2002; 2006b; 2013a; 2015b. See also, Bleich and Jacobson 2015.

axiological dimensions of Bleich's bioethical writings on ART, it is necessary and helpful to delineate in brief Bleich's theology, his philosophy and methodology of halakhah and ethics, and relevant interactions of religion and science in his thought.

Interpretive Authority and Limited Judicial Discretion

As an Orthodox Jewish thinker and halakhist, Bleich affirms his belief in the divinity of the written and oral Torah, both of which he professes were revealed to Moses by God at Sinai. Bleich predicates any authentic, accurate, and authoritative understanding of Jewish law upon Judaism's foundational, theological doctrines, of which Sinaitic revelation is primary (Bleich 2015b, 124-5).²² In his writings, Bleich adumbrates a sophisticated theology of revelation giving non-literalist depth to more seemingly simple, doctrinal assertions, such as: "Even that which a conscientious student will one day teach in the presence of his master was already revealed to Moses at Sinai" (Palestinian Talmud, *Pe'ah* 2:4). He writes:

All of Halakhah is inherent in the original revelation at Mt. Sinai. Some portions of the Halakhah were fully formulated; others remain latent, awaiting investigation and analysis. Often it is the need of the hour, a specific query or problem which serves as the impetus to discover what has been inherent in the Halakhah from the moment of its inception. The result is not a change or a new construct. It is *a priori* in the sense that it was always present in Torah; it is synthetic only in the sense that it requires a stimulus to prompt the investigation which serves to reveal that which had already been available to the human mind at any time in any age. (1980, 31)

²² Bleich (Bleich and Jacobson 2015, 15) upholds the rabbinic belief that "legal revelation is a once in an eternity phenomenon" with no possibility of a "second, superseding revelation." On the centrality of belief and religious doctrine in Judaism per Bleich, see Bleich 1993; 2013a 1-31.

Bleich presents a Kantian notion of a synthetic *a priori* to model halakhic development.

He writes:

The proposition ‘7 plus 5 equals 12’ is not usually regarded as an empirical generalization. It is a proposition whose truth transcends human experience. Yet, bereft of a physical universe containing objects grouped in sets, the proposition ‘7 plus 5 equals 12’ would never present itself to the human mind. The experience of separately counting the members of two distinct sets, then recombining both sets and finally counting the members of the resultant new set triggers the intellect and serves as an empirical stimulus for the contemplation of what is essentially an *a priori* truth. (1980, 30-1)

Yet, as a master of the Jewish literary tradition, Bleich is astutely aware of the great diversity of textual interpretation and legal opinion, often mutually exclusive and conflicting, within the corpus of rabbinic literature, commentary, and law. Bleich asserts the belief that God deliberately composed the divinely dictated text of the Torah, i.e., the Pentateuch, to be “ambiguous and subject to multiple interpretations” (Bleich and Jacobson 2015, 8-9). God desires human partnership as part of the divine vision for creation, and more specifically, God desires the participation and partnership of Torah scholars in the study, interpretation, and application of Torah to life’s circumstances, including novel situations. Once given, the Torah is no longer in heaven (Deuteronomy 20:12; TB Shabbat 59b), but delivered to the stewardship of Torah sages (Bleich 1977, xiv). Torah study is thus a religious obligation and spiritual discipline of extraordinary responsibility and power. Per Bleich (1983, xvi): “Since, ‘Even that which a conscientious student will one day teach in the presence of his master was already told to Moses at Sinai’ (Palestinian Talmud, *Pe’ah* 2:4) the Torah is, in a fundamental sense, incomplete until that novellum has been formulated.”

For Bleich, the absolute truth of Judaism is thus refracted in the diversity of authentic interpretations and halakhic opinions. In the words of the Talmud (TB ‘Eruvin 13b): “These and those are the words of the living God.” In the words of Bleich (Bleich and Jacobson 2015, 8-9): “The conclusions reached by the inquiring mind of a qualified scholar are, in a fundamental sense, infallible.” Yet, despite this positive theological valuation of conflicting opinions, the poskim of the Jewish community need to follow rules of judicial procedure and decision making to adjudicate between competing interpretations and legal positions in order to arrive at normative praxes (Bleich and Jacobson 2015, 12). Each posek must arrive at a normative conclusion by rigorous analysis, conceptual creativity, due consideration of competing views, and sensitivity to circumstance (Bleich 1977 xvi-ii; Resnicoff 2015, 8).

Legal Positivism and Anti-Contextualism

The discovery – or rediscovery – of new Torah insights, and the formulation of laws and regulations, says Bleich, should not, however, be misconstrued as change: “The divine nature of Torah renders it immutable and hence not subject to amendment or modification” (1983, xiv).²³ In a polemical essay against the “positive-historical” approach to Jewish law associated with the Conservative Jewish movement (see pp. 54-5 above), Bleich writes (1980, 31): “Let it be stated unequivocally: *Jewish law does not change* – the ‘brilliant and dedicated research’ of the scholars of the historical school

²³ See also Bleich 1980, 36.

notwithstanding.” Bleich does not deny the force of historical circumstances or their influence. In his recent “Reflections”, Bleich observed:

Society articulates its desires very forcefully. Jews are quite impressionable with the result that Jewish mores strongly approximate those of the dominant society. Jews of today in disproportionate numbers desire gender parity, personal autonomy, relaxation of impediments to marriage, and religiously unimpeded access to technological advances even on Shabbat. (Bleich 2015b, 126)

He denies, however, that a rabbi of stalwart faith, reverence, “fear of heaven,” and mastery of the rabbinic tradition, is similarly influenced:

...But *vox populi* is not *vox Dei*. Neither public desire nor even public need necessarily reflect the divine plan for regulation of the human condition ... halakhic decision-making is an exercise in applying eternal verities to the case at hand. The result lies in whatever direction halakhic reasoning dictates. Policy decisions and the like dare not be permitted to intrude. That is not to imply that in the decision-making process the halakhic decisor is oblivious to either personal or societal needs and aspirations, whether spiritual or mundane. Ultimately such concerns may influence the stance commended to the observant community. At times, such a stance is described as *da'at Torah* or Torah wisdom. *Da'at Torah* is simply Jewishly informed policy and care should always be taken not to equate such policy formulations with halakhic mandates. (ibid., 126)

Bleich decries rabbis and religious leaders, whom he identifies as students inadequately trained in halakhic methodology, who seize “upon stray precedents, crude analogies, or sheer sophistry,” to yield contemporary halakhic decisions motivated by a preconceived, societally influenced conclusion (ibid., 126-7). Subjectivity, “volitional inclinations,” and the proactive appeal to meta-halakhic ethical values make for a “travesty of the halakhic process.” Conclusions must be “reached in as detached and dispassionate a manner as is humanly possible” (1977, xv). Bleich asserts (ibid.): “The dialectic of halakhic reasoning has always been conducted in the spirit of *yikov ha-din et ha-har* – let the law bore through the

mountain. The law must be determined on its own merit and let the chips fall where they may.” Bleich’s philosophy of halakhah embraces context only in so far as it defines casuistic circumstances. Halakhic method and process themselves are formalistic and positivistic.

Legal Certainty and Judicial Doubt

Although one of the roles of a posek is to follow judicial protocol and rules of decision making to provide clear, definite answers to halakhic queries, there may at times be impediments to legal certainty. The circumstantial knowledge of the case may be tentative and inconclusive. Alternatively, the circumstantial knowledge may be sufficiently trusted to be accepted *pro tanto*, however, several halakhists offer conflicting legal determinations, undermining trust in the affirmation of one approach/answer above others.²⁴ This is especially true when the question at hand impacts upon people other than the questioner, especially when it extends to the whole of the Jewish community, or even to society at large, such as in determinations of identity. Sometimes avoidance of doubt is accomplished by relying on a definitive conclusion of a trusted posek. For Bleich, and many other halakhists, however, more often avoidance of doubt in halakhic practice is achieved by meeting the terms of multiple legal determinations, even if they are mutually exclusive, either by fulfillment of the terms of each view of an affirmative duty, i.e.,

²⁴ In halakhic terminology, circumstantial doubt is called “*safek bemetziyut*,” while legal doubt is called “*safek badin*.”

positive commandment, or by avoiding transgression of the terms of each view of a prohibition, i.e., negative commandment. Depending on the circumstances, and after a reasoned assessment of the cost/benefit of stringency versus leniency, in a case for which some poskim prohibit and others permit, in order to avoid halakhic doubt, it may be preferable to abstain in deference to those who prohibit, rather than rely on those who permit. Bleich asserts that, generally, ideal religious practice requires avoiding halakhic uncertainty. In his words (2017a, 9-10): “The most fundamental expression of ‘*Zeh Keli ve-anvehu* – This is my God and I will beautify Him’ (Exodus 15:2) is scrupulous avoidance of halakhic doubt in performance of *mitzvot*.”

Halakhah and Ethics

For Bleich, Jewish law encapsulates Jewish ethical values. As part of the oral Torah tradition, Jewish ethics is “not only objective, rather than subjective, but is accurately speaking, merely a sub-category of Halakhah” (1985, 58).²⁵ While Bleich is open to the notion of natural morality, i.e., moral principles can be apprehended by reason alone, and cites rabbinic texts supporting such a notion, Bleich rejects natural law as part of Jewish legal theory (1981a; 2013a, 85-124).²⁶

²⁵ In a later version of “Is there an Ethic Beyond Halakhah?,” Bleich (2013a, 135) supports this contention with Rabbi Ovadia Bartenura’s comment on the opening teaching of *Mishnah Avot*, colloquially known as *Ethics of our Fathers* (ad loc., M. Avot 1:1): “‘Moses received the Torah from Sinai...’ indicating that the ethical qualities and moral maxims which are [contained] in this tractate were not the fancies of the Sages of the Mishnah, but that even they were revealed at Sinai.”

²⁶ Bleich (2013a, 112-3) limits a theory of natural law in Jewish thought to the idea that reason alone can and should lead one to accept the authority of and commit to the observance of divine commandments. If reason compels belief in God either through an *a priori* awareness or demonstrable rational argument, then

Similarly, autonomous ethical reasoning, i.e., natural morality, adds little to Jewish law. Bleich explains:

This is reflected in the fear expressed in some rabbinic circles concerning concentration upon “ethical” obligations as distinct from normative Halakhah. The “disdain” of the ethical is born of two considerations. The dictum, “Would that they would forsake Me but observe My Torah (Palestinian Talmud, *Haggigah* 1:7) means nothing other than “Would that they were concerned with normative law rather than with ethical conduct.” Reflected in this concern is the fear that undue concentration upon an attempt to capture the essence of the divine and attendant obligations which transcend normative law may degenerate into antinomianism. The second concern is that ethical reflection can, after all, add but little to what may be discovered by an examination of normative law.... (2013a, 140)

Jewish legal determinations usually break down into three categories: obligatory, permitted, and proscribed. Ethical systems likewise seek to identify, evaluate, and assign actions to five possible categories of ethical valuation: the morally required, commendable, neutral, odious, or proscribed (2000, xv-vi). In Jewish law, since not everything permitted must be done, it is indeed possible to ask whether that which is permitted in a particular context is commendable, neutral, or odious. Often conflicting ethical values underlie this judgment. Thus, Jewish ethics rooted in Jewish law and tradition best help direct such judgments. As opposed to other ethical systems which may be relativist or intuitionist, Bleich depicts Judaism as “religionist,” focusing ethical decision-making as a category of Jewish-legal determination (ibid.). Bleich points out that Jewish law itself, as a self-contained system, entails supererogatory mandates to go between the lines of the law and beyond its letters (2013a).²⁷ Additionally, the Torah

“reasons demands both that man make an effort to discover God’s will as expressed in revelation to man and that man obey the revealed will of God.”

²⁷ Bleich (2013a, 128-31) cites eight categories of talmudic supererogation.

itself (Deuteronomy 28:9) commands: “*ve-halakhta biderakhav* - you shall walk in His ways.” The *mitzvah* of *imitatio Dei*, however, is not precisely formulated in the canons of Jewish law. The Talmud (TB Sota 14a; TB Shabbat 113b) charges a person both to emulate God’s noble characteristics as well as emulate God’s manifest actions as depicted in the Bible and highlighted by the rabbis. However, Bleich (2013a, 141) recognizes that the content of Jewish ethics cannot always: “be captured in precise, unequivocal formulae. This is so, at least in part, because it is so highly relative and because it is both commensurate with, as well as derivable from, an individual’s metaphysical comprehension of the nature of the Deity.” It is for this reason, Bleich (*ibid.*) says that “to the extent that it (i.e., Jewish ethics) is recorded it is recorded in the Aggadah rather than in the Halakhah.” Thus, per Bleich (*ibid.*): “God’s essence can be discovered not from the study of ethics, but from the pages of the Talmud.” And yet, while Bleich understands the ethically shaping role that the study of aggadah plays in the development of the ethical intuition of the halakhist, aggadah itself cannot be utilized as a legal argument per the canons of halakhic decision-making (1997b, 113-14).

Halakhah as Science and Art

Bleich’s denial of subjectivity and innovation in halakhic process leads him to compare halakhah to science. He writes in the introduction to his fourth volume of

Contemporary Halakhic Problems:

This much is certain: There is nothing in these volumes – or in others of this genre – that is innovative in the true sense of that term, just as there is nothing innovative in a treatise on physics. Both disciplines have as their subject matter a closed, immutable system of law – physical in the case of the latter, regulative in

the case of the former. To be sure, the theoretical physicist may propose a previously unexpounded thesis in an attempt to explain the operation of the laws of nature; so also may a *rosh yeshivah* develop conceptual novella in the course of an endeavor to explicate the meaning of the revealed law. In physics, a newly developed hypothesis may have a predictive value with regard to empirical phenomena; likewise, Talmudic novella may yield heretofore unarticulated halakhic propositions. But both in physics and in Halakhah the outgrowth is likely to be marginal to each of the systems viewed in its entirety. In each case the thesis must be tested against the totality of the system. Generally, contradiction by other aspects of the system is tantamount to demonstration of an inherent fallacy in the thesis.

Halakhah is a science in the sense that, in its pristine form, there is no room for subjectivity. That is not to say that there is no room for disagreement. Disagreement abounds in the natural sciences no less so than in Halakhah. But, in picking and choosing between contradictory and conflicting theses, the scientist acts on the basis of the canons of his discipline as understood by his quite fallible intellect, not on the basis of subjective predilections. The halakhic decisor faces the same constrains (1995a, xii-iii).²⁸

Bleich (2015b, 122) also appeals to ideas originating in the philosophy of science to typify what he sees as the science-like methodology of halakhah, what he “somewhat tongue in cheek” dubs “halakhic positivism”: “Judaism sees the entire universe through the prism of Halakhah. Every human act is subject to halakhic scrutiny in one way or another and often in multiple ways. An act or phenomenon that is not circumscribed by Halakhah is, to the halakhic positivist, devoid of meaning” – just as a proposition that cannot be verified or disproved, for the logical positivists, is devoid of meaning.²⁹ Bleich (ibid., 123) disclaims that he intends to take this notion of halakhic positivism too

²⁸ Bleich 2005, xi; reprinted in 2006b; also compares halakhah to science.

²⁹ See also Bleich 2013a, 137. Bleich (2005, xxvii) discusses modes of verification in halakhic positivism. After introducing a “*Hakirah*” – that is, a conceptual dialectic through which a Jewish law is analyzed, Bleich writes: “The conceptual difference between the two formulations is clear, but is there any halakhic difference that flows therefrom? [The thrust of such a question I would term “halakhic positivism,” i.e., the ultimate meaning of a *hakirah* is its verification in a concrete *nafka minah* (i.e., practical difference), just as logical positivism insists that the meaning of a proposition is its mode of verification.]” It is important to note that Bleich’s use of “positivism” here stems from the philosophy of science, and not the philosophy of law, which sees law as empirically rooted in social institutions, and not theoretically founded upon divine command, rational abstractions, or nature, see L. Green 2009.

literally, and yet, at the same time, judges the import of non-halakhic disciplines and genres, like Jewish philosophy, by their relevance to making halakhic concepts understandable.

Although Bleich compares halakhah to science, in great measure to deny subjectivity and historical contingency as legitimate factors in its development and adjudication, Bleich also recognizes that halakhic methodology resembles an art.³⁰ Analytic conceptualization relies on creativity and imagination, and despite formal rules of decision making, halakhic process requires artfulness in evaluating relevant facts, precedents, arguments, and other circumstantial variables affecting the case at hand. Bleich (1995a xiv-v) believes that such artistic talent is “partially innate and partially acquired.” One can train a student in the scientific methodology of halakhah by modelling conceptual thinking, demanding mastery of source material, and teaching the rules of halakhic process and decision making. However, ultimately, the art of halakhah depends on the skill of a particular halakhist: “The decisor must have a keen understanding of the underlying principles and postulates of Halakhah as well as of their applicable ramifications and must be capable of applying them with fidelity to matters placed before him. No amount of book learning can compensate for inadequacy in what may be termed the ‘artistic’ component” (ibid.). Similarly, since Bleich (2013a, 141) does believe that “there is an ethic beyond the recorded Halakhah ... it is precisely for this reason that Halakhah is an art rather than a science.”

³⁰ Bleich compares halakhah to both science and art in Bleich 1995a, xii-iv; 2005, xi-iii; 2006b, 87-9; and 2015b. See also Resnicoff 2015, 14-5.

Bleich also invokes the philosophy of science when he seemingly considers the epistemology and moral axiology of halakhah in light of what has been called theoretic holism, often associated with the thinking of Willard Van Orman Quine (1908-2000). Holism recognizes the interconnectivity of all parts of a whole, and posits that the meaning of individual parts can only be constructed in reference to the whole, including its other constituent parts. Bleich writes:

In order to appreciate the nature of Jewish law, it is necessary to recognize that it constitutes a self-contained system. It is founded upon a complex set of axiological premises, or *grundnorms*, that serve as the matrix of its internal coherence. A philosopher of science understands full well that the entire complement of the laws of nature as posited by science cannot be tested simultaneously. Any given hypothesis can be confirmed or disconfirmed only by assuming, at least for the purposes of that investigation, the constancy of all other axioms comprising the corpus of scientific knowledge.... Much the same is true of the nature of halakhic discussion and dialectic. (Bleich and Jacobson 2015, vii)

Similarly, Bleich (1995a, xix) opines that in halakhah, "...no value is discrete and no teaching stands alone. All individual values are part of a system of values and all particular teachings are part of an all-inclusive corpus."³¹

Bleich's appeal to both logical positivism and Quineian holism raises questions of epistemological coherence. Bleich argues against a conceptualization of halakhic innovation by advancing a theory of "halakhic positivism," in which any new halakhic statements or propositions should be understood as a synthetic *a priori*, as explained above. His embrace of Quineian holism, however, seemingly undermines this conceptualization. Pierre Duhem in *The Aim and Structure of Physical Theory* (1954)

³¹ Bleich 2017a, 7, further locates Jewish mores and values in "*mesorah*" – that is, a mimetic-tradition, "encapsulated in familial, social and cultural experience." For an analysis of the concept of a mimetic-tradition, see Soloveitchik 1994.

advances the underdetermination thesis, positing that theory is always underdetermined by fact for two primary reasons. First, the non-separability thesis asserts that empirical statements are interconnected, and thus, they cannot be singly disconfirmed. Second, the non-falsifiability thesis argues that in the face of disconfirmation, a particular statement can be upheld as true by simply adjusting another interconnected statement. Willard van Orman Quine in “Two Dogmas of Empiricism” (1998), extends Pierre Duhem’s (1954) underdetermination thesis from science as applicable to all knowledge. Quine argues that semantic holism dissolves the Kantian distinction between analytic and synthetic *a priori* propositions.³²

In the philosophy of science, Quineian holism has been construed as an attack on the objectivity of science. Thomas Kuhn in *The Structure of Scientific Revolutions* (1996) appeals to holism and to examples from the history of science to describe scientific method as paradigm dependent, and thoroughly subjective.³³ Historians of science likewise support the subjectivism of scientific method and theory through “historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority” (Shapin 2010). Historical context helps contribute to the disciplinary matrix through which science, and arguably halakhah, develop and by which puzzles and problems are solved. At the same

³² Cf. Putnam 1975 (Orig. pub. 1960), who argues that despite Quine’s cogent arguments, a small class of analytic statements can be salvaged, a notion Shirley 1973 disputes. However, even per Putnam, Bleich’s analogy fails. For more on the analytic/synthetic distinction, see Rey 2016. For more on semantic holism, see Jackman 2017. For the impact of theoretic holism on observation, see Bogen 2014.

³³ Kuhn 1998, in “Objectivity, Value Judgment and Theory Choice,” refines his paradigm theory to soften its subjectivity by pointing to the rationality of science. Competing theories share epistemic values, in addition to the non-rational factors impinging upon scientific method within a paradigm. Cf. Laudan 1984.

time, the success of science, its generation of reliable knowledge, predictive powers, and technological innovations exhibit cumulative progress unparalleled by any other culturally created human institution, thereby tempering, even if not negating, strong claims of paradigm-dependent scientific subjectivity (Laudan 1984; Wootton 2015).³⁴

Although Bleich denies a role to subjectivity and historical contingency in halakhic methodology and process, he does implicitly admit their presence through his subtle qualification of halakhic objectivity. For example, Bleich (1977, xv) writes that halakhic conclusions must be reached “in as detached and dispassionate a manner *as is humanly possible*” (emphasis mine). In a recent article on “The Nature and Structure of Jewish Law,” Bleich (Bleich and Jacobson, 2015, 17) recognizes extra-halakhic subjectivity, yet is confident that qualified halakhic scholar can rise above such influences: “Their charge is to navigate new waters with utmost fidelity to received instructions and to resolve novel issues on the basis of ancient sources. In doing so they have always been keenly aware that they must strive to sublimate subjective predilections in endeavoring to uncover the mysteries of divine reason.” Bleich’s epistemological and axiological assertion that halakhah is a self-contained system limits the influence of contemporary science to clarifying the circumstances of a halakhic query and the application of its halakhic determination. He writes:

The halakhic enterprise, of necessity, proceeds without reference or openness to, much less acceptance or rejection of, modernity. Modernity is irrelevant to the formulation of halakhic determinations. Torah is timeless and eternal. Modern insights may help us to understand and appreciate both principles and minutiae of Halakhah in ways heretofore unknown, but they do not at all effect particular determinations of Halakhah ... Modernity has also given rise to social as well as

³⁴ See Curd and Cover 1998, 83-253.

technological phenomena unknown in days gone by. Those problems and those phenomena must be appreciated by a halakhic decisor functioning in the modern age, but his decisions are made within a transcendental framework in which the term “modernity” has no cognitive meaning. (1995a, xvii-iii)

In recent “reflections,” Bleich (2015b, 134) describes how advances in the biological sciences and medical technology have: “resulted in the emergence of a new academic discipline – bioethics – an interdisciplinary investigation involving specialists in the diverse fields of philosophy, theology, medicine, law, and science, devoted to endeavoring to formulate answers to the questions that are now being raised.” However, for Bleich, Jewish bioethics is synonymous with medical halakhah:

Jewish medical practitioners and patients committed to a Jewish lifestyle must perforce look both to Halakhah for a determination of normative rules and to Jewish tradition for the values against which any contemplated procedure must be examined. ... the challenge lies in teasing out the halakhic issues, uncovering relevant sources and precedents, and reaching normative determinations through the application of halakhic dialectic ... *Bioethics is but a particular and specialized facet of Halakhah.*” (ibid., 135; italics mine)³⁵

An analysis of the epistemological and axiological dimensions of Bleich’s bioethical writings on ART supports his commitment to framing Jewish bioethics as a subset of a self-enclosed halakhic system, yet also shows in what ways changing scientific understanding and technological capability, and their secular legal and bioethical consideration, impact upon Bleich’s own Jewish bioethical analysis beyond simply defining circumstances. In his formulations of halakhic process and conceptual analysis, Bleich invokes comparisons to western legal philosophy and method (Bleich 2005, xv ff.; 2006b; 2015, 126). The very Quineian holism that Bleich embraces

³⁵ Although Bleich denies secular bioethics an influential role in Jewish bioethics, he avers that secular bioethics look to religious traditions, including Judaism, for moral coherence (Bleich 2015b, 135).

regarding the concept of a self-enclosed halakhah also supports the notion that Bleich's formulations and thinking on halakhic method and other matters of interest would be different absent his active knowledge of western philosophy and comparative law.³⁶ The imprint of such knowledge on his above-described formulation of Jewish theology, and his philosophy and methodology of halakhah, itself demonstrates the shaping influence of an expanded epistemology and broadly informed moral axiology.

Table 5.1. Summary of Epistemological and Axiological Findings for Affirmed Intellectual Orientation

Rabbi J. David Bleich's Philosophy and Methodology of Halakhah and Jewish Bioethics	
Philosophy of Halakhah	Legal Positivism.
Historical Contextualism	Anti-Contextualism.
Theory of Change	Circumstances change; Halakhic fundamentals do not.
Scientific Epistemology	Hard science is epistemically special and moderately privileged.
Jewish Moral Axiology	Internally self-sufficient.
Medical Halakhah and Jewish Bioethics	Jewish Bioethics is Medical Halakhah.
Legal Certainty and Judicial Doubt	Strongly avoid doubt.

³⁶ Westreich 2017 argues that the very interaction of civil law and Jewish law regarding family law matters in Israel has substantively changed both.

Rabbi J. David Bleich on IVF/ET and Parenthood

Shortly after the first IVF baby was conceived and born in 1977, Bleich (1978) discussed “Test-Tube Babies” in his quarterly “Survey of Recent Halakhic Periodical Literature.”³⁷ After reviewing the basic science, he declares his stated goal: “We shall here endeavor to delineate the specific questions involved and to show how those questions may be resolved in light of earlier precedents in Jewish law” (Bleich 1978, 86-7; 1981a, 86).³⁸ Per Bleich, the artificiality of the ART is not a halakhic concern per se. Judaism, unlike the Catholic Church, does not adopt a position of reproductive naturalism and natural law: “In the absence of a specific prohibition, man is free to utilize scientific knowledge to overcome impediments of nature” (Bleich 1978, 87).³⁹ Drawing off the contemporary bioethical discussion, Bleich presents the first question as the “moral legitimacy of research involving fetal experimentation” (ibid., 87). At this early stage of IVF in the late 1970s, there was great concern regarding the short and long term health impacts upon the resultant child. Bleich cites Protestant bioethicist Paul Ramsey of Princeton University who regarded IVF/ET as an “immoral experiment” given the unknown potential harms to the child.⁴⁰ Bleich asserts that this position is consistent with the “norms of Torah ethics” (ibid.). His adduced proof-text is a talmudic prescription (TB

³⁷ This was reprinted with minor additions and changes in *Jewish Bioethics* (Bleich 1979c), one of the first collections of articles on Jewish bioethics by an array of scholars of the emerging field, as well as in *Judaism and Healing: Halakhic Perspectives* (Bleich 1981a), a compendium of short articles by Bleich on Jewish medical ethics.

³⁸ Bleich demonstrates that in researching this topic he consulted both popular and professional discussions of the science and medicine. For example, Bleich 1981a, 91n5 laments: “Regrettably, detailed descriptions of the techniques employed in in vitro fertilization have not appeared in scientific journals.”

³⁹ For the Catholic Church’s position on reproductive naturalism, see above pp. 157n48, 172n9.

⁴⁰ See Ramsey 1975.

Yevamot 64b) that a man should not wed a woman from a family with a history of seizures, presumably epilepsy, or of leprosy, in order to avoid producing children who will suffer from these maladies. Bleich avers (*ibid.*, 88): “It follows, *a fortiori*, that overt intervention in natural processes which might cause defects in the fetus would be viewed with opprobrium by Judaism.” Further, Bleich cites Rabbi Moshe Feinstein (*Iggrot Moshe, Even Ha’ezer* 3:12) who rules that women have no marital contract to bear children outside of normal, sexual intercourse, and are not obligated in the mitzvah of procreation, therefore even if halakhically permissible and morally unobjectionable, submitting to IVF would certainly not be required of an infertile Jewish woman, especially since pregnancy and childbirth entail pain and health risks (*ibid.*, 88).⁴¹ Bleich (*ibid.*, 90), however, concludes on a hopeful note that IVF may prove healthy and beneficial in time, thus allowing infertile couples to achieve “the happiness and fulfillment of parenthood”.⁴²

In 1986, at a conference of the Academy of the Kingdom of Morocco on “Ethical Problems Raised by the New Techniques in Human Reproduction,” Bleich (1998a, 204) began his remarks with the statement: “Jewish scholars have not welcomed artificial

⁴¹ More precisely, Feinstein rules that couples who engage in normal sexual relations with the intent of conceiving fulfill the biblical commandment of reproduction, regardless of whether the woman actually conceives, see above, Chapter Four, p. 137. See also Bleich 1995b, 53-6; 1998a, 147-8. Regarding discretionary IVF/ET, Bleich (1978, 86) cites the then Ashkenazi Chief Rabbi of Israel, Rabbi Shlomo Goren, as judging IVF “morally repugnant, although halakhically unobjectionable.” He also cites the then Sephardic Chief Rabbi of Israel, Rabbi Ovadiah Yosef, who gave IVF “qualified approval.”

⁴² Bleich (1981a, 88) asserts that “Jewish ethics knows of no *Miranda* principle which would bar the use after the fact of information obtained by illicit means.” Thus, even if, in line with Ramsey, Jewish ethics would not sanction discretionary IVF until proven safe in terms of both short and long term health outcomes, the morally unconscionable standing of early IVF human experimentation would not proscribe later benefit from the results of said experimentation. See Bleich 1979e.

forms of procreation with a great deal of enthusiasm.”⁴³ Despite the fact that Judaism is pro-family and pronatalist, and that Jewish law does not object to overcoming natural obstacles through artificial means, artificial procreation does not fulfill the divine commandment of reproduction, which, per Bleich, requires a natural sexual act. Jewish meaningfulness is defined as the fulfillment of the divine will as articulated through the mitzvot. Nonetheless, “as a religion of law, the basic principle is that if a specific act or course of action is not proscribed as a contravention of a divine prohibition, or condemned as a violation of the spirit of the law, then, by definition, the action is permitted” (Bleich 1998a, 204). However, Bleich (ibid., 208-13) finds three categories of direct and ancillary problematics that create an overall negative ethical assessment of artificial procreation: violation of marital bonds when donor sperm is utilized;⁴⁴ prohibited destruction of unused embryos; and the duty to avoid unknown and unseen potential harms, once again citing Paul Ramsey’s views on fetal experimentation, as well as adding concerns for other health risks, psychological impacts, and demographic influences.

⁴³ It should be noted that in recent “Reflections,” Bleich (2015b, 136) emphasizes that the findings of Jewish bioethical investigations “can and should be presented differentially to disparate audiences ... My essays in bioethics are not all of the same genre precisely because each is designed for one or another readership.” At the same time, Bleich republished his remarks in Morocco in *Jewish Bioethical Dilemmas: A Jewish Perspective* (1998a) along with essays targeting Torah-learned, observant Jewish audiences, and thus all his writings arguably should be taken as reflective of his thinking along its stages of development.

⁴⁴ Bleich 1998a, 215nn11-2 respectively lists those halakhic authorities who view AID and IVF-D as adultery and those who do not. However, Bleich (208-9) opines that even those poskim who do not believe adultery is transgressed absent a sexual act “would agree” that donor semen “infringes upon the spirit of the law and hence, *de minimis*, is to be regarded as a form of quasi-adultery or prostitution.”

IVF/ET and Maternity (Non-Surrogacy)

While Bleich does not directly address the question of maternal identity in his 1978 article, it is implied that the woman who bears an IVF/ET child is unquestionably the halakhic mother. This conclusion also directly follows from earlier halakhic and Jewish bioethical discussions of artificial insemination for which the birth mother is assumed to be the legal mother (Bleich 1981a, 80-4). In a later article, Bleich (1991) cites the opinion of Rabbi Eliezer Waldenberg (1990, vol. 15, no. 45) who in 1980 suggested that an IVF child has neither a halakhic mother nor father. Waldenberg presents three arguments for his position: one, in vitro conception is an unnatural process that relies on the “intermediacy of a third power”; two, non-sexual reproduction inherently separates conception from genealogy; and three, the removal of the ovum prior to conception likewise severs a woman’s maternal genealogical connection to her own gametes, even if the same woman subsequently gestates and bears the child. Bleich (1991, 82-3) judges Waldenberg’s arguments, “which are not based upon precedent or analogy to other halakhic provisions,” as appearing “to be without substance.” Bleich disputes the idea that a Petri dish constitutes a “third power” since neither the container nor its culture medium directly effects fertilization.⁴⁵ Arguments two and three are deemed by Bleich as unsupported, conclusory contentions. No evidence is brought to connect genealogy solely

⁴⁵ Bleich 1991, 96n6, recognizes that culture mediums affect cellular metabolism, but nonetheless supports his objection to considering a Petri dish a “third power” through a more sophisticated scientific understanding and attendant legal analysis.

with natural conception, while contrary to Waldenberg, there is rabbinic-textual evidence that parturition itself determines maternity.⁴⁶

IVF/ET and Paternity with Husband-and-Donor sperm

While in his early essay on “Test-Tube Babies,” Bleich (1978) doesn’t directly address maternal identity, Bleich does explicitly address the question of paternal identity and leaves the matter unresolved. He asks:

Does a filial relationship exist between the father and a child born in this manner? Does the child enjoy the status of the father as a kohen or levite? Is the child considered to be an heir to his father’s estate? These questions have been analyzed with regard to children born of artificial insemination and such discussions appear to be equally germane to the case of children born as a result of *in vitro* fertilization. In any event, the resolution of these questions has no bearing upon the permissibility of *in vitro* fertilization. (ibid., 89)

Although Bleich does not answer these questions, he unequivocally proscribes IVF with donor sperm: “Such procedures can, of course, be sanctioned only if the sperm of the husband is used exclusively. Under no circumstances should the sperm of any person other than the husband be utilized” (Bleich 1978, 89; 1981a, 89).⁴⁷ This position also follows from earlier halakhic and Jewish ethical assessments of AID. Bleich reports that even “those authorities who do not regard A.I.D. as adultery nevertheless view it as a repugnant violation of the marital relationship which entitles the husband to divorce his wife without being obliged to satisfy the financial obligation specified in the marriage contract” (Bleich 1981a, 81-2).

⁴⁶ Bleich 1991, 96, also cites and dismisses the opinion of Rabbi Judah Gershuni (d. 2000) (1979; 1980, 361-7), who similar to Waldenberg, argues that an IVF child has neither halakhic mother nor father.

⁴⁷ Bleich 1981a, 89, asserts that safeguards to avoid the inadvertent mix-up of gametes must be established for IVF procedures.

In a later article, Bleich (1991, 83) clarifies that “there is a significant disagreement among rabbinic authorities with regard to whether a paternal relationship may occur as a result of artificial insemination or whether such a relationship can arise only as the result of a sexual act.” In a footnote to this sentence, Bleich credits *Sefer Mitzvot Katan* of Rabbi Isaac of Corbeil, who ascribes fatherhood to the man whose ejaculated semen on a bedsheet impregnates a woman, as the primary source for identifying the sperm donor as the halakhic father (see Chapter Four, pp. 155-6). Bleich proceeds to cite fifteen halakhic authorities who rule accordingly, as well as five authorities who oppose, and one who remains in doubt (Bleich 1991, 96n8).⁴⁸ It is precisely because of the likely designation of the sperm donor as the halakhic father that

⁴⁸ Per Bleich 1991, 96n8 (chronological and minor citational expansions have been added and minor errors corrected):

1. The views supporting paternal identification for sperm donor: Isaac of Corbeil (d. 1280), *Hagahot Semak*, referenced by Judah Rosanes (d.1727), *Mishneh leMelekh, Hilkot Ishut* 15:4; Joel Sirkes (d. 1640), *Bach, Yoreh De'ah* 195; and Samuel Phoebus (d. 1706) *Bet Shmuel, Even Ha'ezer* 1:10. Other support includes: Moses Lima (d.1670), *Chelkat Mechokek, Even Ha'ezer* 1:6; Simeon ben Zemach Duran (d. 1444), *Teshuvot Tashbatz*, 3:263; Aryeh Leib ben Asher Gunzberg (d. 1785) *Turei 'Even, Chaggigah* 15a; Jonathan Eybeschütz (d. 1764), *Benei Ahuvah, Hilkhhot Ishut* 15; Jacob Ettlinger (d. 1871), *Arukh laNer, Yevamot* 10a; *Mishneh leMelekh, Hilkhhot Issurei Bi'ah* 17:13; Jacob Emden (d. 1776) *She'ilat Ya'avetz*, 2:97; Moses Schick (d. 1879), *Maharam Shik 'al Taryag Mizvot*, no. 1; Malkiel Zvi Tannenbaum (d. 1910), *Teshuvot Divrei Malkiel*, 2:107; Shlomo Zalman Auerbach (d. 1995), *No'am*, I (5718/1958), 145-166, especially 155; Israel Zev Mintzberg (d. 1962), *No'am*, I, 129; Joshua Baumol (d. 1948), *Teshuvot 'Emek Halakhah*, 1:68; Avigdor Nebenzahl (b. 1935), *Assia*, V (5746), 92-93; and Ovadiah Yosef (d. 2013), quoted by Moshe Drori (b. 1949), *Tehumin*, I (5740), 287, and Abraham S. Abraham (b. 1935), *Nishmat Avraham, Even Ha'ezer* 1:5, sec. 3. Broyde (1988, 120n23) adds: Ovadiah Yosef, *Yabi'a Omer* 1:6; Yechezkel Yaakov Weinberg (d. 1966), *Seredei Eish* 3:5; Moshe Feinstein (d. 1986), *Igrot Moshe, Even Ha'ezer* 1:10; Menashe Klein (d. 2011), *Mishneh Halakhot* 4:160; Eliezer Waldenberg (d. 2006), *Tzitz Eliezer* 27:3; Yoel Teitelbaum (d. 1979), *Divrei Yoel* 2:110;
2. Views who do not identify sperm donor as father: David HaLevi Segal (d. 1667) *Taz, Even Ha'ezer* 1:8; Chaim Yosef David Azulai (d. 1806), *Birkei Yosef, Even Ha'ezer* 1:14; Ovadiah Hedaya (d. 1969), *No'am*, I, 130-137; Moshe Aryeh Leib Shapiro (d. 1972), *No'am*, I, 138-142; and Ben Zion Uziel (d. 1953), *Mishpetei Uzi'el, Even Ha'ezer*, no 19, reprinted in *Piskei Uzi'el* (Jerusalem, 5737), pp. 282-283. However, Broyde 1988, 120n23 notes that *Taz* (ibid.) may not dispute ascribing paternity to the sperm donor, but rather does not believe a child born as a result of a “bed-sheet conception” fulfills the commandment of procreation.
3. Leaves the matter unsettled and in doubt: Mordechai Yaakov Breisch (d. 1976), *Teshuvot Chelkat Ya'akov*, 1:24.

Bleich strongly argues against and proscribes both AID and IVF with semen donated by a man other than the husband. In order to avoid future consanguineous marriages, among other halakhic concerns and ramifications, a person needs to know who are his or her natural parents. AID and IVF-D introduce lineage confusion and thus are to be avoided (Bleich 1978; Bleich 1991, 82, 89).

Epistemological and Axiological Dimensions: Bleich on IVF/ET and Parenthood

Several observations can be made regarding the epistemological and axiological dimensions of Bleich's early writings on IVF (and AI). First, Bleich aspires to thoroughly familiarize himself with the medical and scientific background of the topic under consideration, thereby enabling greater sophistication and nuance of analysis. He demonstrates that he seeks scientific understanding and information in both popular and professional scientific resources. Although there is indication that twentieth-century American, European, and Israeli poskim also sought understanding of the medical context, there is no comparable representation in their writings that they thoroughly educated themselves through researching scientific literature. Scientific competency and literacy is a distinguishing factor between medical-halakhic literature and Jewish bioethical writings.

Second, Bleich also shows familiarity with non-Jewish religious ethics and secular bioethical literature. For example, he contrasts the Catholic church's insistence on reproductive naturalism with Judaism's theoretical embrace of artificial interventions. Additionally, his dispositive citation of Paul Ramsey's bioethical views on fetal-

experimental therapies demonstrates the influence of general bioethics on the development of his own thinking.⁴⁹ Minimally, familiarity with the concerns considered by secular and non-Jewish religious bioethics helps Bleich better “issue-spot” as part of his own process of Jewish bioethical analysis.⁵⁰ Maximally, such familiarity will directly influence Bleich’s own thinking, as it may have upon reading Paul Ramsey. Further, this cross-fertilization, as it were, of acute scientific understanding, general bioethical awareness, and informed Jewish-legal analysis represents a synergistic modality of religion and science dialogue.

Third, Bleich displays axiological conservatism in tune with the conservatism of halakhic authorities whose writings he studies and cites. Although Bleich understands Jewish bioethics and medical halakhah as being synonymous in a fundamental sense, he does at times use the differentiated language more common to Jewish ethics rather than the more common conclusory binary of permitted/recommended or prohibited/not recommended of codifactory halakhah. For example, he speaks of the halakhically permissible and morally problematic and odious. While his axiological conservatism at times limits the progressive application of scientific knowledge and technological capability, he displays openness to their utilization when halakhically permissible and morally unproblematic.

⁴⁹ Bleich’s aforementioned talmudic proof-text counselling the consideration of family health history when choosing a spouse in and of itself would unlikely lead to Bleich’s judgment of IVF as unethical fetal experimentation.

⁵⁰ Bleich 2005, xv, identifies “issue-spotting,” a term borrowed from law school education meaning the ability to identify with precision legal problematics in a case study, as a necessary skill for a halakhist.

Finally, maternal and paternal designations in cases of IVF/ET display minor complexity. The identification of parenthood remains the monist standard of a unique father and mother, with little thought applied to the causal basis of said standard. Bleich and the halakhists he studies consider the possibility that the new assisted reproductive technologies may complicate parental identifications, possibly – though rejected by Bleich – even denying a child halakhic parents and denying parents an unambiguous genealogical connection to their biological child.⁵¹ However, regarding IVF/ET, even the failure to meet a monist standard of natural parenthood does not introduce a pluralist standard, which comes into Bleich’s consideration of gestational surrogacy.⁵²

Table 5.2. Summary of Attitudes Toward ART and Definitions and Account of Parenthood

Rabbi J. David Bleich’s Jewish Bioethical Views on Parenthood and Procreation Through AI/IVF	
Attitude Toward AI and IVF	AIH and IVF-H: Negative Attitude. Tentatively forbidding. AID and IVF-D: Prohibiting.
Definition of Maternity	Monist Causal Account of maternity.
Account of Paternity and its Definition	Monist Causal Account of paternity. Paternity is always sperm donor.

⁵¹ In Bleich’s (1991, 96n8) aforementioned list of halakhic authorities’ positions on paternal identification in a context of AI and IVF, he references, but does not discuss, Rabbi Moshe Aryeh Leib Shapiro (1958, 138-142) who in a case of AI with husband’s sperm credits the technician/physician who injects the sperm as child’s halakhic father. Per Shapiro, the injector causally transgresses the prohibition of adultery by injecting sperm into the vaginal tract of a woman married to another man.

⁵² In 1972, Bleich addressed the question of maternal identity in a case of ET after natural conception, before IVF/ET with a surrogate became a live issue. In that earlier context, he did indeed begin to consider a pluralist standard of maternity that would become more pertinent with the advancement of IVF/ET. See Bleich 1972.

Rabbi Michael J. Broyde's Epistemological and Axiological Orientation

Rabbi Michael J. Broyde's prolific writings present a profile of a legally oriented scholar deeply interested in the relationship of law, religion, and society, especially as they intersect in both Jewish law and United States law, often in comparison to one another.⁵³ Broyde has often simultaneously served as a professor of law at Emory University, congregational rabbi in Atlanta, and rabbinical court justice in New York City, perhaps explaining his particular interest and expertise in comparative and Jewish family law.⁵⁴ His scholarship also has entailed Jewish-legal explorations into and expositions upon the interactions of science, technology, and society, including numerous publications on the new assisted reproductive technologies. Broyde writes for both professional and popular, secular-academic and Jewish journals, and like Bleich, has made accessible to a broad readership the technical and arcane discussions of Jewish law on issues of contemporary relevance and resonance. Broyde consistently utilizes his analyses and presentations of discrete topics to teach more generally about Halakhic methodology and Jewish legal process. Broyde's writings demonstrate that he is self-reflective about his philosophy and methodology of Jewish law and ethics, and that over time, his views on these topics have developed. His writings show a growing awareness of how epistemology and moral axiology – knowledge and ways of knowing, ethics and values – impinge on the development of Jewish law, especially in light of sociological

⁵³ See Broyde 2017a.

⁵⁴ Rabbinical courts today in America primarily focus on matters of family law and personal identity through the administration of Jewish religious divorces and conversion processes. They also serve as arbitration panels in monetary disputes, as well as provide other religious administrative services, often in partnership with the Israeli Rabbinate, see Broyde 2017b. Congregational rabbis, likewise, often deal with family law matters and issues of personal status.

and technological changes. In order to assess the epistemological and axiological dimensions of Broyde's bioethical writings on ART, we first more generally consider Broyde's philosophy and methodology of halakhah and ethics, especially with regard to scientific and technological advancement.

Interpretive License and Judicial Discretion

As an Orthodox Jewish scholar, Broyde's fundamental theological commitments are similar to those of Bleich, with whom Broyde himself studied to become an ordained rabbinical judge.⁵⁵ Although, unlike Bleich, Broyde does not often write on classical Jewish philosophical and theological topics, Broyde affirms in his writings the divine nature of the Sinaitic revelation of the written and oral Torah, as well as other normative theological doctrines of Jewish Orthodoxy.⁵⁶ Broyde, however, does diverge from Bleich regarding the notions of innovation and change within Jewish law. Whereas Bleich fundamentally and consistently denies the idea of change and innovation in Jewish law, as Broyde's own thinking on the philosophy and methodology of halakhah matured, he came to embrace and explicate change and innovation in the development of Jewish law. For example, writing in 1988 on, "The Establishment of Maternity and Paternity in Jewish and American Law," Broyde states in his conclusion: "Jewish law is objective and unchangeable" (Broyde 1988, 118), by which he seemingly means that the principles of

⁵⁵ Broyde received "*Yadin Yadin*" ordination at the Rabbi Isaac Elchanan Theological Seminary in its postgraduate institute for the study of talmudic jurisprudence and family law, which is headed by Bleich, see Broyde 2005d, 299; 2016; 2017a; Bleich 2017b.

⁵⁶ For example, see Broyde 2010, 133: "Though Torah is God-given, halacha is neither static nor stagnant; rather, it demands human involvement..."

Jewish law remain unchanging, even if their circumstantial application results in variety or novelty. Broyde states this explicitly in a 2000 article on, “*Halachic Responses to Sociological and Technological Change*”:

Although halacha appears to change, insofar as the answer provided to an identical question might be different in different generations or locations, it is actually the same principles now being applied to new circumstances. ... it is vital to conceptually distinguish between changes in the *principles* used by halacha and differences in *results* provided by halacha to questions based on novel social and technological situations. (Broyde and Wagner 2000, 95-98)⁵⁷

However, in 2010, Broyde published a monograph on, “Innovation in Jewish Law: A Case Study of *Chiddush* [i.e., novel interpretation] in *Havineinu* [i.e., a short form of the ‘*Amidah*, the principal daily Jewish prayer],” in which he presents a more nuanced theory of innovation and change in the evolution of Jewish law.⁵⁸ In this work, Broyde continues to uphold the idea that apparent changes in Jewish law born of sociological shifts and technological advances are not to be confused with fundamental changes, but, rather, are to be understood as novel applications of ancient principles in radically new circumstances (Broyde 2010, 4, 134). At the same time, Broyde propounds a robust theory of halakhic change and innovation through “*chiddush*” – that is, novel talmudic commentary and legal interpretation.⁵⁹ Broyde opens his book’s “Preface” by acknowledging and rejecting different popular views on change in halakhah:

⁵⁷ See also Broyde and Jachter 1993, 89: “Advances in technology require *halacha* to apply previously developed principles to new settings.”

⁵⁸ Explaining the reasons for choosing the *Havineinu* prayer as the case study through which to explore change and innovation in Jewish law, Broyde (2010, 6) writes: “It is an area far removed from ideological controversy, which given the potentially charged nature of any discussion about the process of change in Jewish law, should decrease the intensity of the heat and debate and increase the clarity of the light.”

⁵⁹ The word “*chiddush*,” referring to interpretive creativity, is a well-known term in the cultural lexicon of the *Beit Midrash* – i.e., the Jewish study hall, as well as a *yiddishism* referring to a discovery, innovation, or novelty. See Weiser 1995, 14, s.v. “chi-dush.” For another exposition of the role of *chiddush* in Jewish scholarship, see Lamm 2002, “The Future of Creativity in Jewish Law and Thought,” 3-16.

One of the most controversial discussions raging in both the academic and popular discourses about Jewish law, halacha, addresses the question of how Jewish law undergoes change, if in fact, it does. A survey of the various opinions seems to portray few options as normative. One belief is that Jewish law does not change. An opinion on the other end of the spectrum is that the rabbis can change Jewish law in well-nigh any way they wish. A third school of thought emphasizes Rabbinically enacted decrees and ordinances (*takkanot* and *gezeirot*) as modern tools of change and development within Jewish law.

In fact, while all of these approaches contain elements of truth, both as a matter of theory and as a matter of practice, none of them provides any sort of true image of how substantive Jewish law actually functions. Jewish law has been neither rigid throughout the ages, nor malleable to every desired outcome; Post-Talmudic Rabbinically-enacted decrees and ordinances have played only a minor role in amending Jewish law in the last millennium. In fact, the primary mechanism that causes change in Jewish law is not accurately described by any one of these approaches. (Broyde 2010, 1)

Broyde contends that there are two ways that a fixed-legal system can change: legislation and legal interpretation. In United States law, for example, only twenty-seven amendments have met the high procedural and legal threshold to alter the Constitution. However, there has been abundant constitutional change through legal interpretation and judicial rulings (*ibid.*, 2). While post-talmudic legislation is limited by the halakhic system to the above-mentioned, rabbinically enacted communal decrees and ordinances, such instances have been few and far between. At the same time, Jewish legal interpretation has throughout the evolution of Jewish law introduced moderate, gradual change, and, on rare occasion, more radical transformations. Broyde explains:

The Sages of the Talmud, and their modern day heirs, are charged with the duty to study, infer, and apply halacha, answering questions of Jewish law for its adherents in every generation. Without explicitly invoking change, each scholar and each generation has an inclination to accept the validity of particular types of arguments or particular sources. Thus, normative halacha changes continuously through the process of study and analysis. Sometimes this change is through the decision of an authority that one approach – previously thought incorrect – is in fact correct; sometimes it is through the reinterpretation of sources motivated by the search for truth; sometimes it is because economic pressures force the re-

evaluation of the sources; and sometimes Jewish law responds to a new reality, as technology, society and social conditions, or scientific knowledge change. (ibid., 2-3)

Per Broyde, it is precisely the interpretive license and judicial discretion responsibly applied by the halakhist that drives the engine of innovation, change, and the evolution of the halakhic system.

Evolutionary Halakhah and Modest Contextualism

Broyde identifies three contexts and causes that facilitate halakhic change through the process of legal interpretive innovation: abstract study, technological change, and social and economic changes. Like Bleich before him, Broyde too points to the ambiguities inherent in Torah texts, the plurality of inconclusive opinions engendered by their disambiguation, and the need to conceptually analyze talmudic and halakhic texts, their commentaries, and the case law of the responsa literature to arrive at adjudicating halakhic rationales and principles. Although the Torah is of divine origin, once revealed to the Jewish people, it requires human partnership through study, interpretation, and application to bring it to its teleological fulfillment (ibid., 133). Unlike Bleich, however, Broyde explicitly recognizes this process as innovative and evolutionary:

Clearly, interpretation is inherent within halacha; it is a necessary and natural process, not a conscious, unbounded act of modification. ... Ultimately, the difficulties within the text ... lead to [innovative] interpretation and adaptation ... Jewish law's evolution – the incremental change in practice that anyone who has studied halacha clearly sees – is a result of incremental innovation caused by the interplay of changing realities. (ibid., 136, 140, 149-50)

Like Bleich, Broyde relies upon the religious, ethical, and professional integrity of the halakhist to interpret as part of a “faithful search for truth,” respecting the original intent

of rabbinic texts, and burdened by both accountability to the received tradition and the normative responsibility to respond to present individual and/or communal questions and needs (ibid., 135-6,140-1).

As mentioned above, in his monograph on innovation in Jewish law, Broyde (ibid., 4, 134) is careful to say that halakhic responses to technological advances and socio-economic shifts do not represent fundamental changes to halakhah, but merely are examples of poskim plying unchanging halakhic principles to novel circumstances. Broyde has indeed penned articles demonstrating this qualification. For example, in an article on, “Shaving on the Intermediate Days of the Festivals,” Broyde (1996b) notes that technological advances, social changes, and economic pressures coalesced encouraging halakhists to find legal license for shaving at a time, i.e., the intermediate days of a festival, traditionally rabbinically proscribed. The invention of electrical shavers allowed for a halakhically permissible way to remove facial hair due to technical, hair-splitting distinction between the forbidden shave of a straight-razor and the permissible hair-cutting action of an electrical shaver.⁶⁰ Changing cultural norms in America led to the socialization of being clean shaven among religiously observant Jews. Additionally, work-place expectations to appear kempt and clean shaven added economic pressures to shave daily. All three led to a reanalysis of the original rabbinic decree that

⁶⁰ Shaving with a straight-razor is halakhically proscribed by Leviticus 19:27: “You shall not round off the side-growth on your head, or destroy the side-growth of your beard,” and Leviticus 21:5: “They shall not shave smooth any part of their heads, or shave the side-growth of their beards, or make gashes in their flesh. Midrash Sifra, Kedoshim 6, and TB Makkot 21a reconcile the apparent redundancy of these two verses by positing that the second verse narrows the interpretation of the first verse, i.e., only destroying by shaving is proscribed. However, other forms of destruction, like cutting with a scissors, are excluded from the prohibition. Many electrical shavers are deemed to work by scissor-cutting action.

prohibited shaving on the intermediate days of a festival. In such a case, Broyde argues, the halakhic principles didn't change, just their reassessed application.

Similarly, Broyde (Broyde and Wagner 2000) explores the activities of showering and smoking on festival days, for which showering was traditionally prohibited and smoking permitted due to the idea that most people did not regularly bathe in past eras, while most people considered smoking salubrious and indulged in it as part of their festive enjoyment. Sociological change driven by advances in household plumbing technology and new understandings of the dangers of smoking have reversed common practice, thus, arguably creating, per Broyde, contemporary permission for showering and a new prohibition for smoking on festivals. Broyde claims that these are not truly examples of fundamental halakhic change since the permitting halakhic principle of “*shaveh lechol nefesh* – of benefit to all” has remained intact, only the circumstances of its application in the cases of showering and smoking have reversed.

Broyde also argues thus in a series of articles on halakhic assessments of electricity and electrical technologies as they pertain to the laws of the Jewish Sabbath. Here too the essential question is how to apply the unchanging halakhic principles of Shabbat to new circumstances born of novel technologies (Broyde 1992, 1993a; Broyde and Jachter 1991, 1993, 1995). Similarly, the advent of printing and the proliferation of prayer books, along with safer environments, changed the need for short form prayers (Broyde 2010). Thus, technological, social, and economic factors generate circumstantial, but not fundamental, change and innovation.

This caveat, however, is somewhat in tension with Broyde's strong theory of interpretive innovation in which he does recognize bona fide halakhic changes. Broyde argues that, "a variety of factors, both internal and external to halachic texts, drive intellectual innovation" (Broyde 2010, 133). Study leads to interpretation, which relies on conceptual innovation, introducing new applications, adaptations, and novel understandings of and approaches to the law. Since Torah study is an ongoing religious duty demanded of Jewish scholar and layman alike, the entire halakhic system is set up for ongoing development.

Broyde teases out the internal and external factors driving interpretive innovation. External factors include the aforementioned technological, social, and economic conditions. Broyde recognizes that, "taking the rules found in one technological setting and applying them to another setting is always very difficult. Such action is subject to disagreement about which [legal] analogies are apt and which analysis is accurate" (ibid., 4). Similarly, Broyde highlights the influence of acculturation: "As Jews move through different lands, questions arise about the application of halachic rules to new surroundings and varied cultures. The cultural diversity and wider economic opportunities encountered by the Jewish community certainly have increased in light of emancipation" (ibid., 4). However, the modern era not only brought Jews political emancipation and social acculturation, but also intellectual enlightenment, i.e. access and exposure to modern modes of thinking and the accumulating knowledge of western thought.⁶¹ In the idiom of this dissertation, technology and sociology affect not only

⁶¹ See Katz 1971, 1973.

circumstances, but also epistemology. For example, in an article on, “Electrically Produced Fire or Light in Positive Commandments,” Broyde (Broyde and Jachter 1993, 89) writes: “Advances in technology require halacha to apply previously developed principles to new settings. Frequently, in the process of drawing distinctions based on advances in technology, it is necessary to distinguish between terms that the classical texts did not explicitly separate.” Thus, the advent of different kinds of electrical lights, i.e., incandescent, halogen, LED, etc. . . . , compelled halakhists to factor out the halakhically significant qualities of fire, light, and heat to better ascertain how to conceptually categorize and apply Jewish law to these new technologies. These distinctions would have not come to mind when the sole source of visible radiance is fire. Technology and scientific understanding thus change not only circumstances, but expand and transform halakhic conceptualization. The imprint of scientific understanding on halakhic conceptualization will be shown below more strikingly in an epistemological and axiological consideration of Broyde’s own halakhic analysis of AI and IVF/ET. Additionally, as applied to Bleich as well, Broyde’s training and experience in secular legal thinking and analysis, and philosophy of law, are arguably themselves contributing factors to an epistemology that capacitates Broyde to conceive of and articulate his philosophy of halakhah and his theory of interpretive innovation.

Broyde (2010, 133-50) also analyzes the internal factors propelling interpretive innovation. He identifies the main ones as: one, the abstraction of case law and the extrapolation of its underlying legal concepts and principles toward novel applications; two, internal textual and legal ambiguity and inconclusive rulings; and three, textual and

legal contradictions. The case law of classical rabbinic texts and Jewish responsa literature is voluminous. In order to build off of extent case law, and apply its foundational legal concepts and principles to novel circumstances, sensitive analysis is required to separate out casuistic contingency and generalizable conceptualization. Halakhists often emerge from this process with different accounts, thus growing the legal corpus through innovative interpretation (ibid., 135-6; 139-140). Also, talmudic and legal texts, and their commentaries, will often contain ambiguous phraseology and unclear passages. Sometimes, there will be a continuity of terminology, but with variances in precise meaning. Generations of commentators will attempt to disambiguate such texts, further expanding the rabbinic-legal corpus. Additionally, more often than not, the Talmud serves as a repository of Jewish legal opinion, usually without resolving the plurality of interpretive approaches and legal positions. Here too commentators and codifiers stake positions, growing the body of halakhic commentary and rulings. Ambiguities within the writings of these commentators likewise fuel supra-commentary and further development (ibid., 136-7). Finally, any large collection of ancient texts, generations of commentary, and extensive codificatory and case law is likely to be filled with apparently contradictory material. There are two primary methods of resolving contradictions: one, harmonizing texts and/or laws by differentiating between them or by minimizing and resolving their conflicts; two, by choosing one over the other through decisive judicial ruling. Halakhists will often differentially employ both methods, leading to more nuanced, complex legal understandings (ibid., 134, 140-44).

In sum, Broyde proposes a theory of evolutionary halakhic development and modest contextualism by which the natural process of textual interpretation grows the Jewish legal corpus, and advancing technologies, changing sociologies, and economic pressures induce creative applications of Jewish law to novel circumstances. Throughout, *chiddush* – Jewish legal innovative interpretation expands and develops the halakhic system and allows it to govern Jewish life in all its variety in constantly changing circumstances. The question remains, however, as to the epistemological and axiological influences of advances in scientific understanding, technological capability, and socio-economic shifts on the evolution of halakhah within this theoretical framework.

Legal Certainty and Judicial Doubt

Broyde, like Bleich, aspires to halakhic certainty and the avoidance of judicial doubt. However, Broyde’s writings often convey an easier embrace of that which is novel and previously unknown, especially with regard to ART. In an article on, “Modern Reproductive Technologies and Jewish Law,” Broyde concludes:

There is a natural tendency to prohibit that which is unknown, and that tendency is itself a morally commendable virtue lest one engage in activity that is prohibited because its consequences are not understood. However, permanently prohibiting that which one does not understand is a regrettable state of affairs. The Jewish tradition imposes a duty on those capable of resolving such matters to do so. (Broyde 2005d, 316)⁶²

⁶² See also Broyde 1999a, 21.

This statement was shared, not in regard to more normative forms of ART, like AI and IVF/ET, but in regard to cloning. Similarly, in an article on, “Genetically Engineering People,” Broyde (2001a, 899) stakes out a position in favor of therapeutic genetic engineering as a legitimate expansion of the halakhic duty to heal.⁶³ In the realm of ritual law, Broyde argues that there is a halakhic preference to perpetuate traditional observance in the face of opportunities for innovation and change born by technological advances. However, if technological advancements provide demonstrable human benefit and spiritual enhancement, there is license to embrace the new (Broyde and Jachter 1993, 124-6). Presumably, Broyde’s comfort with innovation, at least partially, stems from his evolutionary model of halakhah and modest contextualism, as well as his moral axiology.

Halakhah and Ethics

While Broyde has written extensively on the philosophy and methodology of halakhah, he has not yet published a more comprehensive analysis of the relationship of halakhah and ethics. However, he does often refer to ethics in his legal writings. For example, at the beginning of “Modern Reproductive Technologies and Jewish Law,” Broyde writes:

Jewish law insists that new technologies – and new reproductive technologies in particular – are neither definitionally prohibited nor definitionally permissible in the eyes of Jewish law, but rather are subject to a case-by-case analysis. Indeed, every legal, religious, or ethical system has to insist that advances in technologies

⁶³ See also Broyde 2004, 56-58. Like Bleich, Broyde contrasts the procreative naturalism of Catholic Church doctrine with Jewish theologically mandated, human interventionism.

be evaluated against the touchstones of its moral systems. In the Jewish tradition, that touchstone is halakhah, the corpus of Jewish law and ethics. (Broyde 2005d, 295)

Like Bleich, Broyde locates the halakhic system as the source of Jewish ethics. However, Broyde's evolutionary model of halakhah and modest contextualism also subject legitimate halakhic positions to independent ethical scrutiny. For example, in his essay, "Jewish Law and the Abandonment of Marriage: Diverse Models of Sexuality and Reproduction in the Jewish View, and the Return to Monogamy in the Modern Era," which is part of a collection of articles that he co-edited on, *Marriage, Sex, and Family in Judaism*, Broyde (2005b) reviews permissible halakhic alternatives to marriage and models of sexuality and reproduction, such as concubinage and polygamy. In explaining why halakhic Judaism in the modern era ultimately legitimated monogamy as its sole model for companionship, sexuality, and reproduction, Broyde writes:

The Jewish community voted with its feet by adopting a model of practice that validated monogamy with mutual consent or fault-based exit rights, and that functionally prohibits all forms of sexual activity outside the confines of monogamous marriage. . . . The life of law is experience, and the Jewish experience has concluded that monogamy with mutual consent or fault-based exit rights works. Jewish law did not reach (and still has not really reached) that conclusion. Jewish life did. (Broyde 2005b, 106)

Whether the moral axiology at play here is deontological, virtuous, consequentialist, or pragmatic is left unsaid. However, what is clear here is that halakhah is not axiologically self-sufficient, but that experiential and theoretical knowledge, including Jewish meta-

ethics, as well as social factors, impinge on axiological commitments and their real life consequences.⁶⁴

In the idiom of the philosophy of halakhah and ethics, there does exist an ethic independent of halakhah, and its valid applicability is recognized. However, Broyde, akin to Bleich (1985, 1987, 2013a) and Lichtenstein (1975) before him, would likely locate that axiological allowance within the larger halakhic system itself. In an article on, “Happiness – and Unhappiness – as Legally Significant Categories in Jewish Law,” Broyde explains that throughout the development of Jewish law, poskim contented with cases for which textual analysis and logical reasoning were insufficient to decision making. Second-order rules of decision making were thereby innovated and established, many of them guided by a halakhic axiology of meta-ethics and juridical values. Broyde observes:

There are more than fifty such rules, and there is a great deal of interplay among them ... Jewish law invokes principles that are neither deeply analytic nor probing of the truly correct opinion; rather, it uses social principles of community, such as the needs of the community, the fear of dire financial loss, or conduct permitted for the sake of the ill. Sometimes, one of the second-tier rules invoked is the promotion of happiness (or even unhappiness). (Broyde 2014, 49)⁶⁵

Personal happiness as an ethical and legal-regulative value certainly pertains to issues of Family Law, as well as to the bioethics concerning ART, given the existential

⁶⁴ Perhaps, it is Broyde’s appreciation of the social complexity of Jewish law and ethics that leads Broyde to often defend popular practices among the observant laity against more stringent demands born of narrow, legal interpretations and rulings. For example, in a monograph on the halakhah pertaining to married Jewish women covering their hair, Broyde (2009, 177) upholds the position espoused by many medieval talmudic commentaries, “that the prohibition for married women to go with uncovered hair is a subjective rabbinic violation dependent on societal norms of modesty (and *dat yehudit*), not a biblical prohibition (and *dat moshe*).”

⁶⁵ See also Broyde and Bedzow 2014, 3-4.

unhappiness often experienced by couples struggling with infertility.⁶⁶ As one of the second-order, adjudicative values considered in bioethical analyses and halakhic decision-making, it arguably would incline the bioethicist and halakhist toward greater openness to the utilization of new technologies that enhance psychological contentment.

In his editorial preface to *Marriage, Sex, and Family in Judaism*, whose collected essays “present a complex portrait of the Jewish family and the alternatives to it, both in historical and contemporary sense,” Broyde (Broyde and Ausubel 2005, ix) writes: “Considered as a totality, the chapters in this volume indicate that the way it is does not need to be the way it always will be or the way it always was.” The openness of this halakhic and ethical orientation toward family structures certainly is applicable to some of the social impacts created by ART. At the same time, lest one think that Broyde’s evolutionary halakhah and modest contextualism lend themselves to *laissez-faire* halakhic development, Broyde (2001b, xiii), ends the forward to his treatise, *Marriage Divorce, and the Abandoned Wife in Jewish Law: A Conceptual Understanding of the Agunah Problems in America*, with “a final, and intensely personal note . . . I think the secular community has undergone a vast and systemic decline in interpersonal sexual and marital ethics, particularly in the area of family structures and marital integrity. Rome has fallen. We must make sure that Jerusalem does not fall, too.” Broyde thus acknowledges both the impact of broader society on contemporary Jewish values and the role of one’s axiology, i.e., the intensely personal, on one’s halakhic analyses and moral judgments.

⁶⁶ “*Shalom Bayit*,” a peaceful home life, is a related ethical and legal-regulative value. See Genesis Rabbah 65:2 which teaches the value of domestic tranquility from Sarah and Abraham’s struggle with infertility.

Table 5.3. Summary of Epistemological and Axiological Findings for Affirmed Intellectual Orientation

Rabbi Michael J. Broyde's Philosophy and Methodology of Halakhah and Jewish Bioethics	
Philosophy of Halakhah	Formalist.
Historical Contextualism	Moderate Contextualism.
Theory of Change	Evolutionary halakhah through innovative interpretation.
Scientific Epistemology	Hard and soft sciences are epistemically special and moderately privileged.
Jewish Moral Axiology	Primarily self-sufficient but recognizes social context and external influences.
Medical Halakhah and Jewish Bioethics	Jewish Bioethics is Medical Halakhah.
Legal Certainty and Judicial Doubt	Mitigate doubt through ruling.

Rabbi Michael J. Broyde on IVF/ET and Parenthood

Unlike Bleich, there is no indication that Broyde's initial views on IVF/ET were cautiously negative. Broyde does not seemingly share the same ethical, medical, and religious concerns of Bleich's early analysis. Part of this may be due to Broyde's arriving at a consideration of AI and IVF/ET ten year later than Bleich when AI and IVF/ET were well established.⁶⁷ Some of the early medical concerns and health risk factors had been significantly reduced by then, and social acceptance had been broadening. Part of Broyde's general positivity is arguably due to Broyde's own developing philosophy of evolutionary halakhah. Focusing less on the question of whether the new assisted

⁶⁷ Bleich's first publication on "Host-Mothers" and fetal transfer was published in 1974; on "Test-Tube Babies" in 1978. Broyde's first publication on ART appeared in 1988.

reproductive and genetic technologies aid in the fulfillment of the *mitzvah* of procreation per se, Broyde identifies them within the halakhic category of medical interventions, thus concluding one article on IVF with PGD:

The combination of *in vitro* fertilization with PGD is a less than an ideal way to have children, as all assisted reproduction removes fertilization from loving sexuality, which is the Biblical ideal. Nonetheless Jewish tradition favors healing people from their illnesses even in situations where to effectuate a cure, deviation from the ideal is needed. Human life is sacred, and the eradication of an illness a *mitsva*. It is a brave and very new world in the medical sciences, and we await our opportunity to fix the world – by curing illness, inventing vaccines, and otherwise changing nature to make it more amenable to human life. [IVF with] PGD could be such. (Broyde 2004, 67-8)

Licensing a medical interventional therapy and ART to alleviate the disease of infertility, however, leaves unresolved matters of religious law, family law, parental identification, and other bioethical considerations and halakhic consequences. Broyde's legally oriented bioethical writing and his bioethically oriented legal writings contend with these as well.

IVF/ET and Maternity (Non-Surrogacy)

In 1988, ten years after the birth of Louise Brown, the first “test-tube” baby, Broyde (1988) published an article (technically, a legal “Note”) on, “The Establishment of Maternity and Paternity in Jewish and American Law.” Beginning with the baseline of natural parenthood, Broyde explains that halakhah identifies a mother as “a women [who] provides the ovum and carries the child to term” (ibid., 133). Although the complicating case of surrogacy, to be discussed in the next chapter, introduced the halakhic question of whether maternal identification is fixed at conception or at birth, the essentialist definition of maternity as the ovum contributor and birth mother suffices for IVF/ET. In

Broyde's words: "If conception occurs in a test tube, Jewish law focuses on birth as establishing motherhood" (ibid., 147). Broyde does not deal with the aforementioned solitary positions of Waldenberg (1990, vol. 15, no. 45) and Gershuni (1979; 1980, 361-7) who deny an IVF/ET baby both a halakhic mother and father.⁶⁸

IVF/ET and Paternity with Husband and Donor sperm

Whereas Broyde's discussion of maternity in a non-surrogacy case of IVF/ET is simple and straightforward, he presents a robust and nuanced discussion concerning the establishment of paternity in both homologous and heterologous AI and IVF/ET. Writing in 1988, Broyde (1988, 119) comments that, "currently, the only well-developed dispute in Jewish law concerning the establishment of paternity arises in the case of artificial insemination – however, the principles enunciated there solve almost all other 'hard' cases," including IVF/ET. Broyde presents four opinions of revered twentieth-century poskim as to the ascription of halakhic paternity when conception occurs *ex vivo*, outside (something) alive. First, Rabbi Moshe Feinstein, who permits heterologous AI (and IVF), identifies the sperm donor as the halakhic father. In Broyde's words: "the paternity of the child is established by the genetic relationship between the child and the father" (ibid.). Second, Rabbi Yoel Teitelbaum, like Feinstein, acknowledges, "that the genetic relationship is of legal significance and the paternity is established solely through the genetic relationship" (ibid.). In vehement debate with Feinstein, however, Teitelbaum considers heterologous AI (and IVF) adultery, endowing any resultant child with the

⁶⁸ See above pp. 200-1 and 200n45, 201n46 (in "Bleich: IVF/ET and Maternity (Non-Surrogacy)").

stigma of halakhic bastardy.⁶⁹ Third, Rabbi Eliezer Waldenberg, concurs that heterologous AI transgresses adultery, though not through “the genetic mixing of sperm,” akin to Teitelbaum, but through the biblically unlawful and rabbinically proscribed immodest injection of non-husband sperm into a married woman’s vaginal tract (ibid., 120). Broyde does not contend with Waldenberg’s denial of paternity to the sperm donor in both homologous and heterologous IVF. Fourth, Rabbi Mordechai Yaakov Breisch prohibits heterologous AI as a policy decision dictated by a negative moral judgment, and not due to an act of adultery.

In analyzing all four positions in 1988, and assessing their commonalities and dissimilarities in their halakhic methodologies, analyses, and rulings, Broyde develops a tripartite analytic rubric. He writes:

- This Note uses three terms to refer to the theoretically different types of parent:
- (a) Custodial Parent: This is the person who is currently functioning *in loco parentis*.
 - (b) Genetic Parent: This is the person whose genetic material is used to initiate life. Currently there must be two genetic parents.
 - (c) Biological Parent: This is the person with whom the procreative activity that led to the starting of life occurred. This last category currently typically overlaps with the genetic parent. It need not. In the case of ovarian or testicular transplant,⁷⁰ they would not. In the case of artificial insemination there is no biological father. (Broyde 1988, 123n45)

Broyde’s conceptual analysis utilizing this rubric leads him to the following summation:

Jewish law maintains that paternity is established irrevocably as belonging to the natural parent. In the typical case in which the same person is both the genetic and biological father, Jewish law mandates that such a person is the legal father. In the case of artificial insemination, where there is no biological father but only a

⁶⁹ Feinstein, Teitelbaum, Waldenberg, and Breisch’s views were presented more fully above, in Chapter Four, 155 ff.

⁷⁰ Spermatogenesis begins with precursor stem cells within testicular tissue, thus heterologous testicular transplants, like heterologous ovarian transplants, produce gametes with the genotype of the donor. For the history and current state of testicular transplantation, see Donati-Bourne, et al. 2015.

genetic father, almost all decisors maintain that Jewish law defaults to the principle of genetics to establish paternity. Furthermore, most of the commentators hold that in the absence of any intercourse there can be no illegitimacy. A significant minority of the commentators disagree and maintain that illegitimacy can be established through genetic relationships, absent intercourse. (Broyde 1988, 131)

While in 1998 Broyde limits this analysis to AI, later, he explicitly applies his conclusions to IVF/ET as well: “One who donates sperm is the father – whether he wishes to be or not – as that is how fathers are defined” (Broyde 1999a, 4).⁷¹

Epistemological and Axiological Dimensions: Broyde on IVF/ET and Parenthood

Broyde, like Bleich, consistently demonstrates concerted research to understand the science and technology underlying his legally oriented bioethical inquiries and his bioethically oriented, comparative-legal analyses.⁷² Although Broyde, like Bleich, asserts that scientific, technological, and social changes alter circumstances and do not fundamentally change halakhah, Broyde’s theory of halakhic evolution through interpretive innovation challenges that conclusion. Not only does Broyde’s, like Bleich’s, greater scientific awareness and understanding influence the development of medical halakhah and Jewish bioethics by demanding greater sophistication and nuance of analysis, it also incurs epistemological changes that impinge upon the evolutionary development of halakhah in its abstract study, the primary arena that Broyde explicitly recognizes as driving intellectual innovation and halakhic change.

⁷¹ Note that Broyde 1999, 24n13, refers the reader back to Broyde 1988, 118-23, in his footnote to this quotation, thus indicating that even in 1988 he meant to apply this to IVF/ET.

⁷² This holds true for all his writings. To cite one example, writing on IVF with PGD, and stem cells, Broyde (2004, 54-6) begins with a brief, yet thorough review of the science. His footnotes (ibid., 70-1nn1-5) demonstrate his research of relevant popular and professional scientific literature.

Consider, for example, Broyde's tripartite analytic rubric of parenthood: custodial, genetic, and biological. Broyde generates this conceptional schematization in his analysis of the halakhic positions of Feinstein, Teitelbaum, Waldenberg, and Breisch. It should be strongly noted that none of them use the words "gene" or "genetics" in any of their responsa. Instead, they perpetuate the classical, pre-modern, halakhic terminology of "seed" and lineage. It is unclear to what degree they were knowledgeable of modern genetic theory. Waldenberg, renowned for his responsa on medical issues and new technologies, was the resident-posek of Sha'arei Zedek Medical Center in Jerusalem. In his 1975 landmark responsum on the permissibility of a late-term abortion (until month seven) of a Tay-Sachs fetus, Waldenberg (1990, *Tzitz Eliezer* 13:102) responds to the query of Professor Dr. M. Meir, General Manager of Sha'arei Tzedek, who himself references in his question "gene," "genetics," and "Mendelian inheritance." Waldenberg, however, does not use any of these terms in his response.⁷³ Broyde could have created a tripartite analytic rubric using more classical, halakhic equivalents, such as, "custodial, seminal, and sexual," instead of "custodial, genetic, and biological." His deliberate word choice, however, not only demonstrates that he is knowledgeable of current scientific theory, but also that he consciously introduces into the Jewish bioethical and medical halakhic discourse theory-laden terminology that can result in attendant scientific

⁷³ Similarly, in a responsum (Waldenberg 1990, *Tzitz Eliezer* 11:78, dated 1971) on changing the gender phenotype of a genotypical male infant with ambiguous genitalia, the questioner mentions chromosomes and genetics, but Waldenberg avoids these terms in his response. In one other responsum (Waldenberg 1990, *Tzitz Eliezer* 15:44, dated 1982), Waldenberg uses the word "inheritable" when considering a case concerning the advisability of marriage between two otherwise legally permitted, distantly related individuals who share a family history of blindness. For a study of the intersection of halakhah and science in Waldenberg's legal writings, see Brand 2010; Jotkowitz 2015.

theoretical presuppositions driving intellectual interpretive innovation and halakhic change. Therefore, for example, when Broyde (1988, 131) writes, “In the case of artificial insemination, where there is no biological father but only a genetic father, almost all decisors maintain that Jewish law defaults to the principle of genetics to establish paternity,” Broyde is not simply reporting halakhic viewpoints, but through the introduction of genetic ideas, he is deepening the bioethical analysis and expanding the halakhic corpus.

In the mid-twentieth century, several philosophers of science, influenced by Duhem-Quineian theoretical holism and advances in linguistics and semiotics, began to reconsider the relationship of theory and observation and its impact on epistemology. While philosophical foundationalists held that “seeing is believing,” philosophers of science were beginning to consider whether it is actually the other way around, that “believing is seeing.” “Seeing,” whether it be to make a scientific experimental observation, or while reading a legal text, is a “theory-laden” process. Thomas Kuhn proposed three different ways of understanding “theory-ladenness” (Bogen 2014, 14-21). “Perpetual theory-loading,” supported by the experimentation of perceptual psychologists, suggests that pre-conceived notions even shape visual experience and its subsequent interpretation (Kuhn 1962, 111-21). “Semantical theory-loading,” posits that theoretical commitments strongly influence what we see, how we think about what we see, and how we describe what we see. If we share our observational reports with others who utilize the same words, but have different theoretical presuppositions, our semantic

meanings may be incommensurable (ibid., 127-34).⁷⁴ Finally, “salience” refers to what catches the eye of the observer, and likewise is influenced by larger theoretical commitments (ibid., 123-4).

Similar theories were developing in the philosophy of language, literary criticism, and the philosophy of legal interpretation contemporaneous to the development of these views in the philosophy of science. Ludwig Wittgenstein’s (2008) 1958 publication of *Philosophical Investigations* proposed through its theory of language games that the context of life’s activities and experiences give language its semantic meaning. Postmodern literary theory pointed to the role of the reader in constructing the meaning of the text.⁷⁵ In the philosophy of law, theorists were likewise questioning to what degree the individual interpreter reads his or her world view into the text during its subjective analysis.⁷⁶ Others modified this view, speaking less of individualistic readings, and more of interpretive communities, an idea supported by Wittgenstein’s writings.⁷⁷

When poskim in 1958 began to evaluate the halakhic implications of AI, not one utilized the word “genetics.”⁷⁸ A digital search of all the responsa collected on the Bar Ilan University Responsa Project (2017), discovered only two poskim who utilize the

⁷⁴ Popper (1959) and Hanson (1958), who were of the original conceivers of theory-ladenness, did not believe that the biases it endows to the observer are insurmountable, unlike Kuhn (1962) who strongly argued that scientific paradigms are near-totalizing, see Bogen 2014.

⁷⁵ See Fish 1980.

⁷⁶ See Llewellyn 1950, 1960.

⁷⁷ See Dworkin 1985, 159-77; and 2011; Wittgenstein 1966. See Schelly 1985, 158n1 who cites the relevant publications of Fish and Dworkin. See Solum 2010 for a critical review of Dworkin’s thesis, and Young 1987, for an analysis of the Fish and Dworkin debate. For application to Jewish interpretation, see Dorff 1995, 171-2, 175n18; 1998b, 9-11; and Dorff and Rosett 1988, 204-13.

⁷⁸ See Auerbach 1958; Hedaya 1958; Mintzberg 1958; and Shapiro 1968.

word “genetic,” both dated or published after 2002.⁷⁹ Legally oriented Jewish bioethicists and secularly educated halakhists introduced genetic awareness into the medical halakhic discourse in America and in Israel in the 1980s, whose reference and terminology measurably increased in medical halakhic articles in specialized journals in the decades following.⁸⁰ Jewish bioethics which uses the source material of medical halakhah, thus, in turn, influenced medical halakhah by expanding its epistemological resources and endowing it with deeper scientific understanding, including new terminology. A contemporaneous increase of genetic awareness in larger society due to advancements in science and technology also likely impinged upon this innovative, interpretive expansion.

The dialogical interaction of religion and science in Jewish bioethics results not only in a better scientifically informed understanding of circumstances, but introduces subtle shifts of fundamental understanding. Per Broyde’s theory of evolutionary halakhic development, and the philosophy of science and semiotics’ insights into theory-ladenness, increased scientific awareness and understanding necessarily impinges upon

⁷⁹ A digital search of over 100,000 responsa, collected on the Bar Ilan University Responsa Project (2017), revealed only two poskim who utilize the word. It should be noted, however, that of the 100,000 responsa only a fraction of those are from the twentieth and twenty-first centuries, and an even smaller fraction of modern responsa deal with medical or biological matters. Rabbi Ovadia Yosef 2015, in a responsum dated 2002 (*Yabia Omer, Even Ha’ezer* 10:12), invokes genetics in the context of a DNA paternity test. Rabbi Moshe Sternbuch, an English-speaking Israeli posek, invokes genetics in four responsa, and refers to his discussion with an expert in genetics, see Sternbuch 5:244, s.v. “*umumcheh echad*.”

⁸⁰ See Drori 1980, writing in Hebrew in Israel. Drori is currently an Israeli judge (civil, not rabbinical, court), and was then a young legal scholar. See also Soloveitchik 1980, a college educated rabbi writing in Hebrew in the United States. For specialized Hebrew and English periodicals and publications, see above, Chapter Two, “The History and Foundational Models of Contemporary Jewish Bioethics and Medical Halakhah (Jewish Law),” 39-40, nn4-7. Genetic paternity testing introduced genetic ideas into the Israeli Rabbinical Family Court system, as evidenced by court records available through the Bar Ilan University Responsa Project, see Steinberg 2003h, 778-80. Additionally, in the aftermath of 9/11, the Beth Din of America, located in New York City, considered whether DNA evidence is admissible and dispositive in establishing a presumption of death strong enough to allow a married woman to be considered a widow and thus be allowed to remarry. See Broyde 2011, 28-30; 40-5; 61nn8-9.

medical-halakhic and Jewish-bioethical analysis in fundamental ways. In time, it even allows for scientific knowledge to more fundamentally influence Jewish bioethical and halakhic considerations of maternal and paternal classifications, as will be shown to be the case in subsequent assisted reproductive technologies.

Table 5.4. Summary of Attitudes Toward ART and Definitions and Account of Parenthood

Rabbi Michael J. Brody's Jewish Bioethical Views on Parenthood and Procreation Through AI/IVF	
Attitude Toward AI and IVF	AIH/IVF-H: Positive and permitting. AID/IVF-D: Permitting
Definition of Maternity	Monist Causal Account: Ovum contribution and gestation.
Account of Paternity and its Definition	Monist Causal Account, but differentiates between the <i>Genetic father</i> of sexual and non-sexual procreation and the <i>Biological father</i> of sexual reproduction. Paternity is always the sperm donor who is the Genetic Father.

Rabbi Elliot N. Dorff's Epistemological and Axiological Orientation

Rabbi Elliot N. Dorff, like Bleich and Brody, has published extensively on Jewish law and ethics, including Jewish Bioethics related to ART. His *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics* (1998b) is particularly masterful at explicating halakhic discourse, biomedical information, and ethical considerations in a clear and accessible fashion. In addition to his articles and book on Jewish Bioethics, Dorff has also published two additional books on modern personal and

social ethics, respectively.⁸¹ Each of his three treatises on ethics ends with an appendix specifically detailing the book's philosophical foundations and ethical methodology.⁸² Additionally, Dorff has published two books on Jewish theology, as well as treatise on his philosophy of Jewish law.⁸³ Dorff's model of philosophical and methodological reflection and its lucid representation consistently make his discussion of difficult concepts intelligible, especially for readers unlearned in rabbinics or philosophical ethics. In addition to his academic career at American Jewish University and UCLA School of Law, Dorff, like Bleich and Broyde, is rabbinically active in the community, serving as the chair of the Jewish Conservative Movement's Committee on Jewish Law and Standards, and is often called upon for rabbinical consultation by colleagues, students, and Jewish laity (Dorff 2016). Dorff has also served in numerous advisory roles to governmental agencies on bioethical matters. In order to assess the epistemological and axiological dimensions of Dorff's bioethical writings on ART, it is necessary and helpful to review in brief Dorff's theology, his philosophy and methodology of Jewish law and ethics, and the relationship of religion and science in his thought.

Interpretive Freedom and Judicial Discretion

As a Conservative Jewish thinker, rabbinical jurist, and legally oriented ethicist, Dorff's faith commitments and theology undergird his philosophy and methodology of

⁸¹ See Dorff 2002a, *To Do the Right and the Good: A Jewish Approach to Modern Social Ethics*; and 2003, *Love Your Neighbor and Yourself: A Jewish Approach to Modern Personal Ethics*.

⁸² See Dorff 1998b, 395-423; 2002a, 241-287; 2003, 311-46.

⁸³ See Dorff, 1992a, *Knowing God: Jewish Journeys to the Unknowable*; Dorff and Rosett 1988, *A Living Tree: The Roots and Growth of Jewish Law*; and Dorff 2007, *For the Love of God and People: A Philosophy of Jewish Law*.

Jewish law and ethics.⁸⁴ Although he does not share in Bleich and Broyde's Orthodox Jewish theological doctrine of the Sinaitic revelation of the Written and Oral Torah, Dorff upholds a doctrine of divine revelation. He, however, maintains, "that the specific *content* of human theological ideas and codes of practice is created by human beings," – "the Jewish community of the past and present" – "and hence is subject to error and change" (Dorff 2007, 31).⁸⁵ Dorff's religious epistemology is less concerned with rationally justifiable grounds of religious belief, as much as with the Jewish religious experience of the divine-human encounter through Torah-study, ritual observance, and a spiritual orientation of discerning divine action in history by recognizing the power of human agency to fulfill the divine will and thereby enact providential purpose (Dorff 1992a). Dorff rejects a theology of legal and moral autonomy, and affirms a doctrine of heteronomous religious obligation through a covenantal system of mitzvah.⁸⁶ Thus, Dorff asserts that his commitment to a Jewish approach to law and ethics is based on religious theology and duty, and not only for pragmatic, ethnic, and cultural reasons (Dorff 2002a, xv).⁸⁷

Dorff's theory of Jewish law and ethics is not to be confused with a covenantal model (see above, Chapter Two, 43-5), which he negatively critiques, but as a Jewish-judicial model and legally oriented method (Dorff 1995, 163-5). In addition to law being

⁸⁴ For Dorff's construction of the ideology and history of the Conservative Jewish movement, see Dorff 1996a, 2005b.

⁸⁵ For Dorff's theology of revelation, see 1992a, 91-128; 1996a, 110-57; 2007, 29-37. For Dorff's embrace of the historical-critical method toward biblical and rabbinic literature, see Dorff and Rosett 1988, 20-1; Dorff 2003, 17.

⁸⁶ For Dorff's covenantal theology and heteronomous authority of Jewish law, see Dorff 1988, 1989; 1996a; 2007, 87-130. For his rejection of legal and moral autonomy, see Dorff 1995, 162-5.

⁸⁷ For a full exposition by Dorff on, "Motivations to Live by Jewish Law," see Dorff 2007, 131-88.

central to Judaism's theological narrative and historical experience, Dorff lists five reasons for retaining a legal method: "its inherent discipline, authority, continuity, coherence, and educational utility" (1998b, 404-16). Legal process gains its integrity from the discipline of its method. By assuming a heteronomous authoritative voice to guide our lives, Jewish law imposes duties and responsibilities, allowing for the wisdom of the past to inform the needs of the present. Law achieves continuity and preserves a shared national identity across space and time by uniting people through a common legal and ethical system. Finally, law is easily teachable and put into practice.

Like Bleich and Broyde, Dorff too looks to interpretation as the primary vehicle of Jewish legal process. All three recognize the need to ply conceptual analysis to the original rabbinic texts, case law, and codes of the Jewish legal tradition to identify their underlying principles and ethical values that can then be reapplied to novel circumstances. Dorff differs from Bleich and Broyde in at least four significant ways: 1. the binding status of codified rules; 2. strong historical contextualization; 3. intentionality in innovative interpretation; and 4. broad interpretive license and judicial discretion.

Rules, Principles, and Policies

Dorff invokes the legal philosophy of Ronald Dworkin to explain how a legal model can maintain coherence, holding true to its foundational values, conservatively withstanding impulsive pressures for change, while progressively allowing for interpretive adaptation and change in a methodologically responsible and humanely responsive way. Dworkin distinguishes between "rules," "principles," and "policies."

Rules demand unflinching obedience, principles express values, and policies direct toward an articulated goal (Dworkin 1977, 22-31). Dorff (1995, 167) argues that if Jewish law is understood more as principles and policies, than as timeless, binding, codified rules, it will maintain its coherence through generations of interpretation and necessary change:

The methodological principles I have described – that we must retain a legal method with its inherent discipline in making our decisions; that we must recognize that Jewish law most often prescribes policies and principles, not inviolable rules, and we must interpret and apply Jewish law accordingly; that even general policies must be implemented with sensitivity to the context of a specific case; that we must be aware of the inevitable and proper impact of the reader and his or her context, goals, and values in interpreting and employing a text; and that this awareness does not vitiate the authority of the text, but it does open the door, with appropriate argumentation, for contemporary moral sensitivities – must all, in my view, shape the way in which we approach issues of bioethics in our time. Only then can our methodology be sufficiently dynamic to accommodate the revolutionary changes in the world of medicine on almost a daily basis and yet be unmistakably Jewish. Only then can we responsibly and wisely carry on the vital and religiously rooted tradition of medical care and adaptability which we have inherited. (Dorff 1995, 172)

Halakhah as a Living Organism and Strong Historical Contextualism

Dorff is a proponent of the “positive-historical” method of Jewish studies, typically denominationally associated with Conservative Judaism, which historically contextualizes halakhic source material in space and time. This approach views Judaism as historically and culturally contingent, recognizes changes in ideas, values, and practices through the sweep of Jewish history, and proactively leverages this knowledge in contemporary halakhic and ethical decision-making. Dorff is avowedly not a legal-positivist and does not believe that Jewish law should be construed as a self-enclosed

deductive system (Dorff 2007, 48-60).⁸⁸ Rather, Jewish law, as a way of life, should be likened to a living organism whose *corpus juris* grows, changes, and ages – sometimes in growth spurts, other times more slowly – always in response to internal and external influences. Sometime immune reactions are triggered to preserve its health and integrity. Like an organism, throughout its growth and maturation it always retains its identity (ibid., 60-79).

In his preface to *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics*, Dorff writes:

Depicting Judaism as a way of life also conveys its ever-developing nature, for just as the conditions of human life continually change, so too do Jewish views and patterns of action. ... In each age, however, Judaism must earn the compliment of being valued as a complete way of life by remaining relevant to new sensitivities and circumstances. In the service of attaining that end, Jews who know and love the tradition must ever be willing to stretch it to address the old problems that now appear in new guises and the completely new problems produced by changing contexts, moral awareness, and technologies. ... On the other hand, Jews who ignore their tradition altogether or identify it with whatever they happen to think at the moment also do a disservice to both Jews and Judaism. ... A large part of the tradition's value is precisely that it is normative, that it challenges us to think and act in ways that we would not otherwise imagine. The trick, then is to find a way to balance tradition with change ... [this is] especially true for Jewish bioethics. ... Questions about engendering and saving lives arise in ways today that our ancestors could not even imagine. This produces major problems of method, for how do you gain guidance from the tradition on questions it never contemplated? (Dorff 1998b, xiii-xv)

Dorff answers his concluding methodological question of how do Jewish law and ethics respond to unanticipated challenges by outlining that first one identifies precedents in Jewish law, should they exist, relevant to the moral issue being considered. Then one

⁸⁸ Here Dorff's debate is not only with Orthodox halakhists like Bleich and Broyde, but also with his Conservative colleague Rabbi Joel Roth 1986, who constructs a legally positivistic model of Conservative Jewish law.

exercises “depth-theology,” uncovering the foundational Jewish values and legal principles in play, evaluating them in light of Jewish theology, ethical literature, and communal custom, and always taking into account historical context. Next an assessment should be made as to how the legal principles and Jewish values inform potential reinterpretations and application to contemporary situations. Dorff (2014, 421) proposes: “In both the slow, evolutionary changes and in the more metamorphic ones, the law must be shaped through continually interacting with Jewish theology and philosophy, historical realities, economic conditions, moral sensitivities, and Jewish goals, just as it has historically been shaped and reshaped.” In the absence of relevant precedents, Judaism’s foundational concepts and values can be applied to a novel circumstance to provide moral guidance.⁸⁹

Stretching the Law and Intentionality in Innovative Interpretation

One of the major methodological differences between Dorff, on the one hand, and Bleich and Broyde, on the other, is the question of intentionality in innovative interpretation. Bleich and Broyde respectively believe that interpretive creativity, whether characterized as rediscovery or innovation, methodologically occurs naturally through internal halakhic process, albeit sometimes in response to external stimuli. Dorff, on the other hand, believes that a halakhist and/or ethicist may, and sometimes should, intentionally facilitate Jewish legal change through “stretchy” interpretation. A “reasoned

⁸⁹ See Dorff 2014, 422. Towards this goal, Dorff generates lists of Jewish foundational concepts and ethical values in each of his ethical treatises, see 1998b, chapter two; 2002a, chapter one; 2003, chapter one.

opinion” based on innovative readings would need to be confluent with the larger thrust of the tradition and persuasively be defended against other possible readings (Dorff 1998b, 9-10). Dorff’s positive-historicism, along with his acute awareness of the impact of the reader on interpretation and the construction of textual meaning, lead him to challenge the epistemological integrity of ahistorical Orthodox Jewish halakhic methodology, which he characterizes as literalist.⁹⁰ In a discussion of weighing the applicability of Jewish legal precedents, Dorff writes that an Orthodox Jewish approach to bioethics:

... ignores the historical context of past medical decisions and the crucial differences between medical conditions then and now ... The sources did not contemplate the realities of modern medicine; for that matter, American legal sources from as late as the 1940s did not do so either. Consequently, reading such laws and precedents closely to arrive at decisions about contemporary medical therapies *all too often amounts to sheer sophistry*. The texts themselves in such attempts are not providing clear guidance but are rather being twisted to mean whatever a particular rabbi or judge wants them to mean. (Dorff 1995, 171; italics mine)⁹¹

In contrast to what he perceives as customary literalism and false naivete, Dorff says:

One can do this without being devious or anachronistic if one does not pretend that one’s own interpretation is its originally intended meaning or its only possible reading. The Conservative objection to many Orthodox readings of texts is thus based on both tone and method: not only do many Orthodox responsa make such pretensions, often with an air of dogmatic certainty, they do so with blatant disregard for the effects of historical and literary context on the meaning of texts and indifference to the multitude of meanings that writings can often legitimately have.⁹² (Dorff 1998b, 413; italics original)

⁹⁰ For Dorff’s views on the impact of the reader on interpretation, see Dorff 1995, 171-2, 175n18; 1998b, 9-11; and Dorff and Rosett 1988, 204-13.

⁹¹ Dorff 1998b, 412-3, repeats the accusation of sophistry.

⁹² See also Dorff 2014, 418-9.

Therefore, Dorff (ibid., 414) says: “We must therefore first judge whether or not medicine has changed significantly in the area we are considering, and if it has, be prepared *to stretch some halakhic and aggadic sources beyond their original meanings*” (emphasis mine). Similarly, Dorff opines: “In the service of attaining that end, Jews who know and love the tradition must ever be willing *to stretch it* to address the old problems that now appear in new guises and the completely new problems produced by changing contexts, moral awareness, and technologies” (Dorff ibid., xiii; emphasis mine). Ancient rabbinic sources, claims Dorff, legitimately must sometimes be considerably extended to arrive at an apt decision, as long as procedurally legal form and substance are maintained and one is careful to declare that “ours is *a possible reading,*” and not the only reading (ibid., 415; italics original). Legal-stretchiness allows for broad interpretive license and judicial discretion.

Dorff’s advocacy for intentional interpretive-stretchiness along with his polemical characterization of Orthodox halakhic methodology as unsophisticatedly literalist and indulging in sophistry strikes an ironic tone on two counts. First, in his own polemical moment, Bleich, as cited above, conversely decries rabbis and religious leaders, who he identifies as students inadequately trained in halakhic methodology, who seize “upon stray precedents, crude analogies, *or sheer sophistry*” (emphasis added), to yield contemporary halakhic decisions motivated by a preconceived, societally influenced conclusion (Bleich 2015b, 126-7). Does self-aware intentionality when interpretively stretching Jewish law in a pre-conceived direction lessen or increase a charge of sophistry? Second, Dorff utilizes the writings of Orthodox medical halakhists and

bioethicists, which overwhelmingly populate the literature to mine sources and learn from their views. He will often cite their views, opinions, and even halakhic rulings uncritically in his own Jewish bioethical writings.⁹³ If indeed they were rife with unsophisticated literalism and sophistry, one would imagine that would undermine any shared substantive discourse.

Scholars indeed may critique competing systems of interpretation, and contrast them with their own. However, a wiser course than polemics would arguably be to identify differences in the epistemologies and axiologies undergirding philosophy and method. One of the purposes of this chapter's constructions and analyses of the philosophies and methodologies of halakhah and bioethics of this dissertation's four Jewish bioethical exemplars is indeed to highlight the epistemological and axiological similarities and differences between them. Critical comparisons allow for scholarly dialogue and learning. The similarities and differences between them provide insight into ways of relating science and religion, and tradition and modernity, within Jewish bioethics.

Legal Certainty and Judicial Doubt

The plasticity of Jewish law in Dorff's halakhic methodology reduces the need for legal certainty, and lessens the concern for the avoidance of judicial doubt.

⁹³ For example, see Dorff 1998b, chapter three, "Having Children with One's Own Genetic Materials," 52: "Most rabbis who have written about AIH have not objected to it." In n47, Dorff identifies who he is counting as "most rabbis" – six Orthodox halakhists and bioethicists! Further, forty-eight bibliographical entries of Dorff's treatise on medical ethics are known Orthodox halakhists, bioethicists, theologians, and Jewish studies scholars. For more on the use of Orthodox sources of Jewish law in Conservative Judaism, see Hollander 2013, 315n37.

It also raises the concern of how to protect and preserve the coherence of a communally shared halakhic system. Dorff points to Conservative Judaism's Committee on Jewish Laws and Standards as the professional and communal mechanism for establishing the boundaries of normative practice and legitimate dissent within the Conservative Jewish community (1998b, 402-3; 419-20n12).

Halakhah and Ethics

For Dorff, a primary purpose of halakhah is to regulate Jewish ethics through normative moral living. Jewish law and ethics are inexorably knit up together. Jewish meta-ethics ground and guide halakhah, and halakhah is essential to moral practice. A positive-historical consciousness allows for the testing of Jewish law against external and independent ethics. Ethical ideals are actualized in law. Jewish law sets reasonable expectations through minimal standards. Law helps resolve conflicts between ethical values and helps set moral priorities. Law encapsulates ethics, thus serving as a valuable tool for ethical education. Law instantiates ethical ideals in real life, and law also provides for continuity of tradition, while allowing for flexible adaptability. Legal remedies aim to repair moral damage and create social peace (Dorff 2003, 337-44). Dorff believes that:

Judaism has gone further than most other religious or secular systems of ethics in trying to deal with morality in legal terms. It is therefore not surprising that contemporary decisions in Jewish medical ethics flow out of the continuing interactions among Jewish religious thought, law, and morality. To isolate any one of these perspectives is to distort Jewish tradition. But to see and apply their interactions to contemporary concerns requires knowledge of and commitment to all three: a developed moral and legal sense; and the capacity for sound judgment, compassion, and wisdom. (Dorff 1998b, 404)

At the end of Dorff's appendix detailing his approach to Jewish bioethics, he summarizes eight methodological principles "sufficiently dynamic to accommodate the revolutionary changes occurring in the world of medicine on an almost daily basis and yet remain unmistakably Jewish" (1998b, 416-7):

1. Give "intelligibility, coherence, and meaning" to individual moral decisions within the larger context of our faith commitments and convictions.
2. Maximize dialogue between ethics and religion.
3. Apply legal method for its "inherent discipline, authority, continuity, coherence, and educational utility" (ibid.).
4. Understand Jewish law as prescribing policy guidelines, not inviolate rules, allowing flexibility in applying principles to new circumstances.
5. Be attuned to the nuances of the specific case.
6. Read texts in historical context to allow intelligent applications to a modern setting.
7. Be aware of influence of the reader on textual interpretation.
8. Affirm that contemporary awareness need not reduce the authority of text or undermine tradition.

Unlike Bleich and Broyde, Dorff thus believes that what is narrowly referred to as medical halakhah does not suffice as Jewish bioethics and that to arrive at a Jewish way of life requires a moral analysis in addition to a legal one.

Table 5.5 Summary of Epistemological and Axiological Findings for Affirmed Intellectual Orientation

Rabbi Elliot N. Dorff's Philosophy and Methodology of Halakhah and Jewish Bioethics	
Philosophy of Halakhah	Non-Formalist.
Historical Contextualism	Strong Contextualism.
Theory of Change	Halakhah stretches in light of changes and innovations.
Scientific Epistemology	Hard and soft sciences are epistemically special and strongly privileged.
Jewish Moral Axiology	Internally insufficient.
Medical Halakhah and Jewish Bioethics	Jewish Bioethics scientifically and ethically informs and stretches Medical Halakhah.
Legal Certainty and Judicial Doubt	Mitigate doubt through judicial license.

Rabbi Elliot N. Dorff on IVF/ET and Parenthood

Dorff's responsum on "Artificial Insemination, Egg Donation and Adoption" was approved by Conservative Judaism's Rabbinical Assembly's Committee on Jewish Law and Standards in March 1994, seventeen years after the first IVF/ET child was born, and forty-three years after the first halakhic opinions were published concerning AI (Dorff 1994a, 17n*). Dorff makes full use of the extant bioethical and halakhic literature in formulating his comprehensive Jewish-bioethical analysis of assisted and collaborative reproduction and parenthood. As a rabbi and theologian, he extols the blessings of parenthood and laments the challenges of infertility. Dorff is avowedly pronatalist, especially for Jews whose demographic trends portend future existential challenges due to "late marriage, no marriage, intermarriage, low birthrates, and infertility" (2005, 219-

21, 231-3).⁹⁴ Like Broyde, and unlike Bleich, Dorff enthusiastically supports the voluntary and responsible use of reproductive medical technologies to overcome infertility, no different than any other medical remedy.⁹⁵ He halakhically and ethically licenses AI and IVF with both husband and donor sperm, albeit in the case of donor sperm with several caveats (Dorff 1994a, 30; 1994b, 63). He is also the only one of this dissertation's four exemplars in their treatment of the issues to discuss positively single mothers potentially utilizing donor sperm and AI/IVF technologies to bear and then raise children (Dorff 1998b, 111-5).⁹⁶ He also permits the confidential donation of gametes by single and married men and women, as well as the donation of surplus embryos, to help others struggling with infertility (Dorff 1994c, 87-9; 1998b, 58; 103-7).

IVF/ET and Maternity (Non-Surrogacy)

Dorff upholds the halakhic ruling of the Rabbinical Assembly's Committee on Jewish Law and Standards that parturition determines maternal identity.⁹⁷ Although logical reasoning can argue for other alternatives, as we shall see in the next chapter on surrogacy, Dorff argues that biblical precedent is preferred to logical reasoning in Jewish legal methodology. The Torah consecrates the firstborn son, referring to him as "*petter rechem* – opening of the womb" (Exodus 13:2). The Torah's sacred signification of birth

⁹⁴ See also Dorff 1998b 40, 95-6.

⁹⁵ Like Bleich and Broyde, Dorff also contrasts the Catholic Church's reproductive naturalism with Judaism's interventionism.

⁹⁶ For changing attitudes and increased incidence of Jewishly observant single women pursuing motherhood through donor sperm and ART, see Ross 1998; Blumenthal 2015.

⁹⁷ See Mackler 1997b.

is taken as dispositive of maternal identity being determined as the bearing mother (Dorff 1998b, 101).⁹⁸

IVF/ET and Paternity with Husband and Donor sperm

When it comes to paternal identification, however, Dorff finds halakhic and ethical complexity, where others, like Bleich and Broyde, decide the matter rather simply. For Bleich and Broyde, the sperm donor is always the halakhic father. As in the case of AID and IVF with donor sperm, the husband of a woman who bears the child conceived non-sexually with the sperm of another man may raise the resultant child. Per Bleich and Broyde, halakhah views such a man as “one who raises another’s child,” since the sperm donor is the only recognized halakhic father. Dorff, however, believes that ART has generated a situation fundamentally unlike anything that has ever existed prior, and thus Jewish law and ethics should recognize the fatherhood of both the social father, who raises the child, and the biological father, whose genetic material engendered the child. The biological father must be recognized for two reasons. First, it is no light matter to deny him halakhic paternal status. Jewish law holds incest as such a severe prohibition that it is one of three cardinal mitzvot for which one must give up one’s life rather than transgress. Halakhah and Jewish bioethics are concerned with unintended incest, thus

⁹⁸ Mackler 1997b, 186n16, however, claims that this argument is a second-order support, and not the primary basis for maternal identity, which instead he ascribes to the transition from the status of a fetus who is merely an extension of the mother’s body to a new status of newborn child who gains independent personhood at birth, see *ibid.*, 180. So, for example, per Mackler, the bearing mother who delivers via cesarean section, whose child is not “opening the womb” would still be considered the mother. Contra Dorff, Mackler privileges logical reasoning in Jewish legal methodology.

preferring accessible, disclosive records regarding the sperm donor's identity.

Furthermore:

[It is an] incontrovertible genetic fact that it is the natural father's DNA that the child inherits, not the social father's. Modern research has made us increasingly aware of the impact of our genes on who we are as a people, not only biologically but in a number of character traits as well. The donor's genes influence the medical history of the child, and they determine the identity of the people whom it is genetically dangerous to marry, let the children born of that marriage suffer from diseases rooted in their consanguineous union. Moreover, the donor's genes will affect the child's intelligence, height, general physical appearance, susceptibility to specific diseases, and even personality traits such as the tendency to get angry quickly or to laugh often. The genetic contribution of the semen donor, while modified by the child's upbringing, is thus ultimately indelible. (Dorff 1998b, 75)

At the same time, AID and IVF-D “*stretches* our understanding of fatherhood” (ibid., 74, emphasis mine). From antiquity until ART, it was assumed that the natural father of a child would also be responsible to raise him or her. Even though there are four pre-modern rabbinic sources (see above, Chapter Four, pp. 153-6) that entertain an idea of non-sexual reproduction, “these sources are so unlike the contemporary conditions ... one wonders whether they can seriously serve as a legal resource for our questions” (ibid., 51). Furthermore, in those cases, questions were raised *post facto*. Here, all the collaborating reproductive partners consent, intend, and expect to conceive a child (ibid.). It is for these reasons as well that AI and IVF-D cannot halakhically constitute adultery. Adultery is a sexual transgression that breaches the sacred trust between a woman and a man bound in the covenant of marriage. Here, there is no intimacy nor intercourse, and the husband knows of and supports the procreative proceedings because he intends to become the social father of the resultant child (ibid., 41).

Dorff adduces several biblical and rabbinic textual supports to convey halakhic paternal significance upon the social father. First, the example of levirate marriage in the bible provides a precedent for which the sperm donor is not assigned paternity. When a man predeceases his wife having had no children, his surviving brother marries and inseminates his widow, so that, “the firstborn son that she bears shall be accounted to the dead brother, that his name may not be blotted out in Israel” (Deuteronomy 25:6). Two, a midrash on Isaiah 64:7, “But now, O Lord, You are our Father,” compares God’s non-biological paternal status to that of a guardian who raises an orphan girl, who can be listed as her father in her marriage contract: “for the one who raises is called father and not the one who begets” (Exodus Rabbah 46:5). Three, Jewish law recognizes the transformative power of renunciation, such as in the case of a pagan who renounces the idolatrous status of an idol, transforming it into a mere statue. Dorff stretches this concept to innovate an analogical idea of paternal renunciation by the sperm donor. Finally, at the end of Genesis, the patriarch Jacob elevates the status of Joseph’s sons Ephraim and Menashe from grandsons to tribal sons, thus also demonstrating the transferability of paternal-child relations: “Now, your two sons, who were born to you in the land of Egypt, shall be mine; Ephraim and Menashe shall be mine no less than Rueben and Simeon” (Genesis 48:5; Dorff 1998b, 75-6).⁹⁹

In addition to these legal arguments, Dorff also adduces several moral arguments arising from contemporary realities. In cases of ART undertaken in a licensed fertility

⁹⁹ It should be noted that all Dorff’s four supports are his own novel and innovative interpretations: two interpretations based on biblical precedent, i.e. proofs one and four; one based on a midrash, i.e. two; and one based on legal analogy, i.e., three.

clinic or hospital, as long as the husband consents, American law views him as the social father and as the sole legal father without even the need for formal adoption. Also, the larger community will only be aware of and recognize the paternity of social father. Dorff argues: “That is right and proper, for the social father, after all, invests a lifetime of energy, love, and substance in the child, whereas in most cases the donor never even meets the child” (ibid., 77). Dorff goes so far to suggest that the social father “should merit the status of fulfilling” the *mitzvah* of procreation, since “Jewish law generally awards privileges only to those who bear concomitant responsibilities, and that principle would certainly suggest in this case that the man who raises the child, rather than the man who merely ejaculates, should merit the status of fulfilling the commandment of propagation” (ibid.). In the end, though, Dorff acknowledges that because of the textual precedents of non-sexual conceptions in Jewish tradition, however dubious their pertinence, as well as the undeniable imprint of genetics on lineage and health, “for the purposes of the commandment of propagation, the semen donor must be seen as the father of the child” (ibid.).

Dorff therefore argues that both the biological father and the social father be halakhically affirmed as having paternal identity. Since Jewish identity is conveyed maternally, the Jewishness of the sperm donor is non-determinative. As a matter of lineage, priestly or Levitical status would depend on the biological father. Inheritance rights, Dorff says, are governed by the civil law of the land. Regarding incest, like Bleich and Broyde, Dorff agrees that marriage and sexual relations with individuals proscribed as relatives of a biological father are forbidden. However, in serious halakhic application

of his argument for ascribing paternal legal status to the social father, as well as in light of the emotional and educational relationships among members of the social family, Dorff wrote a responsum innovatively forbidding marriage and sexual relations with non-biological siblings raised in the same household, including those relations of the social father who would normally be proscribed were there a biological relation (ibid., 72, 78-9; Dorff 1994c).¹⁰⁰

One internal inconsistency in Dorff's approach should be noted. Dorff, like Bleich and Broyde, affirms that, "If a couple cannot have children, the commandment to procreate no longer applies, for one can only be commanded to do only what one is capable of" (Dorff 1998b, 41). Dorff wants to emphasize that overcoming infertility through ART can be psychologically fraught, costly, painful, and entail health risks. Utilizing ART, such as AI or IVF, to have children is often appropriate and praiseworthy, but still a discretionary decision that needs to be made responsibly and not as an obligatory action, "for the duty to procreate devolves only upon those who can do so through sexual intercourse with their spouse" (ibid., 41-2).

At the same time, Dorff writes that he agrees with Conservative rabbi Morris Shapiro that in a case for which the sperm donor is the husband, he should be considered as fulfilling the mitzvah of procreation, which according to their conceptual analysis is result oriented and for which the manner of conception is preparatory and not fundamental. Dorff adds three supportive arguments. First, "according to all

¹⁰⁰ Dorff categorizes these rabbinically prohibited relations as "*sheniyot* – second-order," a term familiar from talmudic extensions of biblical incest law.

understandings of Jewish law,” the sperm donor is the biological father, and therefore a halakhic father (*ibid.*, 50).¹⁰¹ Second, Dorff invokes a talmudic homiletical principle that says that good intentions are significant: “If a person intended to perform a mitzvah, but due to reasons beyond his control, he did not complete it, Scripture accounts it as if he fulfilled it” (TB Berakhot 6a). In the case of utilizing ART to overcome infertility, the husband intends to generate a child, and should thus be accordingly credited. Third, the husband is making a considerable psychological investment in the process, and compassion dictates that we support him: “the husband generally goes through considerable humiliation, pain, and perhaps depression in coming to terms with his inability to impregnate his wife through sexual intercourse, and we should do all we can to make him feel good about the process and the child that results” (Dorff 1998b, 52-3; 344n50). In cases for which the donor sperm is not of the husband, as mentioned above, Dorff suggests, but doesn’t press, that perhaps the social father should likewise be credited with the mitzvah of procreation.

If, then, in a case of AI or IVF, a sperm-donating husband and thus biological father, and perhaps even the social father of the resultant child, should be considered as fulfilling the mitzvah of procreation through ART, and sexual relations are only preparatory and not fundamental, then why would Dorff limit the mitzvah to procreate to sexual reproduction? It would seem, per his halakhic and ethical analysis, that it would be more consistent to say that there is indeed a clear obligation for a AI/IVF-H, and a

¹⁰¹ Cf. Dorff 1998b, 344n51, though, in which he cites the opinions of rabbis Hadaya 1951 and Shapiro 1951 who deny paternal status to a donor whose sperm inseminates non-sexually. See above, p. 202n48.

potential obligation for AI/IVF-D. Extenuating factors, such as inordinate cost, psychological harm, health risks, etc., may relieve said obligation, as appropriate to the nuances of the case, but an exempted obligation still begins as an obligation. Dorff's compassion, which he identifies as a Jewish meta-ethic, presumably, leads him to avoid unnecessarily imposing burdensome obligations, while at the same time, somewhat inconsistently, reward the voluntary undertaking.¹⁰²

Epistemological and Axiological Dimensions: Dorff on IVF/ET and Parenthood

As a legally oriented Jewish Bioethicist, Dorff sees his bioethical analyses as more than an exercise in medical halakhah, and thus in his writings on ART he introduces moral and psychological concerns and considerations beyond the technically halakhic. For example, after reviewing the legal issues related to “having children with donated genetic materials,” Dorff discusses negative judgments of using donated gametes as licentiousness; the impact of donated gametes and procreative asymmetry on the

¹⁰² To be fair, this critique applies to any halakhist or bioethicist who understands the mitzvah of procreation as result oriented. In defense of this critique, there are indeed examples in Jewish law of voluntary fulfillment of exempted commandments, i.e., “*mitzvah kiyyumit* – a fulfillable mitzvah,” in distinction to a *mitzvah chiyyuvit* – an obligatory mitzvah.” However, usually the exemption in such cases is intrinsic, rather than circumstantial. If one is intrinsically exempt, one can still voluntarily fulfill the commandment. If one is circumstantially exempt, then should the circumstances change or be reasonably overcome, perhaps the original obligation should reattach. Thus, if the mitzvah of procreation is result oriented, as Dorff claims, and there are two ways to achieve that result, one through sexual relations and one non-sexually, then should exemption from the first relieve the obligation of the second? For example, what would be Dorff's halakhic ruling and bioethical guidance in the case of a man who fathered two children, a boy and a girl, through IVF/ET with his wife, who he later divorced, and then remarried a fertile woman? Would the man still have a mitzvah obligation of procreation to father naturally additional children through a sexual act, or would his having two biological children through IVF have exempted him from further obligation? See above, Chapter Four, p. 135 ff., for a possible parallel to a gentile father who converts. It may very well be that Dorff's methodology is less high theory and more mid-level Jewish bioethical principles and pragmatic casuistic application, and thus does not require a conceptual framework for claims that consistently test in hypothetical scenarios.

relationship between spouses, and between parents and children; issues of confidentiality and secrecy; potential racism in donor selection; larger Jewish demographic concerns; and the necessity of compassion in both policy and pastoral support (Dorff 1998b, 80-97).

In both his halakhic and moral consideration of bioethical issues, Dorff grounds his analyses in contemporary scientific understanding, but then turns to the wider resources of the Jewish textual tradition, including midrash aggadah, rabbinic narratives and homilies, and moral literature, as well as to secular bioethics, philosophy, law, and psychology. He addresses individual, communal, and societal considerations, sometimes using policy concerns as a permitting factor. In defending the legitimacy of AI and IVF/ET with donor sperm, as mentioned above, Dorff cites larger existential demographic challenges facing the Jewish people. Dorff writes:

This factor must enter into our moral evaluation of donor insemination, because a Jewish examination of any moral issue cannot adequately address Jewish concerns if it only narrowly considers the specific legal issues involved. Any tradition based on law *must* grapple with its sources if it is to be true to itself and if it is to reap the many benefits inherent in a legal system ... Interpreters of the law, though, must be fully cognizant of the broader context of the issue before them, for otherwise they risk two opposite dangers: the law could either be ignored and thus dishonored, or else – perhaps the greater danger – it could be obeyed despite the personal, social, and moral havoc it wreaks on the situation it was meant to guide with sensitivity and wisdom ... In our case, then, when the demographic statistics are threatening as they are for the continuity of the Jewish tradition and the Jewish community, any opening in the law to enable Jews who are otherwise infertile to have children must be used. This concern, in other words, decisively tips the moral and halakhic scales in favor of donor insemination when the couple cannot have children in any other way. (ibid, 96; italics original)

What fundamentally separates Dorff's intellectual orientation from that of Bleich and Broyde is that he intentionally and dispositively utilizes his expansive epistemological

and axiological resources and commitments as arguments in his halakhic rulings and bioethical recommendations.

In Dorff's consideration of paternity, he employs a legal methodology that admits a broad epistemology, and a moral axiology that recognizes ethical values and considerations beyond those encased within Jewish law, and that emerge out of extra-legal Jewish texts. Thus, after a legal, moral, and psychological review of paternal identity and non-sexual reproduction, especially with donated sperm, Dorff moves beyond the monist standard of parenthood born of natural reproduction stipulating a unique father and mother, to a pluralist standard of paternity, halakhically and ethically recognizing the paternal standing of the biological and social father. For Dorff, the legality of the biological father is grounded in the Jewish traditional concept of lineage and the modern scientific causative factor of genetics. The legality of the social father, however, is innovatively based not on a causal account, but on a volitional, labor-based account, i.e., raising the child. Dorff (1994b) is not the first Jewish bioethicist or medical halakhist to conscience a pluralist account of parenthood with legal consequences. Bleich (1972), had already suggested the halakhic possibility of partible motherhood and a pluralist standard admitting two biological mothers two decades earlier. However, Dorff is the first to conceive of paternity in similar fashion. This is because he is the first legally oriented Jewish bioethicist to acknowledge a non-biological, labor-based accounting of parenthood.

However, Dorff in his consideration of adoption, perpetuates the rabbinic view that adoptive parents function as agents of the child's biological parents. He does not

utilize a volitional, labor-based account of parenthood to similarly ascribe to adoptive parents, who Dorff also recognizes as social parents, the same standing as the social father whose wife's ovum with donor sperm generated the child that he will raise (Dorff 1998b, 107-9). Presumably, this inconsistency can be accounted for by the constraining precedent of an extant legal model and precedent in rabbinic literature for adoption.

Table 5.6. Summary of Attitudes Toward ART and Definitions and Account of Parenthood

Rabbi Elliot N. Dorff's Jewish Bioethical Views on Parenthood and Procreation Through AI/IVF	
Attitude Toward AI and IVF	AIH/IVF-H: Positive and permitting. AID/IVF-D: Cautiously Positive and permitting.
Definition of Maternity	Monist Causal Account of maternity: Parturition.
Account of Paternity and its Definition	Pluralist Causal & Volitional/Labor Accounts of Paternity. AIH/IVF-H: sperm donor is father. AID/IVF-D: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father.

Dr. John D. Loike and Rabbi Moshe D. Tendler's Epistemological and Axiological Orientation

For the past fifteen years, Dr. John D. Loike and Rabbi Moshe D. Tendler have been publishing together on Jewish bioethics and the relationship of Torah and science. Tendler is a veteran professor of biology and medical ethics at Yeshiva University, as well as a Rosh Yeshiva in Yeshiva University's affiliated rabbinical seminary. He has also served as long-time congregational rabbi, and is the son-in-law of the late renowned twentieth-century posek, Rabbi Moshe Feinstein (d. 1986), for whom Tendler served as Feinstein's chief scientific consultant. Tendler, like Bleich and Dorff, has served on

several bioethical commissions. Rabbinical colleagues and students, physicians and Jewishly observant lay people turn to Tendler for authoritative counsel on bioethical and halakhic matters.

Loike, likewise, is an accomplished scientist and bioethicist, and teaches physiology and cellular biophysics, as well as bioethics, at Columbia University College of Physicians and Surgeons, in addition to pursuing his research interests. Unlike Bleich, Broyde, and Dorff, neither Tendler nor Loike has written extensively on the philosophy and methodology of halakhah. However, they have written on what they have called, “halakhic bioethics,” and thus a helpful intellectual orientation may be constructed for them, as well. Their partnered publications, along with their independent scholarship, combine to provide rich insight into their developing Jewish bioethical views within the context of religion and science relations.¹⁰³

Tendler pioneered the teaching of medical ethics at Yeshiva College in 1953, and in 1969, with the support of the Federation of Jewish Philanthropies of New York, he distributed to NY-area hospitals a *Compendium of Jewish Medical Ethics* (1969), which went through several editions (Loike and Tendler, 2011, 93). Early on, Tendler believed that society has erroneously “assigned to the physician the role of theologian and moralist – a role for which he has no competence” (Tendler 1968, 6). Aiming to provide contemporary medicine with needed ethical guidelines, Tendler began to teach, lecture, and organize conferences on Jewish medical ethics. Tendler believed that the rabbinic literary tradition’s insights into human nature and behavior, as well as its commentaries

¹⁰³ For more on Tendler and Loike, see above, Chapter Two, 63-5.

and case studies directly related to health and healing, were particularly suited to contribute to the burgeoning field of biomedical ethics (Gribetz and Tandler 1984, 1-2). Over the years, Tandler has sought out bioethical collaboration, as with Loike, and has continued to contribute to the development of Jewish bioethics.

Halakhic Bioethics and Medical Halakhah

Building off Beauchamp and Childress's (2009) "Principlism," Loike and Tandler (2011) propose six guidelines for halakhic bioethics, four drawn from Beauchamp and Childress, plus two additions: 1. beneficence. 2. non-maleficence; 3. justice through the allocation of scarce resources; 4. limited autonomy; 5. respect for the sanctity of human life and dignity; and 6. ethical relativism and the slippery slope.¹⁰⁴ The principles of beneficence and non-maleficence, of doing good and no harm, find numerous parallels and support within the Jewish ethical and legal tradition. Likewise, the rabbinic legal tradition developed principles for the allocation of scarce resources in pursuit of justice and equity. Because the Jewish tradition tends to conceptualize health in personal ethics through responsible custodianship, rather than personal ownership, autonomy will be limited per the dictates of Judaism's heteronomous legal and ethical system.¹⁰⁵

Loike and Tandler add two additional guiding principles. Secular bioethics understands the concept of human dignity as relative to larger, cultural ethical constructs.

¹⁰⁴ Beauchamp and Childress's (2009) four principles are: beneficence, non-maleficence, justice, and autonomy.

¹⁰⁵ For example, end-of-life decision making, including refusing treatment, deftly needs to navigate the prohibition of hastening death with the allowance not to delay it. See, Loike and Tandler 2011, 109-10; Loike, Gillick, Prager, Simon, Steinberg, Tandler, Willig, and Fischbach 2010; Tandler 2001.

Different ethnic cultures may thus judge dignity by their own subjective standards. The principle of autonomy permits an intrinsic definition of dignity, allowing even individuals to decide its meaning in their lives. Judaism, on the other hand, claim Loike and Tendler, conceives of dignity as extrinsic, inherent in the image of God in which humanity was fashioned, and articulated in the heteronomous laws of halakhah. As an example, Loike and Tendler cite attitudes toward emerging genetic biotechnologies, such as transgenic human spermatogenesis and oogenesis within animal gonadal tissues:

From a halachic perspective this type of biotechnology infringes upon *kevod heberiyot* (human dignity) and would not be allowed for the following reason: In halacha, human reproduction requires, whenever possible, the involvement of a man and a woman (Niddah 31). The use of animals to create human fetuses would therefore infringe upon the uniqueness of humanhood or *kevod heberiyot*. In contrast, secular bioethicists might argue that this type of experimentation, if demonstrated to enhance fertility and be free from medical harm, would not infringe on any of the four bioethical guidelines. (Loike and Tendler 2011, 107)¹⁰⁶

Similarly, ethical relativism and the slippery slope is something with which halakhic bioethics concerns itself and protects against with foresight.

Fundamentally, though, for Tendler and Loike, the purpose of halakhic bioethics is to provide scientifically and ethically informed formulations, “to help resolve, manage, or defuse real life dilemmas that occur in all bioethical arenas” (ibid., 93). They appreciate the ethical insights from secular bioethical literature, and at times from other faith traditions (Gribetz and Tendler 1984). However, active individual cases seek guidance not in bioethics, but in *psak* – legal decision, i.e., the application of medical halakhah. Since halakhic bioethics and medical halakhah synergistically inform one

¹⁰⁶ For Jewish bioethical views on transgenic biotechnologies, see Loike and Tendler 2003; 2007; 2008; Loike 2013.

another, Tendler's epistemological and axiological resources for both likewise seemingly influence each other.

The Symbiosis of Torah and Science

Tendler and Loike locate their halakhic bioethics in the larger consideration of *Torah uMadda*, i.e., ways of relating Judaism and science. In "Torah and Science: Constructs and Methodology," Tendler (1994) asserts an ultimate unity of religious and scientific knowledge, as both emanate from the single monotheistic source. Science is thus defined as the search for unity amidst nature's seeming chaos. "As a result," claims Tendler (*ibid.*, 19-20), "our language should not allow for the question of whether Torah and *madda* (science) are ever in conflict – not if we restrict *madda* to God's world of science and exclude man-made *madda* recorded in the literature of sociology, social biology, psychology and the arts and letters." Tendler thus declares his belief in the epistemic specialness of both hard science and Torah, despite Torah's fair share of arts and letters. Since both science and Torah reflect the same unified truth, then "there is never a conflict between science and Torah. If there is the appearance of a conflict, it is only due to one of three factors: ignorance of Torah principle; ignorance of scientific facts; or most commonly, ignorance of both" (*ibid.*, 28). Tendler (*ibid.*, 25) compares Torah and halakhah to mathematics and engineering: "Mathematics becomes useful when it is converted to engineering and Torah becomes meaningful when it is converted to Halakhah."

In 1988, Tendler (1988, 116-25) published an article, “Evolution, A Theory that Failed to Evolve: An Update for Torah Schools 5748.” He found two fundamental religious problems posed by Darwinian evolution: one, the age of the universe conflicts with tradition’s account of young universe, less than six-thousand years old; and two, “the other is randomness or undirected evolution that denies existence of a creator.” However, in 2007, Loike and Tendler (2006-07) published, “Molecular Genetics, Evolution, and Torah Principles,” in which they accept molecular genetics as the mechanism of evolution, and newly opine that “randomness is not a synonym for atheism and need not conflict with a Torah-based outlook” (Loike and Tendler 2006-07, 180).¹⁰⁷ They explicitly recognize that medical discoveries are possible because of the molecular genetic link between human beings and other life forms. This turnabout for Tendler attests to the seriousness in which he takes the intellectually symbiotic relationship, as he describes it, between Torah and science in his worldview.

Nishtanah haTeva – Our Way of Understanding Nature Has Changed

Central to Tendler’s, and Loike’s, theology of Torah and science, and their methodology of halakhic bioethics and medical halakhah is the epistemological idea that there is progress to both scientific and halakhic knowledge: “Any discussion on bioethics or medical ethics must recognize that halacha respects new developments in scientific knowledge and technology ... Applying unchanging halachic norms to new scientific realities can be termed *nishtanah hateva*, the ‘nature of things’ has changed” (Tendler

¹⁰⁷ See Loike and Tendler 2014a, 43n14, for an example of recognizing evolutionary development.

2011). Tendler (2004) interprets “*nishtanah hateva*” to mean, not that nature has undergone a historical metamorphosis, but simply that our knowledge of science or medicine has changed.¹⁰⁸ Tendler and Loike (2011, 116) claim that Rabbi Moshe Feinstein, Tendler’s father-in-law held this view, and applied it to his halakhic analyses and rulings, believing that, “under certain circumstances, we should follow the scientific knowledge of the times and rely on the assessment and rulings of the rabbis of every generation.”¹⁰⁹

New Science, Novel technologies, Legal Certainty, and Judicial Doubt

Recognizing progress in science and technology, Loike and Tendler likewise acknowledge that unprecedented phenomena raise concerns of halakhic certainty and doubt: “It is important to emphasize that halachic philosophy and its practical implications have profound effects in dealing with new and emerging bioethical challenges. For example, there are and will be situations where there are no halachic precedents in obtaining a solution...” (Loike and Tendler 2011, 117). In fact, Loike and Tendler (2003, 1) observe that complex biotechnological advances ironically have challenged and caused a reexamination of our simplest presumptions about “the basic definitions of human experience.” In the 1970s, the first heart transplant questioned the

¹⁰⁸ See also Loike and Tendler 2011, 114-5, nn47-50, who credit Rabbi Moses Isserles (Responsum no. 6) with the notion that halachic principles can and should adapt to new scientific procedures and discoveries. They also find support for this view also in the writings of Rav Sherira Gaon, *Otzar HaGeonim Gittin 68b*, responsa section, 37b; Maimonides, *Mishneh Torah*, “*Hilkhot De’ot*” 4:18; Rav Avraham ben HaRambam, *Ma’amar ‘al HaAggadot s.v. Da Ki At; Magen Avraham, Orach Chaim 173:1*.

¹⁰⁹ See Loike and Tendler 2011, 116n58, citing *Igrot Moshe, Even Ha’ezer*, volume 2, 3:2; *Choshen Mishpat*, volume 2, 73:4; and *Yoreh De’ah*, volume 3, 36.

definition of death.¹¹⁰ Similarly, “the birth of the first test tube baby, Louise Brown, in 1978, initiated halakhic discussions regarding the definition of motherhood, the halakhic status of surrogate mothers, and whether babies born by way of in vitro fertilization are included in the formal *mitsva* of reproduction” (ibid.). The advent of genetic technologies such as cloning, the human genome project, transgenic experimentation, and human-animal chimera, have recently raised the question of the fundamental definition of human personhood. In response to all these advancements, Jewish bioethics turns to its moral axiology as developed in rabbinic literature and its halakhic conceptual precedents.

Unanticipated phenomena, however, will sometimes mean that new definitions will need to expand old parameters, like in the case of parenthood and ART. Loike and Tendler’s reading of talmudic texts relevant to procreation and personhood, for example, lead them to posit a “multi-faceted definition of *Homo Sapiens*” that “incorporates biological (being formed within or born from a human), cultural (expressing moral intelligence), and genetic (being capable of producing offspring with a human) criteria” (Loike and Tendler 2002, 349). Like Broyde, before them, they are eisegetically employing theory-laden language to generate innovative interpretations to address biotechnological advances. “Thus,” claim Loike and Tendler, “in this age of *in vitro* fertilization and cloning technology, the talmudic definition of humanness would include any organism formed utilizing somatic cells, germ line cells, or nuclei that were obtained from human beings” (Loike and Tendler 2002, 346). Loike and Tendler further assert

¹¹⁰ For the halakhic bioethical debate concerning the definition of death, see Tendler and Rosner 1989, 1993; Bleich 1991b; and Shabtai 2012. For a historically informed analysis of the debate, see Reichman 1993; and Reifman 2012, 2013.

that, were it technologically possible, a child conceived in vitro and gestated in an artificial incubating womb would earn full human status. However, lest one think that their interpretative process is intentionally revolutionary, they strike a triumphalist and protectionist note: “Within the context of a scientific definition of species we also show how the underlying characteristics, so-called modern theories of human identity, were in fact foreshadowed hundreds or thousands of years ago in halakhic literature” (Loike and Tendler 2003, 1).

Table 5.7 Summary of Epistemological and Axiological Findings for Affirmed Intellectual Orientation

Rabbi Moshe D. Tendler and Dr. John D. Loike’s Philosophy and Methodology of Halakhah and Jewish Bioethics	
Philosophy of Halakhah	Formalist.
Historical Contextualism	Strong Scientific Contextualism.
Theory of Change	Halakhah adapts to and adopts advances in science.
Scientific Epistemology	Hard science is epistemically special and strongly privileged.
Jewish Moral Axiology	Primarily self-sufficient but external influences.
Medical Halakhah and Jewish Bioethics	Jewish Bioethics scientifically and ethically informs. Medical Halakhah rules and guides.
Legal Certainty and Judicial Doubt	Mitigate doubt through ruling.

Dr. John D. Loike and Rabbi Moshe D. Tendler’s on IVF and Parenthood

Tendler was an early advocate of AI and IVF, even with donor gametes, as a therapy for infertility (1984; 1988).¹¹¹ Viewing ART through the lens of bioethics,

¹¹¹ This positive attitude was licensed in great part by the halakhic rulings of Tendler’s father-in-law, Rabbi Moshe Feinstein. See Jotkowitz and Gesundheit, n.d.; and Rosner 1990.

Tendler believed that the rights, duties, and privileges of parenthood needed to be brought into balance in an ethical and equitable application: “These include the right of a husband and wife to procreate; the rights of a fetus or preembryo to life; the interest of society in preserving its ethical foundations; and the hard reality that scarce resources must be allocated amongst many worthy projects, thus pitting many goods against each other (Tendler 1988, 71). Like Bleich, Broyde, and Droff, Tendler and Loike affirm Judaism’s interventionist orientation toward the world, in general, and the duty to heal, in particular: “In Genesis 1:28 we learn that God blessed them and said to them: ‘Be fruitful and multiple, fill the earth and *master* it.’ There is a dual command in this verse. The first is to have children, to procreate. The second is [an] active interventionist role” (ibid., 72). These two commands come together in treating infertility with ART.

IVF/ET and Maternity (Non-Surrogacy)

Tendler, upon review of past medical studies, deems the potential health risks to both mother and child sufficiently minimal as to support strongly IVF/ET. Tendler writes:

The transfer of an autologous embryo, as in the IVF technique using sperm from the husband, and egg from the wife, does not raise any serious ethical issues. ... From the Judaeo-biblical heritage, these techniques conform with the Divine instruction to master the physical and biological world by lifting another veil from the face of nature. The oligospermic husband, the wife with blocked Fallopian tubes, can now be given the opportunity of having children whose cells contain their own hereditary material. (ibid., 72-3)

In the simple case of non-surrogacy AI and IVF/ET, the woman whose ovum is inseminated, and carries and births the resultant child, is unquestionably the halakhic mother.

IVF/ET and Paternity with Husband and Donor sperm

Although Tendler is supportive of AI and IVF/ET, he does believe that, “the issue of legal paternity, however, does present religious ethical questions, especially to those who understand the religious consequence of knowing who your father is, the problem of consanguinity” (Tendler 1984, 9). However, he believes that, “The tumult on this issue is totally unwarranted. Taking a detour from the ovary to the uterus via a Petri plate doesn’t introduce any new factors” (ibid., 9). Tendler confidently asserts: “In any honest analysis using biblical ethics there is no doubt as to the legal paternity of this child. *A child conceived by artificial insemination is clearly the child of the one who donated the genetic material.* There is no question on that issue, nor is there really much of a question concerning bastardy” (ibid., emphasis mine).

Tendler (1988, 74-5) differentiates between adulterous and “unsanctified” sexual relations. Like Dorff, Tendler believes that adultery requires betrayal, and, “infidelity, an act of ‘betrayal’ of the husband’s trust does not occur under the medical protocol of embryo transfer using donor sperm for fertilization. There is no adultery with a hypodermic syringe!” (ibid.). Tendler, however, does exhibit concern about potential deleterious psychological impacts of using donor sperm, as well as the ethical slippery slope that would employ AI-D/IVF-D for eugenic purposes, preferring the superior

genetic stock of a donor to that of a fertile, but average husband, as well as in non-traditional family structures (ibid.). Consanguinity and the specter of unintended incest by a child produced with donor gametes also persists as a concern for Tendler.¹¹² In light of this, Loike and Tendler (2013a, 21) only permit a non-Jewish sperm donor.

Epistemological and Axiological Dimensions: Loike and Tendler on IVF/ET and Parenthood

Tendler and Loike's epistemic privileging of science, and their theology of Torah and science symbiotically representing a single truth, translates into an intellectual orientation of strong scientific contextualism which pulls them in contradictory directions. On the one hand, Tendler and Loike are prepared to recognize scientific progress and utilize their principles of halakhic bioethics, as well as the conceptual halakhic principles deduced from the texts, commentaries, codes, and case law of the rabbinic tradition, to align in realist fashion new scientific understandings with contemporary halakhic guidance. At the same time, their scientific worldview and faith in the verisimilitude of Torah traditions also allows them to read current scientific theory and observations into pre-modern rabbinic texts. In regard to the determination of paternity, they speak in terms of a monist-causal account of parenthood that focuses on genetics. Tendler has consistently identified paternity with genetics. Tendler (1988, 75)

¹¹² Despite Tendler's focus on genetics as a measure of paternity, in the case of testicular transplant, Tendler believes that halakhah views a transplanted organ as becoming legally subsumed by the transplantee, and thus the transplantee would be the father of any offspring born of sperm emanating from his body, despite having the genetic signature of the gonadal donor. At the same time, while this conceptual analysis and application resolve the question of halakhic paternity, biological inbreeding is still a concern, and thus good health records of both donor and recipient should be kept. See Tendler 1988, 76.

goes so far as to assert: “The sperm with its genetic material determines the paternity of the fetus. The ‘artificiality’ of AID or ET does not alter this conclusion, clearly held by all biblical authorities.” Even if the sages of antiquity had observed patterns of heritability and espoused contemporaneous theories of the role of male and female gametes in reproduction, they surely did not enjoy the knowledge of genetics born of scientific method and awakened in a unique, scientific-historical context.¹¹³ As emphasized above regarding Broyde’s similar use of genetic terminology, speaking of a genetic father, rather than of a sperm donor, impresses contemporary scientific awareness into the halakhic process, not only conveying that our knowledge of nature has changed, but also that our new-found knowledge of nature likewise changes medical halakhah and Jewish bioethics semiotically through the introduction of new theory-laden language. This will become more explicit in our analysis of Loike and Tendler’s halakhic bioethical views on surrogacy.

Table 5.8. Summary of Attitudes Toward ART and Definitions and Account of Parenthood

Rabbi Moshe D. Tendler and Dr. John D. Loike’s Jewish Bioethical Views on Parenthood and Procreation Through AI/IVF	
Attitude Toward AI and IVF	AIH/IVF-H: Positive and permitting, AID/IVF-D: Permitting when sperm donor is non-Jewish.
Definition of Maternity	Monist Causal Account of maternity.
Definition and Account of Paternity	Monist Causal Account of Paternity. Paternity is identified by the Genetic Father who is always the sperm donor.

¹¹³ For the history of genetics, see Mukherjee 2016.

Chapter Conclusion

Modern in vitro fertilization, like its much older, chronological predecessor, artificial insemination, initially rattled the scholarly community of medical halakhists, especially with the introduction of third party gametes. Jewish bioethics was then a developing field in its earliest stages and new scientific knowledge was slowly being assimilated into the halakhic discussion. In the West, sexual mores were going through radical change challenging traditional Jewish axiologies. In our study of this dissertation's four bioethical exemplars thus far, we constructed an intellection orientation for each based on their writings on the philosophy and methodology of halakhah and bioethics, and then evaluated the epistemological and axiological dimensions of their overall intellectual orientation, as well as their specific Jewish bioethical analyses of AI and/or IVF (see Table 5.9 below). Each, in his own way, demonstrates the imprint of scientific knowledge in developing a bioethical and halakhic discussion of greater nuance, as well as a more sophisticated philosophy and methodology of halakhah and bioethics. Their writings on AI/IVF also show how their growing and changing epistemologies and axiologies influence their readings of ancient and contemporary sources. Novel technologies force new considerations of definitions, like those of paternity and maternity, long considered clear and settled. The relationship between epistemology and moral axiology, as well as the Jewishly internal and external sourcing of knowledge and ethical values, likewise impact upon their contemporary Jewish bioethical and medical halakhic viewpoints regarding ART and its outcomes. Changing moral value-judgments

under the influence of evolving social attitudes and the increasing widespread use of new technologies also play a role in Jewish bioethical assessments of ART.

Each of the four exemplars also introduces methodological mechanisms that facilitate change in Jewish law and ethics in response to advances in science. Bleich introduces theoretic holism, which he posits regarding the halakhic system. However, holism must also allow for the impact of assimilated new scientific knowledge on the interconnected whole. Broyde introduces innovative interpretation as the primary engine of change in halakhah. Novel scientific awareness and understanding catalyze and empower such innovative interpretation, and thereby engender halakhic change. Dorff points to unanticipated scientific discovery and invention as creating indeterminate gaps within the halakhic system for which there may not be sufficient resources to provide apt legal precedent or analogy. Responding to those indeterminate gaps can introduce halakhic change. Tendler and Loike assert the need for realist realignment in face of changing scientific understanding to ensure that Torah is a *Torat Emet* – a Torah of truth. The Jewish bioethical analyses and medical halakhic adjudications of ART enlist these four methodological mechanisms as ART continues to develop and progress in unprecedented ways.

Table 5.9. Epistemological and Axiological Findings Matrix for Intellectual Orientation, Attitude Toward ART, and Definition of Parenthood for Four Exemplars

x: Exemplar y: Intellection Orientation	Rabbi J. David Bleich	Rabbi Michael J. Broyde	Rabbi Elliot N. Dorff	Rabbi Moshe D. Tendler and Dr. John D. Loike
Philosophy of Halakhah	Legal Positivism	Formalist	Non-Formalist	Formalist
Historical Contextualism	Anti- Contextualism	Moderate Contextualism	Strong Contextualism	Strong Scientific Contextualism
Scientific Epistemology	Hard science is epistemically special and moderately privileged	Hard and soft sciences are epistemically special and moderately privileged	Hard and soft sciences are epistemically special and strongly privileged	Hard science is epistemically special and strongly privileged
Jewish Ethical Moral Axiology	Internally self- sufficient	Primarily self- sufficient but external influences	Internally insufficient	Primarily self- sufficient but external influences
Medical Halakhah and Jewish Bioethics	Jewish Bioethics is scientifically and comparative- legally Informed Medical Halakhah	Jewish Bioethics is scientifically and comparative- legally informed Medical Halakhah	Jewish Bioethics scientifically and ethically informs and stretches Medical Halakhah	Jewish Bioethics scientifically and ethically informs. Medical Halakhah rules and guides.
Legal Certainty and Judicial Doubt	Strongly avoid doubt.	Mitigate doubt through ruling.	Mitigate doubt through judicial license.	Mitigate doubt through ruling.
Theory of Change	Circumstances change, not halakhic fundamentals.	Evolutionary Halakhah through innovative interpretation	Halakhah stretches in light of changes and innovations.	Halakhah adapts to and adopts advances in science.
Attitude Toward AI and IVF	AIH/IVF-H: Negative AID/IVF-D: Prohibiting	AIH/IVF-H: Positive AID/IVF-D: Permitting	AIH/IVF-H: Positive AID/IVF-D: Cautiously Positive	AIH/IVF-H: Positive AID/IVF-D: Permitting if D non-Jewish
Definition of Maternity	Monist Causal Account	Monist Causal Account	Monist Causal Account	Monist Causal Account
Definition and Account of Paternity	Always sperm donor. Monist Causal Account	Always sperm donor. Monist Causal, but differentiates <i>Genetic father</i> of sexual and non- sexual procreation <i>Biological father</i> of sexual reproduction.	AIH/IVF-H: sperm donor AID/IVF-D: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father. Pluralist Causal & Volitional/Labor.	Always sperm donor. Monist Causal Account: Genetic Father

CHAPTER SIX

Gestational Surrogacy and Ovum Donation

Artificial insemination (AI) and in vitro fertilization (IVF) represent two assisted reproductive technologies (ART) that have advanced new approaches to overcoming fertility challenges for couples utilizing their own gametes. As modes of non-sexual reproduction, they have also introduced the possibility of the participation of third-parties in a collaborative reproductive process. AI and IVF allow for sperm donation from a third-party, as discussed in Chapter Five, and IVF also allows for a third-party ovum donor, as well as for a gestational surrogate.

In this chapter, I focus on IVF with ovum donations and/or gestational surrogacy. In such cases, previously unified maternal processes – gamete provision, conception, gestation, and parturition – are further splintered into divided processes. Gestational surrogacy needs to be differentiated from other forms of surrogate motherhood discussed in the bioethical literature. Gestational surrogacy specifically refers to the case in which the woman who gestates and delivers the child is different from the woman whose ovum was utilized for conception. Thus, IVF with ovum donation is also categorized as a form of gestational surrogacy. In such cases, there is seemingly no genetic relationship between the gestational carrier and the resultant child. Traditional surrogacy refers to a case in which the woman who gestates the child also contributes the ovum, and was inseminated either by a sperm

donor or by a married man.¹ Here there is a direct genetic connection between the child and surrogate mother, and possibly between the child and the man who aspires to be the social father. In traditional surrogacy, the expectation is that after birth the biological mother will relinquish her custodial rights to the resultant child which a husband and wife wish to raise as their own (ASRM 2015). Table 10 summarizes possible cases of surrogacy.²

Table 6.1. Forms of Surrogacy. TS = Traditional Surrogacy; GS = Gestational Surrogacy.

Case #	Surrogacy	Conception	Ovum Donor	Sperm Donor	Gestation/ Parturition	Social Mother	Social Father	Collaborators
1	TS	AI/Natural	Surrogate	Husband	Surrogate	Wife	Husband	3
2	TS	AI/Natural	Surrogate	Donor	Surrogate	Wife	Husband	4
3	GS	IVF	Wife	Husband	Surrogate	Wife	Husband	3
4	GS	IVF	Wife	Donor	Surrogate	Wife	Husband	4
5	GS	IVF	Donor	Donor	Surrogate	Wife	Husband	5
6	GS	IVF	Donor	Husband	Wife	Wife	Husband	3
7	GS	IVF	Donor	Donor	Wife	Wife	Husband	4
8	GS after embryo/fetal transplant ³	AI/IVF or Natural	Wife	Husband	Surrogate	Wife	Husband	3
9	GS? Ovarian Transplant	Natural	Donor	Husband	Wife	Wife	Husband	3

¹ Other nomenclature is also utilized in the bioethical and legal literature, such as “commercial surrogate” which identifies a woman who is paid to provide the labor of pregnancy, and after parturition, deliver the resultant child to the “commissioning parents”; a “partial surrogate” or “ovum surrogate,” other names for a traditional surrogate, provides both ovum and gestation; and a “full surrogate” provides gestation but no gametes. See, Singer and Wells 1985, 96; Arneson 1992, 132.

² See Broyde 1988, 131-2 who lists four cases of surrogacy, including ovarian transplants, and see Dorff 1998b, 58 who lists six cases.

³ In the early 1970s, some fertility specialists anticipated being able to transplant fetuses from one woman to another. While this made for interesting bioethical theorizing at the time, this project has been medically abandoned and deemed unfeasible.

Again, in all cases of gestational surrogacy, the ovum donor and the woman who gestates and delivers the child are different. Collaborative procreation thus raises anew the question of the nature of parenthood and its grounding, and gestational surrogacy particularly complicates maternal identification. As before, we will first understand the current science and its history, then identify issues of larger bioethical discussion, and then more particularly of Jewish bioethical concern, and finally evaluate the epistemological and axiological dimensions of the contemporary Jewish bioethical debate concerning maternal and paternal identity regarding gestational surrogacy.

The History of Ovum Donation and Gestational Surrogacy

As presented in Chapter Five, some credit the first IVF of mammalian ova to Harvard biologist Gregory Goodwin Pincus and E. V. Enzmann's in 1936. They successfully harvested an ovum from one doe rabbit, achieved IVF, and then embryo transfer (ET) to an unmated, second doe rabbit that subsequently gave birth. In other words, not only did they claim to achieve IVF, but also represent a first ever claim to gestational surrogacy!⁴ Immediately after the announcement of this feat on March 26, 1936, science journalist William L. Laurence wrote in the New York Times:

As rabbits and men belong to the mammalian group, the work is viewed as pointing toward the possibility of human children being brought into the world by a "host-mother" not related by blood to the child. It is reasoned that eventually

⁴ As also mentioned in Chapter Five, later scientists doubted the veracity of these "first" claims given advances in the understanding of gamete physiology that make earlier successes unlikely. Pincus also claimed that he had parthenogenetically fertilized rabbit ova absent sperm, through a strong salt solution or high temperatures, thus making him the first ever claim of cloning as well! See Laurence 1936. For the possibility of mammalian parthenogenesis, see Kono 2004.

women capable of having children whose health does not permit them to do so may “hire” other women to bear their children for them, children actually their own flesh and blood. To one who desires to speculate at this point the Harvard experiment offers another possibility. Theoretically, at least, it may become possible for a woman so inclined, particularly in a country influenced by eugenic considerations, to bring into the world twelve children a year by “hiring” twelve “host-mothers” to bear their test-tube-conceived children for them. Advocates of “race betterment” might urge such procedures for men and women of special aptitudes, physical, mental or spiritual. (Laurence 1936)

The New York Times followed up this article with a eugenically inclined editorial the next day entitled “Brave New World,” acknowledging that the “social implications ... are not easily grasped ... [but now,] human destiny, conscious and deliberate physical and mental improvement will be the concern of the race ... the species will be more important than any individual.” The editorial also consolingly reassures its readership that love will never die even as it is sundered from parenthood: “It will be a different world, with a spirituality and a passion of its own” (New York Times 1936; Biggers 2013, 7).

In the 1970s, changing social-sexual mores and the ongoing development of fertility medicine created a scientific and social environment more open to collaborative reproduction, including traditional surrogacy through AI. Although some trace the history of traditional surrogacy throughout the ages all the way back to Genesis (16:1-15), when Sarai appoints her maidservant Hagar as a surrogate mother to Abraham, in the Modern Era, the first legal contract between a surrogate mother and a married couple was drafted in 1976 (Van Gelder 1997).⁵ Surrogate motherhood made headlines in 1987-8 with the infamous case of “Baby M,” a baby girl born on March 27, 1986, to Mary Beth Whitehead, who had contracted with William and Elizabeth Stern to be artificially

⁵ Rachel and Leah similarly use their maidservants Bilhah and Zilpah as surrogates, see Genesis 30:1-24.

inseminated with William Stern's sperm, and then gestate and bear his child, which upon delivery would be given to the Sterns in consideration of a \$10,000 payment. After the birth of the child, who Whitehead named Sara and the Sterns named Melissa, and some custodial back and forth, Whitehead had a change of heart and refused to relinquish her daughter to the Sterns. On March 31, 1987, Judge Harvey R. Sorkow declared the contract binding and issued an adoption order establishing Elizabeth Stern as Baby M's legal mother. A year later, on February 3, 1987, the New Jersey Supreme Court overturned Sorkow's previous ruling, invalidating surrogacy contracts more generally, and setting into motion a complicated history of judicial and legislative consideration of traditional surrogacy, procreative liberty, and contract law (Shanley 2001, 102-3; 177-8nn1-4).

In 1985, in the United States, seven years after the birth of Louise Brown, the first successful human IVF/ET, Wulf H. Utian, Leon Sheean, James M. Goldfarb, and Robert Kiwi reported the first successful gestational-surrogate pregnancy utilizing an embryo conceived in vitro with an infertile women's ovum and her husband's sperm. The gestational surrogate was a married, twenty-two-year-old woman, who already had borne two healthy children (Utian, et al. 1985). Four years later, in 1989, Patrick Steptoe and Robert Edwards oversaw Europe's first case of gestational surrogacy. Treatment guidelines, ethical considerations, legal adjudications, and regulatory directives followed.⁶ While traditional surrogacy has a track record of legal complications and

⁶ Surrogacy laws and governmental regulations vary greatly within the United States, and throughout the world. See Rao 2003 for an analysis of the "patchwork" of laws and regulations in the US. In the UK, surrogacy is fully regulated, see Brinsden 2003. Likewise, surrogacy is fully regulated in Israel, see Schuz 2003.

conflicts, gestational surrogacy less so. Longitudinal follow-up studies for gestational surrogacy attest to largely positive outcomes (Goldfarb, et al. 2000; Brinsden 2003).

The Science of Gestational Surrogacy

Gestational surrogacy is achieved through the same IVF reproductive technology presented above in Chapter Five. The clinical process of IVF/ET remains nearly the same for all cases of gestational surrogacy. The difference being that hormonal therapy is necessary to prepare two women for their respective contributing roles. The egg donor needs to undergo ovarian stimulation and oocyte retrieval, thereby assuming attendant health risks and inconvenience.⁷ The gestational surrogate needs hormonal manipulation to ready her uterus for implantation (ASRM 2015, 14). Beyond the health risks of hormonal treatment, the surrogate also bears health risks and inconveniences attendant to pregnancy and delivery. In ovum surrogacy, a woman lacking viable ova can gestate a fetus conceived via IVF from a donor ovum and her husband's sperm, or a donor embryo. Whereas in gestational surrogacy, a woman can gestate a fetus conceived in vitro with the healthy ovum of a woman who is unable to carry a pregnancy to term for any number of reasons, such as missing or malformed uterus, or due to a disease or medical condition making pregnancy too high of a health risk to the ovum donor/social mother and/or to the fetus (Dorff 1998, 59).

⁷ Egg donors, like sperm donors, are also tested for infectious disease, as well as are screened for medical and genetic history. Recent advances in oocyte vitrification and cryopreservation have made it newly possible to freeze donated ova for an extended period before use to allow for a post-latency period re-testing of the donor for infectious disease. Since egg donation entails both health risks and inconvenience, significant monetary compensation is often provided to the donor. In general, the IVF/ET costs are greater in cases of gestational surrogacy since more than one woman needs to be treated, see ASRM 2015, 14.

Issues of General and Jewish Bioethical Concerns Relating to Gestational Surrogacy

While gestational surrogacy originally began as a method for a married couple to overcome infertility, over time it assumed other social uses, when legally permitted. Gestational surrogacy has become an option for same-sex couples to generate children genetically related to themselves through gamete donation, as well as an option for fetal incubation for a woman who desires a genetically related child, but prefers not to be burdened by pregnancy. Changing family constructs thus became an issue of social and ethical concern and regulation. The increasing medicalization of childbirth raised anew questions of artificiality and naturalness (Cook, Sclater, and Kaganas 2003, 5-6; Teman 2003a,b).⁸ Popular, scholarly, and legal debates raged about the commodification of reproduction, the potential for exploitation of surrogates, discrimination in selection processes, distributive justice, procreative liberty, privacy, and bodily autonomy (Purdy 1989, 1990; Ber 2000). Feminist ethicists themselves have been divided in their assessments of surrogacy, some adamantly against, and others in favor of legalization (Anderson 1990; Shalev 1989; McLeod 2009).⁹ Some ethicists seek to distinguish between commercial and altruistic surrogacy, i.e., “contract” and “gift” surrogacy, with the former considered a form of prostitution or contractual slavery, and the later an act of kindness. Others, however, argue that both types of arrangements curtail personal autonomy, entail risk, attenuate birth-mothers’ rights, and have the potential for exploitation (Anleu 1992; Lane 2003). Yet others acknowledge the exploitation implicit

⁸ In legal disputes, claims of naturalness and accusations of artificiality get caught up in the identification of legal parenthood, see Annas 1991.

⁹ See also Arneson 1992; and Laufer-Ukeles 2002.

in the commodification and commercialization of reproduction, but argue that voluntary, mutually advantageous exploitation is not immoral and should be legal (Wertheimer 1992). Medical professionals and bioethicists alike worry for long-term, negative, psychological impacts, as well as whether or not there should be ongoing familial entanglements between the child, the genetic and/or social parents, and the surrogate.

Jewish bioethicists, jurists, and medical halakhists consider many of these issues, as well, especially in Israel which has legalized and regulated gestational surrogacy since 1996.¹⁰ They also concern themselves with questions of confidentiality and disclosure regarding consanguinity and the later potential for unintended incest, and related questions pertaining to the use of donor gametes from relatives, and relatives serving as gestational surrogates. However, the primary issue that has engaged medical halakhists and Jewish bioethicists regarding gestational surrogacy, including IVF with ovum donation, is the question of maternal identification – who is the halakhic mother? Additionally, since halakhic Judaism asserts that Jewish identity is matrilineal, when collaborative reproduction utilizes the gamete and/or gestational services of non-Jews, the resultant child's Jewish status and the possible need for religious ritual conversion are also at question (Steinberg 2003g, 581-3; Heisherik 1997; Kurztag 1999; Wahrburg 2011).

¹⁰ See Shifman 1987; Kahn 1998, 2000; Clark and Silverman 1999; Schenker 2003; Schuz 2003; Sinclair 2003, 113-20; Hashiloni-Dolev 2006.

Gestational Surrogacy and Parenthood: Epistemological and Axiological Considerations

Paternal identification in cases of traditional or gestational surrogacy is the same as in the case of AI and IVF with husband and donor sperm discussed above in Chapter Five. However, the question of maternal identity in cases of gestational surrogacy is virtually unprecedented. The closest medical analogy would be to ovarian transplantation, whose halakhic evaluation was analyzed above in Chapter Four. There too the gestational carrier does not share the same DNA with the ovum whose fertilization generated the child she will deliver. However, even this commonality only arises with new knowledge of the science of oogenesis and genetics. On the surface, the case of ovarian transplantation is fundamentally unlike the case of gestational surrogacy, given that conception is achieved naturally between a unique woman and man. Therefore, scientific awareness and the role of new knowledge are potentially poised to play an important epistemological role in the adjudication of maternal identification in gestational surrogacy. Additionally, philosophical and secular legal literacy may also aid in the conceptualization of collaborative reproduction and its application in legal reasoning.

However, as legally oriented scholars, the first tack that medical halakhists and Jewish bioethicists will take to assess maternal identification in cases of gestational surrogacy is to mine the rabbinic-textual tradition for potential legal precedents and analogies. Such analogical findings are then tested and sifted over time in the crucible of scholarly debate. Once again, the imprint of scientific

knowledge and its awareness need to be epistemologically discerned for each discrete analysis of such legal precedents and analogies.

Axiologically, in a way, we begin at the end and work backwards. Today, gestational surrogacy is widely supported within a broad spectrum of the Jewish community. There are indeed rabbinical leaders of the Haredi community in Israel and the United States who have utilized broadsides to prohibit sperm and ovum donation, and gestational surrogacy (Wosner 2009). However, the necessity of broadside proclamations may itself indicate increasing social acceptance amongst the grassroots. Furthermore, there are Haredi, Modern Orthodox, and Conservative halakhists who permit gestational surrogacy, and Orthodox fertility-consultation services that will assist couples seeking halakhic counsel regarding and assistance with gestational surrogacy, such as Machon Puah in Jerusalem.¹¹ Yet, such was not the case upon gestational surrogacy's arrival as a viable ART (Zohar 1991, 13-4).¹² What axiological dynamics account for the change in attitude and orientation?

We now proceed to investigate this dissertation's four Jewish bioethical exemplars on ovum donation and gestational surrogacy: Rabbis J. David Bleich, Michael J. Broyde, Elliot N. Dorff, and Moshe D. Tendler and Dr. John D. Loike.

¹¹ See Nishmat's "Women's Health and Halacha" website, <http://www.yoatzot.org/questions-and-answers/answer.asp?id=1048>.

¹² David Feldman and Fred Rosner were of the first Conservative and Orthodox, respectively, Jewish bioethicists to permit, see, Rosner 1991, 114.

Rabbi J. David Bleich on Gestational Surrogacy and Parenthood

The question of maternal identity and gestational surrogacy in Jewish bioethics and medically halakhah preceded the first reported case of gestational surrogacy in 1985 by fifteen years. In March 1970, in England, there was “widespread public discussion” about test-tube babies and incubating host-mothers due to claims that such reproductive possibilities were imminent. Chief Rabbi of England Immanuel Jakobovitz released a statement at the time commenting:

Hardly less offensive to moral susceptibilities is the proposal to abort a mother’s naturally fertilized egg and to re-implant it into a “host-mother” as a convenience for women who seek the gift of a child without the encumbrance and disfigurement of pregnancy. To use another person as an “incubator” and then take from her the child she carried and delivered for a fee is a revolting degradation of maternity and an affront to human dignity. (Jakobovitz 1975, 264-5)¹³

While Jakobovitz does not add halakhic analysis to his moral denunciation, in 1972, J. David Bleich, published a preliminary halakhic analysis of “Host-Mothers” as part of his series surveying recent halakhic periodical literature. Bleich (1972, 127) considers medical factors beyond convenience for gestational surrogacy, theoretically asking regarding fetal transplantation: “Would Halakhah sanction the use of a ‘host-mother’ for the purpose of saving the fetus?” Additionally, Bleich inquires if gestational surrogacy took place regardless of its halakhic sanction, who would we identify as the halakhic mother?

¹³ In 1975, Jakobovitz updated his 1959 *Jewish Medical Ethics* with an additional chapter, “Recent Developments in Jewish Medical Ethics,” in which this quotation appears, see Jakobovitz 1975, 251-94.

Absent any clear precedent or previous halakhic discussion, Bleich considers whether ovarian transplantation may serve as a legal analogy. Citing the prior analysis of Rabbi Yekutiel Ayreh Kamelhar of Chicago, who in 1932 wrote that he halakhically viewed a transplanted organ as having assimilated into, and thereby assuming the identity of the recipient's body, Bleich (Bleich 1972, 129) states: "To a significant degree, the identical argumentation may be applied in determining the maternity of a child born of a fertilized ovum implanted in the womb of a host-mother."¹⁴ Kamelhar himself had identified two possible legal analogies to support his ruling regarding ovarian transplantation. First, in agricultural halakhah, a limb of a less-than-three-year-old tree assumes the chronological age of an older tree upon which it is grafted. Second, in the laws of animal husbandry, only the mother is considered to establish the species of the offspring since she "nurtures and sustains the embryo" (ibid., 128). Kamelhar opined that even per the conflicting opinion that "the father's seed is to be considered," that is only because in inter-species mixing, the male seed plays a dynamic role. For Kamelhar, the ovary is distinct from dynamic seed and only functions by being situated in a body.¹⁵ Bleich asserts that in the case of gestational surrogacy, like for the halakhah of species determination, "it is the host-mother who nurtures the embryo and sustains gestation" (ibid., 129).

¹⁴ See above, Chapter Four, p. 146 ff., 146n34; Reichman 1998, 46-8.

¹⁵ Knowledge of oogenesis postdates Kamelhar. Although Bleich does not refer to oogenesis here, he does so in his article on "Test-Tube Babies," see Bleich 1978, 89-90.

Bleich, however, also distinguishes embryo transplantation from ovarian transplantation. He writes:

However, the role of the natural mother in determination of identity is a dynamic one and analogous to that of "the seed of the father." It may therefore be argued that, according to those who assert with reference to classification of hybrids that "the seed of the father is to be considered" in the case of an already fertilized ovum the maternal relationship between the child and the donor mother is to be "considered" no less than "the seed of the father." Consideration must also be given to the possibility that perhaps two maternal relationships may exist simultaneously just as maternal and paternal relationships exist at one and the same time. The child would then in effect have two "mothers," the donor mother and the host mother.

According to some authorities, however, the donor mother alone may be viewed as the mother in the eyes of Jewish law. There are those who maintain that the prohibition against feticide is applicable from the moment of conception and deem the fetus to be a nascent human being even in the earliest stages of gestation. According to this view, the zygote may perhaps be viewed as having already acquired identity and parentage. (ibid., 129)

Bleich thus begins the Jewish bioethical consideration of maternal identity in cases of gestational surrogacy by making four important points while surveying the logical halakhic possibilities:¹⁶ First, perhaps the host-mother should be considered the halakhic mother because the embryo is assimilated into her body, and she gestates and nurtures it, suggesting a labor-based, causal account of maternity. Second, perhaps, the ovum donor, who in the case of embryo/fetal transplantation is also the "natural mother," is the halakhic mother since she plays a dynamic role "in the determination of identity," akin to "the seed of the father" (ibid.). In other words, although in 1972 Bleich does not yet invoke genetics, he recognizes a causal account of parenthood and personhood related to the gametic imprint upon identity. Third, perhaps the ovum donor should be considered

¹⁶ Note that here Bleich does not acknowledge the possibility that a child born through gestational surrogacy has no halakhic mother. He does contend with this possibility later in Bleich 1995a, 238-42.

the halakhic mother because parenthood arguably attaches along with personhood, and in the halakhic debate surrounding abortion, some halakhic authorities endow personhood, i.e., the status of, in Bleich's words, "a nascent human being," during the earliest stages of gestation and therefore prohibit abortion as feticide (ibid.; Bleich 1979d). Per Bleich, even a zygote may have "already acquired identity and parenthood, and thus the ovum donor's maternal claim preempts that of the "host-mother" (Bleich 1972). Fourth, It may be possible that collaborative reproduction will create a new circumstance in which "two maternal relationships may exist simultaneously" (ibid.). Thus, for the first time in Jewish history, Bleich moves the halakhic and Jewish bioethical discourse from a monist to a pluralist standard of maternity.¹⁷

In 1981, three years after the first successful IVF and his first article on "Test-tube Babies," and four years before the first successful gestational surrogacy, Bleich returned to the question of maternal identity in cases of host-mothers.¹⁸ Here he explicitly invokes genetics: "The question which must be considered is whether, for purposes of Jewish law, maternal identity is established by conception, by parturition or, perhaps, by genotype" (Bleich 1981b, 359). Bleich then adduces a talmudic support for parturition establishing maternal identity, and an aggadic support for conception as a determinant.

¹⁷ The earliest conception of a pluralist standard of biological maternity in Western medicine may possibly be attributed to Robert Tuttle Morris who used the phrase "treble parentage" in 1895 in a surgical treatise, that included a chapter on ovarian transplantation, see Morris 1895a, 156-9, cited in Simmer 1970, 321, 327n55. Simmer, *ibid.*, tells how ovarian transplantation aroused much controversy regarding maternal identification. See also Reichman 1998, 35-6. There is no indication that Bleich was aware of this history. See also S. Feldman 1992.

¹⁸ Bleich's 1981b article was reprinted in a slightly more expanded rendition in Bleich 1983.

Citing Rabbi Moshe Hershler (Hershler 1980, 1:316), Bleich brings in a talmudic passage (TB Yevamot 97b) that rules that twin sons born to a woman who had converted to Judaism after conception, but prior to parturition, have no obligation for levirate marriage if one brother would predecease his twin while childless, since, in utero, the “rebirth” of conversion halakhically severs parental ties. At the same time, they cannot marry each other’s wife after a divorce because their twin-birth established them as maternal brothers. Thus, opines Hershler, this talmudic passage establishes maternal identity and relations at parturition.

After his full halakhic analysis, as an additional support, Hershler (*ibid.*, 319-20) introduces an aggadic source into the Jewish bioethical discussion of gestational surrogacy. Genesis 30:23-4 identifies Joseph as the son of Rachel; Genesis 34:1 calls Dinah, “the daughter of Leah.” However, both the Babylonian and Palestinian talmudic traditions preserve a more complicated background to the birth of Dinah and Joseph. Per the aggadah, Rachel was pregnant with a girl and Leah with a boy. However, Leah knew through divine inspiration that Jacob would have twelve sons, and given that she already had six, and each of the maidservants, Bilhah and Zilpah, had two, if she would bear another son, then Rachel would only contribute, at best, one son to the twelve tribes. In order to for Rachel to contribute at least the same number of sons as the maidservants, Leah prayed to God to effectuate a switch. The Palestinian Talmud (Berakhot 9:3) understands that the gender of each fetus changed in utero. Some interpret the Babylonian Talmud (Berakhot 60a) similarly. However, *Targum Yonatan* (Genesis 30:21) interpolates into his Aramaic translation of Genesis that Leah prayed for, and was

granted, a fetal transfer.¹⁹ Thus, even though Leah was conceived by Rachel, since she was born of Leah, she is “the daughter of Leah,” further supporting parturition as the maternal indicator.

Rabbi Menashe Grossberg (1925, 145-6) in his commentary on *Targum Yonatan* applies this aggadic tradition to uterine transplantation: “from here there is support for the halakhic consideration of a woman in whom physicians transplanted her daughter’s reproductive organs, whether she is permitted to her husband (for sexual relations), or whether she is incestuously prohibited.”²⁰ Grossberg had previously cited Rabbi Meir Eisenstadt’s *Kotnot Or* (1891, 51) to resolve Rabbi Elijah Mizrachi’s question regarding Rashi’s commentary on Genesis 46:10 that stated Simeon married his sister Dinah, though they were both children of Leah. If, however, Leah was really Rachel’s daughter, and prior to Sinai only maternal siblings, but not paternal, were incestuously prohibited, then Simeon married her lawfully. Rabbi Bleich suggests that, per Grossberg, conception establishes maternity. It should be noted, though, that conception as a determinant need not be based on a genetic account per se.²¹ However, in light of Grossberg and Hershler’s utilization of the same aggadah to arrive at opposite conclusions, Bleich concludes that

¹⁹ For more information about *Targum Yonatan*, i.e. Pseudo-Jonathan, see Beattie and McNamara 1994. Rabbi Shmuel Eidels (1555-1641), in *Maharsha*, ad loc. Niddah 31a, interprets TB Berakhot 60a in light of *Targum Yonatan*’s fetal transfer.

²⁰ Grossberg doesn’t complete the application which presumably would prohibit a man from cohabiting with his wife into whom was transplanted her daughter’s reproductive organ since the original identification endures. It is also interesting that Grossberg reverses the medical scenario which originally positing the transplantation of a mother’s reproductive organ into her daughter, see above, Chapter Four, 145 ff.

²¹ This is made clear by Frimer 1982, 174, in a letter to the editor in response to Bleich 1981b.

this “illustrates the cogency of the position ... that halakhic principles are not derivable from aggadic sources” (Bleich 1981b, 360).²²

In 1991, Bleich returned to consider ovum donation and gestational surrogacy, but this time frames the question of maternal identification in the idiom of modern medicine: “In each of these cases there is some question with regard to whether the genetic mother or the gestational mother is regarded as the child’s mother for matters in which such a relationship is significant in Jewish law...” (Bleich 1991a, 82). Bleich asserts that “the consensus of rabbinic opinion is that the maternal-filial relationship is generated between the gestational mother and the child, despite the absence of any genetic relationship, by virtue of parturition alone” (ibid.). He further states that it is an open question as to whether the resultant child may have two halakhic mothers. Bleich rehearses the possible options for maternal identification in an increasing variety of scenarios, copiously citing, elucidating, and critiquing the growing medical halakhic literature and its adduced legal analogies, precedents, and reasoning. For Bleich, “the crux of the question, however, is whether halakhah at all recognizes a maternal relationship based upon donation of an ovum, i.e. a relationship based solely upon genetic considerations” (ibid., 87). He acknowledges that there indeed may not be any rabbinic sources that can be marshalled as evidence for a genetic account of maternity. In his conclusion, Bleich restates his opening assertions:

In the opinion of this writer, the preponderance of evidence adduced from rabbinic sources demonstrates that parturition, in and of itself, serves to establish

²² Bleich cites this conclusion in the name Rabbi Joshua Feigenbaum who critiqued Grossberg’s utilization of this aggadah for a halakhic application. Bleich argument is perplexing here because different halakhists will sometime utilize the same halakhic source and also arrive at opposite conclusions.

a maternal relationship. Nevertheless, the possibility that Jewish law may recognize a second maternal relationship based upon donation of an ovum cannot be excluded and indeed there is some evidence indicating that such an additional relationship is recognized. It is also possible that an additional non-genetic and non-parturitional relationship, or even multiple relationships of that nature, may be established on the basis of gestation. Thus, for purposes of Jewish law, the relationship arising from parturition must be regarded as firmly established whereas genetic and gestational relationships must be regarded as doubtful (*safek*). The primary effect, but by no means the sole implication, of recognition of this “doubtful” relationship is to prohibit marriage between genetic siblings and other genetic relatives. (Bleich 1991a, 95)

Although Bleich’s knowledge of human reproduction leads him to consider maternal identifications brought to light by scientific advancement, in the end, his philosophy of “halakhic positivism” privileges a process of halakhic adjudication based on the received textual tradition. While his willingness to consider a pluralist standard of maternity seems to stem in part from his affirmative belief that science and Torah converge on a single truth, his advocacy for dual-maternity primarily comes from his approach to legal certainty and judicial doubt.²³ As Bleich (2017a, 9-10) recently posited: “The most fundamental expression of “*Zeh Keli ve-anvehu* – This is my God and I will beautify Him” (Exodus 15:2) is scrupulous avoidance of halakhic doubt in performance of *mitzvot*.”²⁴ This holds especially true in cases of ambiguous maternal identity given the halakhic fundamentality of Jewishness and severity of the laws of consanguinity.

In 1994, however, Bleich revisited maternal identification in light of Rabbi Ezra Bick’s (1993) published critique of his halakhic method and conclusions. Bick, a *Rosh*

²³ See Sinclair 2003, 107, who believes Bleich’s theory of plural motherhood is “a response to the challenge to the traditional approach raised by modern genetics.”

²⁴ See Bleich 1994, 56, where he concludes that when “conventional halakhic methodology provides no solutions,” like in the matters of gestational surrogacy and ovum donation, “the matter is then to be treated by application of the halakhic canons governing situations of doubt.”

Metivta (Talmud instructor) at Yeshivat Har Etzion in Israel, asserts that the novel question of maternal identification in cases of gestational surrogacy and ovum donation “is not susceptible to the classic halakhic approach of analogy with an existent halakhic ruling” (ibid., 28). Contra Bleich, Bick denies that a “preponderance” of halakhic authorities support parturition as determining maternity; Bick claims that “practically speaking, no halakhic sources exist for this or any competing candidate for the determinant” (ibid.). Bick proceeds to show how the sources Bleich adduces in favor of parturition can also be read in support of the ovum donor, thereby making motherhood genetically indicated. Bick argues: “If conventional halakhic method fails, the result should not be desperate attempts to preserve a semblance of halakhic reasoning. There may be questions to which conventional halakhic methodology provides no sources, no solutions” (ibid., 32). Therefore, Bick suggests halakhic adjudication not by flawed legal analogies, but by conceptual models inspired by careful readings of primary source materials. Bick suggests that talmudic understandings of reproduction either support a “biological model,” in which both man and woman contribute seed, or, alternatively, an “agricultural model,” in which a man plants his seed in a fertile woman. In light of modern science, the first would lead to a genetic account of parenthood; the second to a gestational account of maternity.²⁵ Bick further denies the possibility of multiple mothers, and finally asserts that conceptual modelling rather than adjudication by legal analogy

²⁵ Paternity may still be assigned to the sperm donor. However, Bick also entertains the notion that per the agricultural model, there may only be motherhood, and no fatherhood, in cases of IVF absent a process akin to “seeding.”

allows for halakhah to be derived from aggadic sources and Jewish ethics to be distilled from halakhah.²⁶

In response, Bleich disputes Bick's points of critique finding his alternate readings unsupportable, and his characterization of Bleich's legal method as inaccurate. Bleich (1994, 55) counters: "The methodology is not really reasoning by analogy at all, but rather the identification of an operative principle equally applicable..." Bleich turns Bick's critique on itself, retorting: "The one thing we must not do is engage in "desperate attempts to preserve a semblance of halakhic reasoning" – including the drawing of inappropriate analogies, construction of conceptual models and derivation of halakhic norms from philosophical or aggadic notions" (ibid., 56). Bick's preference for reading ancient texts in light of modern science leads Bleich to clarify the role of genetics in establishing maternal identification: "It must be clearly recognized that Halakhah takes no direct cognizance of genetics as a significant factor in and of itself" (ibid., 53). Bleich asserts that halakhic terminology therefore should reflect this, remarking that an ovum donor is "a term that I regard as, halakhically speaking, more precise than 'genetic mother'" (ibid., 52).

A year later, Bleich (1995a) published his fourth volume of *Contemporary Halakhic Problems*, in which he reworked all his previous writings on IVF, gestational surrogacy, and ovum donation into a comprehensive treatment of the issues. He reiterates his preference for parturition as the maternal determinant, along with his concern of legal

²⁶ Bick credits Rabbi Joseph B. Soloveitchik as the source for his method of conceptual modelling, see Bick 1993, 43.

uncertainty regarding gestation, ovum donation, and even genetics also serving as grounds for motherhood in a pluralist maternal model. In practice, per Bleich, the rules governing legal doubt require an approach of stringency, for example, in circumstantially relevant halakhic areas, such as conversion and consanguinity. In yet a later article on surrogate motherhood concerning bioethical issues broader than maternal identity, Bleich (1998b, 163), writes of a surrogate that, “she is a natural mother, both biologically and psychologically.” This assessment was born of Bleich’s scientific awareness of reproduction, as well as his psychological reading of traditional surrogacy in Genesis and of the human dimensions of surrogacy-related U.S. court cases.

Epistemological and Axiological Analysis of Rabbi J. David Bleich on Gestational Surrogacy

From 1972 through the present, Bleich’s writings display a halakhic epistemology that is scientifically and medically informed. His scholarship on IVF, ovum donation, and gestational surrogacy not only records the contemporary development of medical halakhah and Jewish bioethics, but influentially shaped the field as well, especially with his introduction of a pluralist model of motherhood and his encyclopedic presentation of sources and opinions.²⁷ At the very least, Bleich’s acute scientific awareness and understanding has led to greater sophistication and nuance of analysis. His comparative

²⁷ For example, the late preeminent Israeli posek, Rabbi Shlomo Zalman Auerbach, ruled in line with Bleich’s theory of dual-maternity, see Avraham 1993, vol. 4., *Evan Ha’Ezer* 5:2; Steinberg 1997, 5. It should also be noted that Auerbach disapproved of such collaborative reproduction, deeming it contrary to Torah values, see Mashiach 2013, 106-8.

legal interests also have influenced his epistemology lending themselves to better framing of halakhic issues.²⁸

Although Bleich introduces the language of genetics into his Jewish bioethical analyses, his careful, legally positivistic halakhic methodology prevents him from eisegetically reading genetics into pre-modern sources, something seemingly done by other medical halakhists.²⁹ However, genetic awareness and understanding does influence the questions Bleich raises, his review of sources, and even his judicial judgments. While legal uncertainty may have led him to advocate for dual-maternity, his concern for the status of the ovum donor is arguably influenced by his knowledge of genetics. This is seen in the language with which he frames his discussion of the issues.

Axiologically, Bleich is quite conservative. While his initial hesitation toward IVF technology was rooted in the bioethical principle of maleficence-avoidance on behalf of both mother and child, even when IVF has proven largely safe with positive natal outcomes, Bleich still disapproves of its use with marital gametes, prohibits with donor sperm, and is avowedly unsupportive of surrogacy arrangements and ovum donation (Bleich 1998b). Bleich demonstrates that axiological conservatism can limit the progressive application of scientific knowledge and technological capability.

²⁸ This is true throughout his writings. For a recent example, see Bleich 2016c on the legal disposition of embryos.

²⁹ See Soloveitchik 1980; Kilav 1984; Bleich 1994, 54, regarding Bick; and Bleich 1995a, 255nn27-8, regarding Joshua Ben-Meir and Kilav, and the section on Broyde following below.

Rabbi Michael J. Broyde on Gestational Surrogacy and Parenthood

In 1988, three years after the first successful gestational surrogacy and shortly after the “Baby M” case was making headlines, Rabbi Michael J. Broyde published a legal note on, “The Establishment of Maternity and Paternity in Jewish and American Law.” In a section on, “The Establishment of Maternity and Surrogate Motherhood,” Broyde identifies four types of surrogates: one, where “the ‘surrogate’ mother is the genetic mother as well as the person in whom ovulation, conception, pregnancy, and birth occur;” two, ovarian transplantation in which “the child conceived from such a donation is genetically related to the donor, but is the product of ovulation, conception, pregnancy, and birth from the surrogate;” three, ovum donation, in which “a single egg is removed from the genetic mother and implanted in the surrogate mother;” and four, fetal transplant, in which, “the genetic mother’s ovum is naturally fertilized,” before being transferred to the surrogate (Broyde 1988, 131-2). It is noteworthy that Broyde frames his discussion by distinguishing between the genetic mother and the surrogate mother, something he does throughout his presentation.

Broyde inquires as to the halakhic factors that determine motherhood and whether there is a consistent maternal standard for all aspects of Jewish law, including inheritance, incest, and redemption of the firstborn. Broyde initially sets out to demonstrate that, “although somewhat counter-intuitive, Jewish law does not automatically employ genetics to answer all questions of lineage” (ibid., 133). While Broyde is certainly writing to a broad readership given that his legal note was published in the *National Jewish Law Review*, rather than in a halakhic journal, once again, it is

epistemologically noteworthy that he speaks of assuming a genetic standard as “intuitive.” Broyde cites three examples in which Jewish law rejects genetics as determinative. First, conversion dissolves legal consanguinity. Second, Jewish law does not recognize legal paternity in the laws of animal husbandry. Third, in the agricultural laws of grafting, the genetics of tree branches become irrelevant after grafting. Broyde clearly considers the ancient concept of lineage and the modern notion of genetics as legally equivalent and exegetically interchangeable (*ibid.*, 133-4).

Regarding gestational surrogacy, Broyde believes that the weight of halakhah’s interpretive and codificatory history has established parturition, rather than conception as determining maternity, especially when conception isn’t “legally significant,” such as in the case of IVF. Thus, gestational surrogacy would be added to Broyde’s list of cases in which Jewish law does not employ genetics to determine lineage. Per Broyde, once Jewish law determines a particular mother and father to be the halakhic parents, each one’s parenthood, like that of natural parenthood, is irrevocable (*ibid.*, 131). Although Broyde believes that most rabbinic sources support that maternity is determined by the birth mother, genetic awareness still plays an important role in his halakhic analysis of the issues (*ibid.*, 134-40).

In 1988, Broyde is familiar with much of the extant medical-halakhic and Jewish-bioethical literature dealing with ART, collaborative reproduction, and genetic engineering.³⁰ He cites several potential halakhic precedents and legal analogies dealt with in the relevant scholarship. The first source is the aforementioned aggadah

³⁰ See Broyde 1988, 134-9nn125, 128, 131, 167, 169, 170.

concerning the birth of Joseph and Dinah by the matriarchs Rachel and Leah in the book of Genesis. Broyde believes that the talmudic rendition of the aggadah support the idea that “she who gives birth to the child is the mother” (ibid., 134). The non-talmudic rendition of this aggadah, what Broyde identifies as midrash, as cited by *Targum Yonatan*, which may support conception as a determinant, is even less authoritative than talmudic aggadah, whose own legal evidentiary legitimacy is denied by many authorities.³¹ Thus, Broyde dismisses this source as likely not being dispositive, nor even significant, in the adjudication of maternal identity (ibid., 135).

Broyde also cites TB Yevamot 97b regarding the twin fetuses who were converted along with their mother in utero, originally cited by Hershler, and deemed by Bleich to be the strongest source indicating parturition as the halakhic maternal determinant.³² For Broyde, the importance of this source is two-fold. First, it shows that the Talmud views conversion as severing, “all previously established genetic relationships” (ibid.). Once again, Broyde speaks in the idiom of genetics. Second, said conversionary severance also makes the twins’ conception “legally insignificant,” creating, per Broyde, a legally analogous situation to conception via IVF, which he also deems as “legally insignificant” since it occurs *ex vivo* (ibid., 136, 139).

Broyde, however, extensively interrogates a third talmudic support, which he deems as “an equally significant proof” for parturition as establishing halakhic motherhood. The Talmud (TB Yevamot 78a) states that a child born to a woman who

³¹ See ibid., 135n130.

³² See above p. 283.

converted to Judaism while pregnant does not need a separate immersion, but is considered Jewish. Most commentators “adopt the intuitive explanation” that the child is Jewish having been born to a newly Jewish woman. The Jewish birthright of the child holds true regardless of one’s halakhic position concerning whether a fetus has the legal status of an appendage of its mother, or whether the fetus enjoys independent quasi-personhood in utero. For Broyde, it also logically follows that she who confers upon a child Jewish identity at birth is the legal mother in all halakhic respects (Broyde 1988, 136n142).

The medieval Spanish Talmudist Moses Nachmanides, however, understands this talmudic passage differently. He accords to a fetus a status of legal independence, and furthermore believes that the mother’s conversionary immersion in a *mikvah* also constitutes an independently valid, conversionary immersion for the fetus. Even though, normally, the conversion of a male to Judaism requires circumcision before immersion, Nachmanides opines that in the case of a fetal conversion, a reversed sequence of immersion before circumcision is still valid.³³ Others, however, debated Nachmanides’s novel talmudic interpretation, and his halakhic ruling on the sufficiency of immersion before circumcision. Broyde comments:

This author believes that this dispute is significant in establishing whether Jewish law considers birth as critical for motherhood. If one accepts the position of Nachmanides’ opponents, then it follows that birth is definitive in establishing motherhood when conception is legally insignificant. According to these authorities, the birth mother is one’s true parent. If one accepts Nachmanides position, then birth is less significant than conception or even genetic

³³ Nachmanides’s (d. 1270) view is known through the works of subsequent medieval Spanish talmudists who cite him. See Shlomo ben Aderet (d. 1310), *Rashba*, ad loc., TB Yevamot 47b-48a; Joseph ibn Habib (d. early-fifteenth century), *Nimukei Yosef*, ad loc. *Rif* Yevamot 16a.

relationships – they are Jewish because they converted. *On the contrary, according to Nachmanides either conception or genetics fixes motherhood.* (ibid., 137, emphasis mine)

In a footnote, Broyde (ibid., 137n148) points out that Nachmanides preference for a causal standard of maternity based on genetics aligns with his understanding that adultery is biblically forbidden not only because it constitutes a marital betrayal, but because it also creates lineage confusion.³⁴ Once again, Broyde regards the ancient concept of lineage and the modern notion of genetics as legally equivalent and exegetically interchangeable. Broyde concludes that since the later codifiers rule against Nachmanides, “it appears that Jewish law focuses on birth, rather than genetic relationship” (ibid., 138).

However, the theoretical case of fetal-transfer surrogacy leads Broyde to one important refinement to establishing parturition as the halakhic determinant for maternity. The Talmud (TB Chulin 70a) confusingly asks what is the sanctity of a male firstling if two wombs were connected and the fetus mid-gestation transferred from one to the other? Maimonides interprets the talmudic scenario as follows:

If one connected the wombs of two animals together and a fetus went out from one and entered the other, it is a legal doubt as to whether the animal into whose womb the firstling entered is exempted from the obligation of firstlings, for it issued from this womb, or whether is it not exempted until the womb issues its own offspring? (*Mishneh Torah*, “*Hilchot Bekhorot*,” 4:18)

Rabbi Ezra Bick (1986) contends that this talmudic source demonstrates that parturition alone is insufficient and that it is only sufficient when it follows conception. Accordingly, Broyde contends that when conception occurs in vivo, it gains legal significance.

³⁴ See Nachmanides Torah commentary on Leviticus 18:20. See above, Chapter Four, pp. 158-9.

Normally, conception's legal significance is muted by parturition which fixes maternity. However, in the case of fetal-transfer surrogacy, the first woman in whom conception occurred and from whom the fetus was removed would be considered the unique mother, and not the subsequent gestational carrier who also will birth the baby. Significant conception plus partial gestation and early parturition defeats the maternal claim of gestation and secondary parturition (Broyde 1988, 138-9). The importance of this theoretically nuanced, albeit practically irrelevant reading is that it affords conception, and thereby genetics, fundamental legal significance. This conceptualization leads Broyde to formulate his ultimate conclusion: "In the case of surrogate motherhood, motherhood is fixed by determining when conception occurred, and where that is not legally dispositive, as in test tube conception, [then] where birth occurs..." (ibid., 157). This is an astounding turnabout conclusion. Despite Broyde's affirmation of parturition's normativity as a halakhic maternal determinant, he resolves that fundamentally, legally significant conception determines motherhood. Given Broyde's clearly stated association of conception and genetics, Broyde thus establishes genetics as legally, if not metaphysically, fundamental to parenthood.

Epistemological and Axiological Analysis of Rabbi Michael J. Broyde on Gestational Surrogacy

As in the case of Bleich, Broyde's halakhic expertise, legal training, and scientific understanding leads him to present his Jewish bioethically oriented legal note with nuance and sophistication. Broyde consciously reads pre-Modern sources through the lens of modern science. This is an eisegetical practice that Bleich comes to decry, but

which Broyde arguably would justify with his later-formulated theory of evolutionary halakhah through innovative interpretation.³⁵ Broyde models a dialogic and integrative relationship between religion and science and is thus more prone to consider halakhic maternal and paternal classifications informed by scientific knowledge. His conclusion granting genetics fundamental legal significance displays an epistemology that privileges scientific awareness and understanding along with Torah tradition. He gives legal expression to his original intuition that genetics should be dispositive of parenthood.³⁶

While, in this legal note, Broyde does not explicitly endorse gestational surrogacy as a fertility option for observant Jews, he also does not exhibit any of the moral and halakhic opprobrium prevalent in Bleich's writings. While silence is always difficult to interpret, here it may signify that Broyde, as a Jewish bioethicist who embraces a dialogical and integrative relationship of religion and science, may more easily license the utilization of novel assisted reproductive technologies. His later writings bear this out.³⁷

Broyde also does not embrace Bleich's dual-maternity theory, but asserts a monist standard of maternity. While this may indeed emerge from his reading of the proposed halakhic precedents and legal analogies, it also extends from his legal philosophy of resolving judicial doubt and achieving legal certainty through halakhic ruling. A dual-maternity theory may make for religious scrupulosity, but also arguably makes for bad law, especially in a society that condones ovum donation and gestational surrogacy.

³⁵ See above p. 290n29; Broyde 2010; and above, Chapter Five, p. 206 ff.

³⁶ In the same legal note, Broyde also discusses "sex-change" and sees genetics as dispositive of halakhic gender identity, see Broyde 1988, 153-7.

³⁷ See Broyde 1999a, 21; 2005d, 316; and above Chapter Five, p. 221 ff.

Broyde contrasts American law which assigns legal paternity and maternity by looking at “fact-specific equities,” and Jewish law, whose “most significant feature ... is its methodological consistency for dealing with questions of maternity, paternity, and parental status” (Broyde 1988, 157). Broyde concludes:

While justice to the litigants and the promotion of equity to the parties is a valuable goal, consistency on a more global basis has many virtues. Inconsistency of methodology in similar cases, and rules too complicated to be applied, do not promote the interests of justice on a societal scale. Jewish law has clearly opted for simplicity of its fundamental rules in the belief that this will promote justice on a broader societal scale. (ibid., 158)

Here Broyde invokes a meta-ethical aspiration of distributive justice beyond strict halakhic analysis to evaluate the consequences of law in light of its *telos*. Broyde’s axiological judgment in favor of Jewish law’s preference for “theoretical consistency and ease in the applications of its rules” likely also leads him, at least initially, not to embrace a complicating standard of dual-maternity (ibid.).

Rabbi Elliot N. Dorff on Gestational Surrogacy and Parenthood

In the early 1990s, Rabbi Elliot N. Dorff began to publish on Jewish medical ethics. He was developing in earnest his bioethical methodology and applying it to topics regarding the end and beginning of life (Dorff 1991, 1992b 1993, 1994a,b,c). During the mid-to-late 1990s, Dorff actively participated in the Rabbinical Assembly’s Committee on Jewish Law and Standards’ consideration of AI, IVF, and gestational surrogacy (Mackler 2012, 15-187).³⁸ Dorff addressed IVF and ovum donation in a 1994 responsum

³⁸ In the mid-1980s, the Committee on Jewish Law and Standards considered abortion and traditional surrogacy, see Mackler 2012, 188-232; Lincoln 1985, 188-92.

approved by the Committee on Jewish Law and Standards, which was republished in 1996 for a broader audience in *Conservative Judaism* (Dorff 1994c; 1996b). In his 1998 publication, *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics*, Dorff reworked and expanded his previous studies of assisted reproduction, and included a discussion of gestational surrogacy (1998b, 66-115). Dorff's Jewish bioethical scholarly contributions and active participation in the Committee on Jewish Law and Standards have had an influential role in the development of Conservative Judaism's bioethical-halakhic policies in general, and specifically in regard to AI, IVF, and gestational surrogacy.

Dorff is consistently supportive of ART, including with donor gametes and gestational surrogates, as long as informed and understanding decisions are being responsibly made and ethically executed by the parties involved. Ovum donation affords a woman who can gestate and deliver a healthy child the opportunity to experience pregnancy, and if her husband's sperm is used to fertilize a donor ovum, then, at least there is genetic continuity of one of the parents (ibid., 98). Like with AI/IVF with donor sperm, Dorff worries here too for genetic parental asymmetry *vis a vis* their child. However, unlike in the case of donor sperm, with ovum donation a woman biologically bonds with her child during pregnancy regardless of the lack of genetic connection (ibid., 98-9). Therefore, if both intended parents are infertile and a donor embryo is gestated by the intended social mother, the challenge of parental asymmetry still obtains. However, with proper counselling and support, parents and child alike can deal with their atypical,

and possibly asymmetrical, social, genetic, and biological relations (ibid., 90-93, 98-100, 110-1).

Since Dorff (1998b, 67-9, 80-1) embraces the halakhic and bioethical view that absent sexual relations, collaborative reproduction with donor gametes constitutes neither adultery nor licentiousness, he permits gametic donation by relatives. Dorff writes:

May a fertile brother donate sperm for the impregnation of his infertile brother's wife? That would have the advantage of carrying on the husband's family genes and the likelihood of producing a child who resembles the husband as much as any biological child of his would. Nevertheless, such donations are generally inadvisable, for while they are not technically incest, they *feel* very close to it and raise all kinds of boundary problems for the brothers and the child later on (Is Uncle Barry really only my uncle, or is he my substitute father when I want him to be?).” (ibid., 99)

Since donor sperm of non-relatives is easily accessible and relatively inexpensive, it should be preferred. However, unlike donor sperm, donor ova are much costlier and more difficult to access. Therefore, Dorff is open to ovum donation from a sister:

An egg donation from a fertile sister to an infertile one involves the same boundary issues for both the sisters and the child. Since donated eggs are relatively scarce and expensive, though, and since the lack of genital contact means that legally there is no taint of incest, a fertile sister may donate eggs to her infertile sibling, but only after appropriate counseling and careful consideration of how the sisters are going to handle these boundary questions as the child grows. (ibid., 99-100)

In general, Dorff (ibid., 103-4) believes that donating gametes to help people overcome infertility challenges is a noble act of kindness, and should be done, “with a sense of mitzvah, duly appreciative of the awesomeness of the human ability to procreate and of his role in helping an infertile couple make that happen.” To avoid unintended incest, it would be best to disclose donor identity. However, if not disclosing donor identity, then it

is necessary to share a thorough medical history when donating gametes to prevent genetic disease (*ibid.*, 104-7).

Dorff (1998b, 58, 60) expresses that he is cognizant of the fact that in the 1990s there seemed to be, at best, hesitant support across the denominations for gestational surrogacy, in which, “the surrogate mother is allowing her womb to act as the fetus’s incubator during the nine months of gestation without contributing any of her own genetic materials to the fetus.” Dorff understands the primary rabbinical objections to gestational surrogacy are based on moral grounds, concerned with the degradation of women, the sanctity of the family, distributive justice, equal access, and the potential for exploitation (*ibid.*, 60-62). Dorff is concerned for these, as well, however, he believes that actual data from studies of gestational surrogacy, as well as persuasive counter-arguments, undermine the strength of these negative moral claims (*ibid.*, 62-5). Dorff opines: “The major argument in favor of surrogacy, of course, is that it enables infertile couples to have children with the gametes of at least one of them. Not only is surrogacy thus a response to the pain of infertility for the couples involved; it is also a way for that couple to fulfill an important Jewish value and hope” (*ibid.*, 60).³⁹

In June 1997, the Rabbinical Assembly’s Committee on Jewish Law and Standards approved two responsa concerning surrogacy: one in favor of permitting the practice by Rabbi Elie Kaplan Spitz, and one opposing the practice by Rabbi Aaron L. Mackler. Dorff supports the conclusion reached by Spitz, whose pro-gestational

³⁹ Dorff is aware of gestational surrogacy with a donor embryo, but speaks here to the more usual case in which at least one intended parent’s gametes are utilized, see Dorff 1998b, 58.

surrogacy responsum he considers to be based on reasoned argumentation and supported by the available sociological and public health data (ibid., 62, 346nn72-3).

Dorff doesn't directly speak to the question of maternal identity in his section on gestational surrogacy, but does take up the issue in the context of ovum donation, which technically is a form of gestational surrogacy in which the intended social mother gestates an ovum of another woman, fertilized by either husband or donor sperm (ibid., 100-1). Dorff begins his analysis by positing that the only source he legitimates as a potential legal precedent is the aforementioned aggadah about Rachel and Leah's pregnancies. He credits Bleich (1981b) for calling attention to the story, and acknowledges Bleich's doubt regarding its legitimacy in halakhic adjudication (ibid., 101). In the main body of his bioethical exposition, Dorff seemingly agrees with Bleich:

The question is whether this interpretation of the story, ultimately built on the Torah's identification of Dina as Leah's daughter, should serve as a precedent for determining the identity of the mother of a child conceived through egg donation. Even if we assume that the story is indeed one of embryo transfer, and even if we ignore the fact that in the story it is God, rather than human beings, who effects the embryo transfer, there are real questions as to whether any story should be used for legal rulings, and all the more so like this, which is really only one possible interpretation of a Talmudic tale. (ibid., 100-1)

However, in a footnote to this passage, while he agrees with Bleich regarding the dubious applicability of this aggadah, he vehemently disagrees with Bleich regarding the admissibility of midrash and aggadah in halakhic adjudication:

I think that we not only can use aggadic material as the source of general principles but commonly do so in halakhic practice. Moreover, I think we should do so, for only then can our beliefs have impact on our actions. We must just be intelligent enough to understand the stories, unlike laws and judicial precedents, are not generally told in a form intended to be examined in legal detail but rather are to be read as articulating general principles; and we must also remember that stories, perhaps even more than legal precedents, may conflict with each other.

Furthermore, in the use of stories for legal purposes, we must examine them, as we analyze potential precedents, for the analogies and dissimilarities between them and the case at hand. In the case here, though, I would agree with Rabbi Bleich that this story is a very thin reed on which to determine the mother's identity, not so much because it is aggadic but because it represents only one reading of what is already a fantastic tale, designed more to indicate the kindness of Leah and the miracles of God than the way rabbis should rule in cases of egg donation. (ibid., 356n66)⁴⁰

While Dorff considers assigning halakhic maternity to the ovum donor for purposes of parity since paternity is primarily assigned to the sperm donor, Dorff sides with the view that parturition establishes halakhic motherhood. He concludes:

Even though it is possible to argue in both directions, the Conservative movement's Committee on Jewish Law and Standards has determined that it is the Torah's phrase, *petei rehem* ("opening the womb") that should be determinative. In doing so, the committee, following the general trend in Jewish law, preferred explicit precedent (*gezerat ha-katuv*) to logical reasoning as the basis of the law. It is thus the bearing mother who determines the Jewish identity of the child; if she is Jewish, the child is Jewish, regardless of the source of the egg used in the child's conception; if she is not Jewish (as in many cases of surrogacy), the child is not Jewish by birth and must undergo the rites of conversion to become Jewish. (ibid., 101)⁴¹

Epistemological and Axiological Analysis of Rabbi Elliot N. Dorff on Gestational Surrogacy

Dorff's writings on gestational surrogacy and ovum donation represent a full Jewish bioethical consideration of the range of attendant halakhic, moral, social, and psychological issues. Bleich and Broyde are usually much more attuned to the high theory of halakhah, scrutinize the extant halakhic literature and proposed legal precedents

⁴⁰ For Dorff's view on the role of aggadah in halakhic reasoning, see Dorff 1991, 4-7; 1992b.

⁴¹ Interestingly, Rabbi Aaron L. Mackler, who wrote the responsum in favor of parturition as the halakhic maternal determinant adopted by the Committee on Law and Standards cites six reasons to support parturition, of which Mackler identifies "*petei rechem*" (first womb issue) as a secondarily supportive reason. See Mackler 1997b, 186n16.

and analogies, and clearly demonstrate that for them Jewish bioethics is primarily medical halakhah. Dorff, on the other hand, approaches the issues as more of an ethicist than a halakhist, expanding the focus of legally oriented Jewish bioethics. While Dorff, like Bleich and Broyde, manifests an epistemology that includes both Torah and general scholarship, Dorff weighs more heavily a wider-scope of bioethical, philosophical, psychological, and sociological concerns, and particularly distinguishes his method for correlating theory with the data of social-scientific studies.

Like Bleich and Broyde, Dorff exhibits a self-aware, scientific mindset, and thus easily weaves the modern ideas of genetics into his analyses, conceptualizations, and terminology. His principled Jewish values, social progressiveness, and compassionate humanism lead him to permit that which is not clearly forbidden. His moral axiology, like his epistemology, is influenced by a synthesis of Torah and Western wisdom. It is therefore somewhat surprising that he affirms parturition as the sole determinant of halakhic maternity. Dorff does not, like Broyde, innovate an exegetically nuanced way to endow genetics with fundamental halakhic import, even if, in practice, parturition remains the sole maternal determinant. And unlike Bleich, who arguably gives credence to the imprint of genetics in his dual-maternity theory, Dorff does not acknowledge dual-maternity.⁴² This is in spite of the fact that he originates a pluralist standard for paternity in his discussion of sperm donation.

⁴² Mackler 1995, 109, 121n54, Dorff's colleague and co-member of the Committee on Law and Standards, explicitly rejects dual-maternity because he thinks that it makes for bad policy.

This is further perplexing since Dorff's primary resource for his positive Jewish bioethical assessment of gestational surrogacy relies on the research and reasoned responsum of Spitz, who in 1997 had submitted a second responsum to the Committee on Law and Standards, which he withdrew prior to its being voted upon, that argued for a volitional standard for parenthood, recognizing the maternal status of the genetic ovum donor, rather than a causal standard based on parturition by the gestational surrogate. Spitz contends that in ART intentions should be determinative for maternal identity, thus establishing the genetic mother as the halakhic mother when in a case of gestational surrogacy the Jewish ovum provider is the intended social mother (Spitz 1996; Mackler 1997c, 182).⁴³ Dorff himself in his earliest writing on IVF wrote regarding adoption: "One Rabbinic source, however, states that the people who raise the child, and not the natural father and mother, are called the parents; *perhaps Jewish law will develop in that direction*" (Dorff 1993, 58, emphasis mine).

Dorff's religious axiology in this particular case apparently privileges the value of communal consensus on matters of Jewish identity and maternal identification, and thus he supports the determination of Rabbi Aaron L. Mackler's 1997 responsum on "Maternal Identity and the Religious Status of Children Born to a Surrogate Mother," approved by the Committee on Law and Standards. He most likely also agrees with Mackler's policy considerations in rejecting a dual-maternity standard (Mackler 1997, 181-2). However, in upholding Mackler's responsum, Dorff still implicitly conveys to

⁴³ Thus, for example, Spitz would argue based on a volitional account of parenthood that in a case of a Jewish ovum donor who intends to be the social mother, and a non-Jewish gestational surrogate, that the child not need religious conversion, since the child's halakhic mother, the genetic/social mother is Jewish.

genetics halakhic import since Mackler's responsum rules that people with first-degree genetic and social relations should not marry each other in order to avoid genetic disease transmission and unhealthy psychological consequences. Mackler's responsum reads:

While the genetic mother should not be viewed as mother halakhically, genetic siblings should not marry (or engage in sexual relations with) each other ... Combining this ruling with those found in Rabbi Elliot Dorff's paper on artificial insemination, one comes to the unsurprising conclusion that one should not marry (or engage in sexual relations with) children of one's genetic, gestational, or social parents. (ibid.)⁴⁴

Dr. John D. Loike and Rabbi Moses D. Tendler on Gestational Surrogacy and Parenthood

Rabbi Moses D. Tendler's views on ovum donation and gestational surrogacy have undergone dramatic turnabouts over the past four decades. In the proceedings of a medical ethic conference that he convened in 1984 at Mount Sinai Medical Center, a year before the first IVF child was born through gestational surrogacy, Tendler (1984, 9) said regarding gestational surrogates: "Clearly, if there ever were a situation in which a woman wanted to incubate an egg, as an act of kindness, to allow the woman who otherwise couldn't possibly conceive have the experience of motherhood, the act would be a charitable act. It would be a wise thing to do." Three years later, however, Tendler (1987, 110) opposed "Surrogate and Incubator Mothers," writing: "These are modified adoptive modalities not designed to cure the illness of infertility. As such, they introduce a new illness, a societal pathology or social iatrogenesis." He thinks traditional surrogacy

⁴⁴ See Dorff 1994b, 47-8; 1998b, 108-9; 2002b.

exploitative, and if the surrogate is a married woman, as psychologically harmful, and raises “religious concerns for adultery, bastardy and consanguinity” (ibid.). In 1987, Tendler (ibid.) distrusted the motivations of gestational surrogacy arrangements, imagining brave new-worldish scenarios of “a woman, unwilling to endure the physical demands of pregnancy,” who along with her husband purchase gametes, and hire an incubator mother to gestate the embryo.⁴⁵ He asks: “What will happen to the ‘flesh and blood’ bond that is the glue of family obligation and support?” (ibid.) In the case “in which all participants have only the most altruistic motivations,” then, “such unique, rare circumstance can be responded to in accord with the traditional methodology of rabbinic responsa” (ibid.). Tendler considered gestational surrogacy an “adoptive modality” that is at odds with the Judeo-rabbinic tradition’s personal and societal ethics. Further, he advocated for societal legislation against surrogate and incubator motherhood, since they violate “the sensibilities of a free, democratic people” (ibid.). By calling both traditional and gestational surrogacy “adoptive modalities,” Tendler implies that he considers parturition the halakhic determinant of maternity, as parturition, and not genetics, is common to both types of surrogacy.

In 1984, Tendler (1984, 9) considered ovum donation “a problem that still requires much analysis.” Four years later, he considered maternal identification in case of IVF with ovum donation complex and still unresolved: “For the first time in human history, gestational motherhood can be separated from genetic motherhood. Surely the contributions of the gestational mother are quite consequential. Legal (halachic)

⁴⁵ This echoes Jakobovits’s opprobrium against gestational surrogacy, see above p. 279.

authorities in Judaism have not been able to clarify this dilemma, and therefore consanguinity prohibitions must be applied to “‘both’ mother’s families” (1988, 75). Note that Tendler frames the complexity not in the pre-modern halakhic categories of seed or lineage, conception or parturition, but like Broyde, in scientific terms – i.e., genetic verses gestational.

Flash forward twenty-six years, and Tendler, in a 2010 interview with the *Wall Street Journal* regarding an alleged shift, especially in Israel, of rabbis halakhically defining maternity genetically, rather than by parturition, Tender said: “Genetics provide only the blueprint, and for the next nine months the work is done by the gestational mother. While the gestational mother is in labor, the egg donor could be on the beach in Miami” (Birkner 2010). Once again, Tendler frames the halakhic debate in terms of genetics and gestation, rather than pre-modern halakhic categories.

In 2011, writing now in partnership with Dr. John D. Loike, Tendler and Loike uphold gestational surrogacy as an example of a situation for which there is no halakhic precedent that can definitively resolve halakhic doubt. They write:

The issue whether a surrogate (e.g., gestational mother) is the halachic mother is a controversial and complex issues without any explicit halachic precedence. This is why Rabbi Shlomo Zalman Auerbach rules that in this situation we are in doubt as how to determine the criteria of motherhood, and in practice we must be stringent. He ruled that both the surrogate and biological mothers have a status of halachic parents, and if one of these individuals in not Jewish, then she must convert. The above example highlights a case where it may be difficult to resolve the underlying halachic guidelines, and yet, practical and viable halachic solutions can nonetheless be established. (Loike and Tendler 2011, 117).

One would have imagined that in the above paragraph, Tendler and Loike would have framed the doubt pertaining to the genetic mother, rather than the gestational mother,

given the broadly attested preference for parturition as the primary maternal determinant in medical halakhah, as well as Tendler's much earlier writings of the 1980s which also side with parturition. The seeming reasons for this turnabout emerges in two articles that Tendler and Loike penned together in 2013 – namely, the emerging field of epigenetics and the recognition of maternal fetal cell transfer. Tendler and Loike believe this new scientific knowledge is a halakhic game-changer.

When DNA was discovered and began to be deciphered, early interpretations of the burgeoning science focused on the genetic code of nature as the author of all things organic from the beginning through the end of the life cycle. However, in time, nurture, or environment, was redeemed and seen as playing a decisive role within the realm of genetics. The genome isn't a linear program code, but responds to epigenetic triggers that activate gene expression in a unique symbiosis of nature and nurture – of genetics and epigenetics (Mukherjee 2016, 393-410). Thus, when considering the case of gestational surrogacy in light of this new scientific awareness, the gamete providers contribute the genetics, but far from being an inert incubator, the gestational surrogate is now appreciated as contributing the epigenetic influence on gene activation during, literally, the most formative period of life – i.e., gestation.

Furthermore, while fetal maternal cell exchange was identified as early as 1893 as being responsible for fatal cases of eclampsia, i.e., seizures during pregnancy, it was only in the late-twentieth and early-twenty-first century that maternal fetal cell transfer has begun to be understood and appreciated in terms of its immunological benefits during pregnancy, and its positive and negative life-long health impacts for both the gestational

mother and child (Loike and Tandler 2013b, 115-120). Maternal fetal cellular trafficking (MFCT) results in fetal and maternal microchimerism, in which cells with genomes foreign to its host take up lifelong residence. During pregnancy, bidirectional microchimerism is thought to prime immuno-tolerance of the fetus during gestation, as well as aid in the development of the fetal immune system. Later in life, these immunological benefits can protect against disease and deter heterologous transplantation rejection from maternal tissue, as well as trigger autoimmune disease and possibly maternal cancers (Jeanty, Derderian, and MacKenzie 2014; Callier 2015).

In an article on “Recruiting a Surrogate for an Infertile Jewish Couple,” Loike and Tandler, therefore, write: “Current scientific research reveals that the surrogate is not merely an incubator, but contributes biologically and genetically to the physiology and psychology of the fetus that is growing and developing in her uterus” (2013a, 5). Similarly, in an article on “Gestational Surrogacy,” they assert: “Emerging scientific data on maternal fetal cellular transfer and epigenetics transform the role of a surrogate as a substitute womb into a cooperative health partnership between the surrogate, the fetus, and the biological parents . . . maternal fetal cell exchange and epigenetic processes create lifelong biological and genetic connections between the surrogate and the fetus.” (Loike and Tandler, 2013b, 113). Tandler and Loike proceed to assess the halakhic impact of epigenetics and maternal fetal cell transfer on maternal identity, as well as on the *a priori* permissibility of the truly collaborative reproduction of gestational surrogacy. They also question whether this new scientific knowledge will also change the perceptions of both gamete providers and surrogate in gestational surrogacy arrangements (*ibid.*, 120).

Reevaluating the definition of halakhic motherhood, Tendler and Loike posit:

Historically there have been three major positions regarding the issue who the halakhic mother of the child is:

1. The genetic mother (i.e., the woman who donated the egg for IVF),
2. The gestational surrogate who gave birth to the child,
3. Both the genetic and gestational women. (ibid., 121)

While this schematization is descriptively correct, it solely utilizes modern scientific categories, rather than the traditional halakhic categories of conception and parturition, ovum donor and birth mother, seed and lineage, found in the earlier Jewish bioethical and medical halakhic literature.

Tendler and Loike cite five rabbinic sources in favor of the genetic mother: four talmudic sources, of which two are aggadic and two halakhic, and one medieval source (ibid., 122-3).⁴⁶ All these sources, at best, support conception as a parental determinant. In Tendler and Loike's scientific worldview, however, conception and genetics are exegetically interchangeable. They also cite one biblical source and six rabbinic sources in favor of "the gestational surrogate who gives birth to the child." Of the rabbinic sources, five are talmudic, of which two are aggadic, and one from midrash halakhah (ibid., 123-4).⁴⁷ All these sources, at best, support parturition as a maternal determinant. Once again, in Tendler and Loike's scientific worldview, they reread parturition as the more developmentally and causatively significant process of gestation. In favor of dual-maternity recognizing "both the genetic and gestational women," they cite the halakhic

⁴⁶ TB Sanhedrin 91b (aggadic); TB Niddah 31a (aggadic); TB Yevamot 78a (halakhic); TB Yevamot 42a (halakhic); and Rambam, *Mishneh Torah*, "Hilkhot Issurei Biah," 19:7.

⁴⁷ Exodus 21:22; TB Yevamot 97b (halakhic); TB Megillah 13a (aggadic); TB Yevamot 69b (halakhic); TB *Berakhot* 60a (aggadic), along with its parallel in TJ *Berakhot* 9:3, and in *Targum Yonatan*; the talmudic concept of "uber yerekh imo" (the fetus is an appendage of its mother) which they do not locate in an explicit textual attribution; and *Midrash Sifra*, ad loc., Leviticus 12:2 (halakhic).

position of Rabbi Shlomo Zalman Auerbach, who they report “supports the view that there are no definitive halakhic precedents that would define motherhood in the case of surrogacy,” and thus inclines toward stringency due to fundamental halakhic doubt.⁴⁸ Interestingly, they do not credit Bleich for this view, even though he has been its originator and most prominent advocate. This is likely because Bleich and Auerbach’s views on dual-maternity are fundamentally different. Bleich principally supports parturition as the halakhic maternal determinant, and out of legal doubt, also worries for the ovum donor/genetic mother. Auerbach believes the legal doubt is fundamental given the unprecedented novelty of gestational surrogacy.⁴⁹ At the same time, Bleich, Tendler, and Loike, all entertain the possibility of a pluralist, causal account of maternity.

Tendler and Loike’s unresolved legal doubt as to maternal indication in cases of gestational surrogacy, as well as several halakhic and moral-axiological reservations regarding surrogacy, lead them to discourage a Jewish woman, let alone a married Jewish woman, to serve as a surrogate. First, since there may be longterm negative health outcomes due to maternal microchimerism, absent a marital context with a mitzvah of reproduction, the prohibition against self-injury mitigates against discretionarily serving as a surrogate. Second, Tendler and Loike cite a 1999 study alleging psychological harms given expressed dissatisfaction by surrogates. Third, Tendler and Loike allege that there is a significant risk that a sexual relationship can develop between the surrogate and the contracting genetic father. For them, non-maleficence outweighs altruistic beneficence.

⁴⁸ See Avraham 1993, vol. 4, 186; 2004, 16-7.

⁴⁹ It should also be noted that Tendler and Bleich have publicly been at vehement odds with each other regarding medical halakhah, most notably regarding the halakhic definition of death, see Tendler 1990; Bleich 1991b; Shabtai 2012.

They surprisingly have less concern for these risks if the surrogate is non-Jewish, manifesting a particularistic moral axiology exhibiting ethical asymmetry towards Jews and non-Jews (2013b, 129-132; 2013a). They also recommend a computer-based registry of all biological parties to collaborative reproduction that can maintain anonymity, but also be used, along with genetic testing, to ascertain that one's marriage prospect is not an immediate genetic relative. Children born to a non-Jewish gestational surrogate should be converted out of fundamental doubt (2013b, 131-2).

Epistemological and Axiological Analysis of Dr. John D. Loike and Rabbi Moses D. Tendler on Gestational Surrogacy

Tendler and Loike, like this dissertation's other exemplars, display thorough familiarity with the secular-bioethical and scientific literature, in addition to the Jewish bioethical and medical-halakhic scholarship. Tendler's turnabouts regarding the halakhic determinant of maternity in cases of ovum donation and gestational surrogacy manifest his epistemic privileging of hard science, accepting *pro tanto* its findings and their halakhic and bioethical implications, unapologetically shifting his opinion when new scientific theories update or replace earlier ones. This correlates well with his methodology of realist realignment and theory of "*nishtaneh hatevah*" as "our understanding of science has changed," leading halakhah to adapt to and adopt advances in science. Tendler and Loike thus exhibit strong scientific contextualism, consequently, though not explicitly, recognizing a strong historical and scientific contextualization of halakhah as a mechanism for interpretive innovation and halakhic change. Tendler and Loike consciously and intentionally read pre-modern sources through the lens of modern

science, translating pre-modern terms into theory-laden, scientifically informed correlates.

Axiologically, Tendler's views have also changed over time, sometimes in line with, and sometimes in contradistinction to contemporary mores. For example, in 1984 he was in favor of gestational surrogacy, by 1987 he opposed it, and by 2013 Tendler and Loike supported gestational surrogacy, preferentially, however, with a non-Jewish surrogate for both technical halakhic reasons of consanguinity and adultery, as well as particularistic protectionism. Tendler and Loike thus manifest a moral axiology that is both informed by the universalism of science, as well as by exclusivist trends of Jewish partiality in halakhah. As opposed to Bleich and Broyde whose writings more clearly reflect a medical-halakhic modality of Jewish Bioethics, Tendler and Loike, like Dorff, exhibit less high-theory legal analysis, and more of a mid-level halakhic-bioethical principlism.

Chapter Conclusion

In January of 2010, Rabbi Dr. Mordechai Halperin, chief officer of medical ethics for the Israeli Ministry of Health and Director of the Falk-Schlesinger Institute for Medical-Halachic Research at Shaare Zedek Medical Center in Jerusalem, spoke at the tenth annual Jerusalem conference of the Puah Institute for Fertility and Medicine. He advocated for the passage of new Israeli governmental legislation allowing for domestic ovum donation. Previous legislation from 1981 only allowed the harvesting of additional eggs, with consent, from a woman already undergoing fertility treatment. In the

intervening twenty-nine years, this meant that infertile women in need of donor ova looked to purchase gametes abroad, usually from non-Jewish donors. Halperin contended that while earlier halakhic authorities established parturition as the maternal determinant, more recently, several eminent Haredi poskim in Israel had switched rabbinical opinion in favor of the ovum donor.⁵⁰ Among them were the late Rabbi Meir Brandsdorfer, the late Rabbi Yosef Shalom Elyashiv, and Rabbi Abraham Sherman, all of whose rabbinically authoritative influence holds sway worldwide.⁵¹ Therefore, Halperin opined, it should be legal for young Israeli women, who presumably would be Jewish, to donate ova in Israel. Since maternity has been halakhically reassessed and established in favor of the ovum donor and genetic mother, children born of ova donated by a Jewish donor would not need conversion. Some objected to the racial overtones of Halperin's rationale to make available "Jewish eggs." Yet others argued that shifting a relatively longstanding halakhic policy of parturition as indicating maternal identity betrays those who have heretofore relied upon this standard (Birkner 2010; Siegel-Itzkovich 2010).

Relatedly, in June 2006, the then Sephardic Chief Rabbi of Israel, Shlomo Amar, consented to allowing an impoverished infertile woman to engage a Jewish, married, gestational surrogate, upending long-established Israeli policy to prohibit such

⁵⁰ See Halperin 2011, 278-98. Westreich 2016, 106n30 cites a private conversation with Bleich, in which Bleich asserted that Halperin's assessment is not accurate. However, Sinclair 2003, 107 ff. proposed a similar observation to Halperin's regarding a shift toward genetics ten years earlier.

⁵¹ See Ariel, 1996; Brandsdorfer 2008; Sherman 2008; Brand 2011a,b. However, for an opposing viewpoint, see Fisher 2004; Goldberg 2008, 2010; and Katz 2011. It must strongly be noted, though, that most Haredi poskim who have identified the ovum donor as the halakhic mother do not utilize genetics in formulating their position, indicating that it is more of a social shift, than an epistemological paradigm shift.

arrangements (Levinson 2006; Teman 2010, 115; Knohl 2016).⁵² Jews facing fertility challenges in the United States and in Israel increasingly have utilized gestational surrogates, including Orthodox Jews, often with rabbinical approbation. Despite Tendler and Loike's published opposition to Jewish women, especially when married, from serving as gestational surrogates, anecdotal evidence seems to indicate that such reproductive altruism is on the rise (Katzman 2017).

What axiological and epistemological dynamics account for the change in rabbinical, Jewish bioethical attitude and orientation? First, the history of ART demonstrates that what was initially perceived as outlandish gradually achieves social acceptance.⁵³ This is especially true when initial judgments portending horrendous moral and social consequences do not materialize over time. Suspicions of improper motivations of those seeking assistance through ART, especially of women, subside when they remain unrealized, such as women seeking gestational surrogates to avoid the burdens of pregnancy. Changing social and sexual mores, including an acceptance of more complex and varied family constructs, also tempers the negative judgments of some of the social changes that ART indeed has wrought. Popular Jewish social and religious acclimation to gestational surrogacy arguably is in line with larger societal acceptance. Rabbis and bioethicists are not immune to shifting cultural perceptions, as well as

⁵² See Knohl 2016 regarding the debate of Rabbi Amar's attribution of his lenient position to the late, former Sephardic Chief Rabbi of Israel, Ovadia Yosef.

⁵³ See Bleich and Jacobson 2015, 361, quoting Kleegmand and Kaufman 1966, 178, who describe the path of reaction from "horrified negation" to "negation without horror" to "slow and gradual curiosity, study, and evaluation," to "very slow but steady acceptance." In fact, recently the halakhic discourse on ART has shifted from fundamental questions of permitted or forbidden, to how best to pursue ART with halakhic guidance, see Dovid Sukenik 2010.

grassroots pressures to allow that which is not explicitly forbidden. Indeed, the subjective moral intuition of individuals is profoundly affected by changing understandings of the world, by turns in societal attitudes, and by personal experience.

Second, in the Israeli context especially, there is a manifest social pressure to make ART available to those with fertility challenges in ways that are financially accessible, and that are blessed with rabbinical approbation. Israel's socialist origins, communitarian values, and strong ethos of shared destiny also express themselves in reproductive liberty, and according to anthropologist Elly Teman, create "a nationalist discourse that frames women's central role as 'biological reproducers' of the collectivity" (Teman 2010, 113). The shadow of the Holocaust, in which two out of three Eastern-European Jews were murdered, has had profound impact upon Jewish and Israeli pronatalism. Ronit Irshai (2012) has convincingly demonstrated the overall, positive halakhic orientation of contemporary medical halakhists toward assisted reproduction, and a concomitant, negative halakhic attitude toward contraception. Jewish demographic concerns and pronatalism, in both Israel and the United States, thus likewise lead to increasing rabbinical endorsement of ART, including gestational surrogacy and ovum donation. A proud religious and ethnic culture of medical achievement and interventionism lends further support to the Jewish reception of ART and more liberal reproductive policies (Birenbaum-Carmeli 2004).⁵⁴

⁵⁴ Teman 2010, supports these contentions, but notes with irony that despite the greater social acceptance of ART in Israel, a culture of procreative liberty, and increasing rabbinical approval of ART's many permutations, the Israeli government has yet to legislate global, rather than exceptional, approval of single women and gay couples hiring gestational surrogates, or permitting married women to be commissioned as gestational surrogates. Teman, *ibid.*, 116-22, theorizes that the Israeli government sees itself as the gate-

Third, the popular, epistemic privileging of science can be discerned in the literature of Jewish bioethics and medical halakhah, as demonstrated through the writings of the four exemplars of this dissertation. When IVF novelly divided conception and gestation/parturition, and then ovum donation and gestational surrogacy proceeded to further distinguish between genetics and gestation, medical halakhists and Jewish bioethicists began to revisit contemporary bioethical dilemmas and pre-modern rabbinic sources within a new scientific paradigm. Bleich started to use genetic categories, but in the aftermath of Bick's critique, catches himself and recommits to non-anachronistic readings of pre-modern sources. However, his dual-maternity theory still acknowledges that the new knowledge of genetics cannot be fully ignored in halakhah. Broyde consciously re-conceptualizes parenthood in genetic terms and endeavors greatly to make room for a genetic indication of maternity through the theoretically powerful notion, even if currently practically irrelevant, that conception is halakhically indicative of maternity when it is significant, i.e. fertilization in vivo. Dorff explicitly endorses the new genetic categories, but chooses not to recategorize maternity in deference to the values of communal consensus and consistent policy by upholding the Committee on Law and Standards' commitment to parturition as the maternal determinant, and surprisingly doesn't extend volitional parental categories for cases of a woman's ovum donation and gestational surrogacy, like he did for men in the cases of the sperm donor and social father. Tandler and Loike completely re-conceptualize maternity in light of scientific

keepers protecting the traditional categories of motherhood and family that gestational surrogacy and reproductive liberty potentially threaten.

advancements, embracing a pluralist standard for maternity not out of circumstantial doubt, but out of fundamental doubt as to how to define parenthood in the unprecedented contexts of ART.

While each exemplar manifests a differentially nuanced philosophy, methodology, and application of Jewish law and ethics (see Table 6.2 below), common to all of them is an affirmative, dialogical relationship of religion and science that recasts ancient texts in the light of new scientific knowledge. Three out of four of the exemplars (Broyde, Dorff, and Tandler and Loike), consciously adapt halakhah and Jewish ethics to new scientific knowledge, and one (Bleich) gives credence to scientific advancement, even while guarding Jewish tradition's legal patrimony. Not only do religion and science relations make for a more sophisticated, scientifically informed, Jewish bioethical analysis, but also when matched with axiological progressivism, more easily halakhically license the new ARTs. Furthermore, expanding Jewish bioethical and medical-halakhic epistemologies fundamentally transform halakhic and ethical discourse, allow for the organic development of Jewish law and ethics, and sometimes even engender innovative rabbinic interpretations and unprecedented halakhic rulings.

Table 6.2. Summary of Attitudes Toward Ovum Donation and Gestational Surrogacy, Account of Parenthood, and Epistemological and Axiological Findings for Four Exemplars

x: Exemplar y: Intellection Orientation	Rabbi J. David Bleich	Rabbi Michael Brody	Rabbi Elliot N. Dorff	Rabbi Moshe D. Tendler and Dr. John D. Loike
Attitude Toward AI and IVF From Chapter Five	AIH/IVF-H: Negative AID/IVF-D: Prohibiting	AIH/IVF-H: Positive AID/IVF-D: Permitting	AIH/IVF-H: Positive AID/IVF-D: Cautiously Positive	AIH/IVF-H: Positive AID/IVF-D: Permitting if D is non-Jewish
Def. of Maternity	Monist Causal	Monist Causal	Monist Causal	Monist Causal
Definition and Account of Paternity	Always sperm donor. Monist Causal Account	Always sperm donor. Monist Causal but differentiates <i>Genetic father</i> of sexual and non- sexual procreation <i>Biological father</i> through sexual reproduction.	AIH/IVF-H: sperm donor AID/IVF-D: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father. Pluralist Causal & Volitional/Labor.	Always sperm donor. Monist Causal Account: Genetic Father
Attitude Toward Ovum Donation (OD) and Gestational Surrogacy (GS) From Chapter Six	OD: Negative GS: Negative	OD: Permitting GS: Permitting Unclear from published work if preference for Jewish or non- Jewish OD & GS	OD: Positive to both receive & donate. GS: Positive to commission & serve as. No preference for Jewish or non-J.	OD & GS: Permissible to receive and commission if OD & GS non-Jewish.
Account of Parenthood	Pluralist Causal Account	Pluralist Causal Account	Monist Causal Account	Pluralist Causal Account
Definition of Maternity	Dual-maternity, principally parturition, but in legal doubt as to adding OD.	Parturition when conception legally insignificant. Conception when legally significant.	Parturition. Surprising that not Pluralist Causal & Volitional/Labor, like in AI/IVF-D.	Begins as Monist: parturition. Currently, Pluralist-Causal with fundamental doubt.
Methodological Basis	Halakhic high- theory. Legal analogy & reasoning. Avoids anachronistic readings. Rejects aggadah as legal source.	Halakhic high- theory. Legal analogy & reasoning. Interpretive innovation by conceptualizing pre-modern sources through contemporary science.	Legal precedent and bioethical principlism. Intentional stretching of both halakhic and <i>aggadic</i> sources. Suspicious of specious legal analogies. Policy consensus.	Halakhic- bioethical principlism. <i>Pro Tanto</i> privileged credence to science. Conceptualize pre-modern sources through contemporary science.
Epistemological Dimensions	Torah with science.	Torah and science.	Torah + science = Jewish bioethics	Torah through scientific progress
Axiological Dimensions	Traditional- conservative.	Traditional- progressive	Liberal- progressive.	Tradi.-conserv. & progressive

CHAPTER SEVEN

Cloning and Mitochondrial Replacement Therapy

Cloning and Mitochondrial Replacement Therapy (MRT) combine emerging genetic technologies with established ARTs to overcome infertility and health challenges. Cloning can have several meanings. It can refer to the laboratory generation of a copy of a genetic sequence, or a complete genome.¹ It can also mean reproductive twinning by embryonic fission, i.e., splitting a morula or blastocyst in vitro so that both parts can develop into embryos that will grow into fetuses and be born as twin children.² Monozygotic identical twins are the outcome of a natural version of such a process, and are, in fact, clones of each other.³ However, the cloning under consideration here is that achieved by a technique known as somatic cell nuclear transfer (SCNT). This is when a full genome encased in an adult somatic cell's nucleus is transplanted into an enucleated oocyte – that is, an ovum whose own nucleus, with its nuclear DNA (nDNA), has been removed. The combined oocyte is prompted through electroporation, i.e., electrical stimulation, to fuse, i.e., whole-cell electrofusion, and then act like a fertilized egg (Evans, Gurer, Loike, et al. 1999). Therapeutic cloning could then produce for a person numerous embryonic stem cells that could be used to heal disease without

¹ Drugs and vaccines, such as human insulin, interferon to combat viral infection, and human blood factors to regenerate red blood cells, have been produced by genetically modifying, and then cloning, viruses or bacteria, see Scott and Weissman 2008.

² See Illmensee and Levanduski 2010.

³ There are several varieties of monozygotic twins, depending at what developmental stage the embryonic splitting takes place. Recent studies have preliminarily demonstrated that the natural incidence of twinning following ART is no greater than that of normal conception. See Wu, et al. 2014.

fear of immunological rejection (Scott and Weissman 2008).⁴ Reproductive cloning could develop the embryo into a clone of the person from whom the somatic cell's nucleus was harvested (Devolder 2016, 2-3). To our knowledge, there has yet to be born a human clone, although reproductive cloning research continues with animal subjects.

Mitochondrial Replacement Therapy (MRT) is another recent innovation in reproductive and genetic technologies that also entails the genetic manipulation and manufacture of human gametes using multiple genetic donors. This new therapeutic reproductive technology utilizes the cloning techniques of SCNT, and is alternatively called: Mitochondrial Replacement Therapy, Mitochondrial Transfer, Egg Cell Nuclear Transfer, Ooplasmic and Nuclear Transfer, and Three-Parent Babies/Embryos/IVF. Mitochondria are cellular organelles present in every human cell except red blood cells. Mitochondria are regulated by their own genome, i.e., mitochondrial DNA (mtDNA), which encodes for thirty-seven genes.⁵ All mtDNA are maternally inherited. Their primary function is energy conversion essential to metabolic processes necessary for life through oxidative phosphorylation (OXPHOS) (Mitalipov and Wolf 2014, 5).

The primary motivation for the assisted reproductive and genetic technology of MRT is to facilitate a woman suffering from non-nDNA-caused mitochondrial disease to reproduce healthy offspring who will not suffer the same malady (Claiborne 2016; Kelly 2013). Individuals with mitochondrial disease or disorders experience metabolic

⁴ See Bonnicksen 2009.

⁵ Thirteen proteins, two rRNAs, and twenty-two tRNAs, see Mitalipov and Wolf 2014, 5. mtDNA was discovered in the 1960s, see Bleich 2015a, 60.

dysfunction that leads to cellular death, may ultimately cause organ system failure, and throughout its progression can manifest itself through a host of physiological complications from muscular dystrophy to GI tract dysfunction to respiratory difficulties and other maladies (Kurt and Topal 2013). The number of people born vulnerable to mitochondrial disease is unclear. Some claim as many as 1 in 400 (Poulton and Oakeshott 2012); others as few as 1 in 5000-10,000 (Mitalipov and Wolf 2014).⁶ Additionally, mitochondrial disease often manifests later in life further complicating our understanding of its pathology, as well as skewing accurate data collection.

MRT enables a woman afflicted with mitochondrial disease to contribute her nDNA to the fertilization of an ovum, and have her mtDNA replaced with the mtDNA from a second non-diseased woman. Thus, in MRT, the intended father contributes his spermatid haploid-nDNA, the intended mother contributes her haploid-nDNA, and an third-party ovum donor contributes the enucleated ovum, with her cytoplasmic mtDNA, engendering so-called “three-parent” children. If the gestator is a surrogate other than one of the gamete donors, the resultant child arguably has four biological parents. The child would not only be free of the intended mother’s mtDNA, protecting the child from mitochondrial disease, but also will not transmit her disease-prone mtDNA to future generations (Claiborne, 2016; Kelly 2013). While tri-gametic embryos aim to free the

⁶ Darnovsky 2013 claims that advocates for the technology tell the press that as many as 1 in 200 children inherit disease-prone mtDNA in order to win public support. See, e.g., Gross 2015. Bioethicists Glenn McGee (McGee and McGee 1998), Françoise Baylis (2013), and Tina Rulli (2016) believe that the numbers of those afflicted with mitochondrial disease are too low to justify extensive research given more pressing needs. They also argue that it focuses parenthood on the need to transfer genes rather than on raising an individual child. For articles on mitochondrial diseases, their pathology, clinical diagnosis, and treatment, see St. John 2013.

resultant child of its mother's disease-prone mtDNA and affiliated disease, the artificial manufacture of gametes from multiple donors also constitutes an example of germline modification in that laboratory-induced changes may be passed on to future offspring.⁷

Table 7.1 summarizes possible basic cases of cloning and MRT.

Table 7.1. Cloning = C; Mitochondrial Replacement Therapy = MRT

Case #	Technology	nDNA	mtDNA	Sperm Donor	Gestation/Parturition	Collaborators
1	C	Woman's Somatic Cell	Woman's Ovum	None	Woman	1
2	C	Woman's Somatic Cell	Ovum Donor	None	Woman, Ovum Donor, or Surrogate	2-3 all women
3	C	Man's Somatic Cell	Ovum Donor	None	Ovum Donor or Surrogate	2-3
4	MRT	Wife	Ovum Donor	Husband	Wife	3
5	MRT	Wife	Ovum Donor	Husband	Surrogate	4
6	MRT	Wife/Woman	Ovum Donor	Sperm Donor	Wife/Woman or Surrogate	3-4

Thus, in cases of cloning, there may be a single, female biological parent, or up-to-three female biological parents. Would this mean that the resultant child has no father? Can there be fatherhood absent a man? Are parental designations biologically defined, or social constructs subject to change? Is parenthood accounted for by causality or volition? Cloning also returns us to the question of whether parenthood adheres to a monist

⁷ Since spermatid mitochondria are degraded during fertilization, only female offspring produced through MRT could transmit mtDNA to a new generation, thus leading scientists and bioethicists to recommend initially limiting MRT trials to male embryos, see Claiborne 2016, 88-95; 119-121. For an explanation of the biological mechanism leading to the degradation of paternal mtDNA, see Zhou, et al. 2016. For the ethics of crossing the germline barrier, see Krinsky 2015. See also Bonnicksen 1998a,b; Knoppers 1998; Cole-Turner 2008.

standard, or is open to a pluralist one allowing for more than one mother. In cases of MRT, there may be as many as three or four biological progenitors. If the intended social father and/or mother are not biological participants in the collaborative reproductive process, the resultant child may have as many as five or six parents. Collaborative procreation with genetic technologies therefore extends the question of the nature of parenthood and its grounding to novel scenarios. Cloning and MRT sharpen the question of whether genetics determines parental identification by forcing a pronounced distinction between the ovum-mtDNA donor and ovum-nDNA donor. Thus, the complications of maternal identification originally introduced by gestational surrogacy and ovum donation multiply, forcing a renewed consideration of the determinative importance of causal reproductive contributions, especially genetic, in Jewish law and bioethics. As before, we will first understand the current science and its history, then identify issues of larger bioethical discussion, and of more particularly Jewish bioethical concern, and finally evaluate the epistemological and axiological dimensions of the contemporary Jewish bioethical debate concerning maternal and paternal identification regarding cloning and MRT for this dissertation's four Jewish bioethical exemplars.

The History and Science of Cloning and Mitochondrial Replacement Therapy

When considering the history of human cloning and MRT, it is important to appreciate that these novel technologies build-off two centuries of advances in scientific understanding, experimentation, and technical refinement. To adequately account for their invention would require rehearsing the history of developmental, cellular, and

molecular biology; embryology; animal husbandry; biochemistry; genetics; and ART (The President's Council on Bioethics 2002). Hans Spemann, a German embryologist at the University of Freiburg im Breisgau, whose work on cellular differentiation earned him the 1935 Nobel Prize for Physiology or Medicine, was the first to speculate about cloning through SCNT in his 1938 book on *Embryonic Development and Induction*: “Decisive information about this question may perhaps be afforded by an experiment which appears, at first sight, to be somewhat fantastical. This experiment might possibly show that even nuclei of differentiated cells can initiate normal development in the egg protoplasts” (Spemann 1938; Nobel Media 2014).⁸ In 1952, two scientists in Philadelphia, Robert Briggs and Thomas J. King, made Spemann's theorizing a reality when they successfully cloned leopard frogs by transplanting the embryonic nucleus of a frog blastula into an enucleated frog ovum. Although they successfully cloned frogs, their scientific interest laid in better understanding embryonic differentiation (Briggs and King, 1952). After conception, the fertilized egg undergoes a process of cellular cleavage, during which totipotent cells begin to differentiate. As the embryo develops into a fetus, differentiated cells (e.g., skin, bone, muscles, nerves) retain their particularity, despite sharing the same genome with all other cells. This process of differentiation was thought to be irreversible. Briggs and King were testing this presumption. Six years later, in 1958, John Gurdon, a graduate student at Oxford, began to apply Briggs and King's nuclear-transfer technique to his own experimentation, this time transferring adult-frog nuclei into

⁸ Given popular associations of cloning with Nazi eugenics, such as in Ira Levin's 1976 novel, *The Boys from Brazil*, it is worth noting that Spemann resigned his position in protest after the Nazi ascension to power, see Sander 1997, 66-75.

enucleated ova. Like Briggs and King before him, Gurdon achieved successful cloning of frogs, but he also demonstrated that fully differentiated adult nuclei could be reprogramed to function like totipotent embryonic cells – at least, in amphibians. Gurdon won the Noble Prize in 2012 for his contributions to developmental embryology (Gurdon 2015; Mukherjee 2016, 397-9).

In the late 1960s, Gurdon’s successes, as well as his high failure rate, engendered lively bioethical debate among ethicists, scientists, and theologians. Nobel laureate Joshua Lederberg (1966), for example, sought to educate the populace and promote “clonal reproduction.” Theologian and ethicist Paul Ramsey (1970) took pen to paper against cloning. In a congressional testimony in 1971, Nobel laureate geneticist James D. Watson advocated for an open and transparent global discussion regarding the pros and cons of cloning. Others, were aghast at the Huxleyan possibility of mass human reproduction through cloning, as demonstrated by *The New York Times Magazine* 1972 article entitled, “The Frankenstein Myth Becomes a Reality: We have the Awful Knowledge to Make Exact Copies of Human Beings” (Gaylin 1972).⁹ In quiet laboratories, the science of cloning and MRT progressed, and in the loud precincts of the public square the debate continued.¹⁰

⁹ Aldous Huxley’s (1998, 6-7) 1932 *Brave New World*’s “Bokanovsky’s Process,” futuristically describes reproductive cloning as: “One egg, one embryo, one adult – normality. But a bokanovskified egg will bud, will proliferate, will divide . . . becoming anywhere from eight to ninety-six embryos – a prodigious improvement, you will agree, on nature. Identical twins – but not in piddling twos and threes . . . Standard men and women; in uniform batches.” Willard Gaylin was a co-founder of the Institute of Society, Ethics, and the Life Sciences, which later was renamed the Hastings Center. See The President’s Council on Bioethics 2002.

¹⁰ For a fuller account of the subsequent history, see The President’s Council on Bioethics 2002.

In 1995, Keith Campbell and Ian Wilmut led a research team at the Roslin Institute in Edinburgh, Scotland, that achieved the first successful nuclear transfer of embryonic sheep cells into enucleated ova.¹¹ They demonstrated that mammalian cell differentiation is also not irreversible (Campbell, et al. 1996). In 1997, they applied their technique of nuclear transfer to adult, mammalian, somatic cells. They enucleated the ovum of a Scottish Blackface ewe. They then placed somatic cells from the mammary glands of a second, Finn Dorset, white-faced ewe into a nutrient-deficient culture medium that stimulated the somatic cells to reorganize their nDNA into a gametic configuration. Electrical current was applied to transfer the reprogrammed somatic cell nucleus into the enucleated oocyte and begin cellular cleavage, differentiation, and embryogenesis. When the resultant embryo ripened into a six-day blastocyst, they transferred it into the uterus of a surrogate sheep for gestation and parturition. Dolly the sheep, a Finn Dorset, was born on July 5, 1996. Her birth was publicized on February 27, 1997, in *Nature*, and made international headlines, unlike the earlier-described cloning successes. In popular imagination, Dolly represented scientific proof that human cloning was within the realm of the possible (Wilmut, et al. 1997; Wilmut and Campbell 2001).¹²

On November 11, 1997, at its twenty-ninth General Conference, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), unanimously adopted its “Universal Declaration on the Human Genome and Human Rights.” Article

¹¹ Previously, in 1984, Danish scientist Steen Willadsen reported the successfully cloning of a sheep, though his claimed achievement failed to capture popular attention. See Scott and Weissman 2008, 27.

¹² Wilmut and Campbell’s research was sponsored by PPL Therapeutics Ltd., toward the goal of cloning genetically adapted sheep to mass-produce therapeutic bio-pharmaceuticals, see Kolata 1998, 25-7. Post-Dolly, cloning animal experimentation continued, see Bleich and Jacobson 2015, 359-361.

11 reads: “Practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted” (UNESCO 1997).¹³ In 2004, a Korean scientist, Hwang Woo-Suk, stunned the world by claiming to have cloned the first human embryo through SCNT. He claimed that his intent was not reproductive cloning, but solely for stem cell research. However, shortly later it was discovered that Hwang had fabricated his results, and had even pressured his female research assistants to donate ova for experimentation (Devolder 2016, 11). In 2005, the United Nations called for a human cloning ban in its “Declaration on Human Cloning,” and many countries have created regulations regarding human cloning research, some forbidding it outright, and others, like France and Singapore, even criminalizing such experimentation (ibid., 1). In the aftermath of the Hwang scandal and international condemnation of human cloning, some refocused their attention on reprogramming adult somatic cells to act embryonically, thereby generating induced pluripotent stem cells (iPS) (Scott and Weissman 2008, 27).¹⁴ In 2013, Dr. Shoukhrat Mitalipov’s team at the Oregon Health and Science University used SCNT to create human embryos from which stem cells were isolated (Tachibana, et al. 2013).

Dolly the sheep, and all SCNT clones to date, however, have not been true clones.

This is because the enucleated oocyte into which a somatic cell nucleus is transferred

¹³ Article 11 continues: “States and competent international organizations are invited to co-operate in identifying such practices and in taking, at national or international level, the measures necessary to ensure that the principles set out in this Declaration are respected.” In 1998, the United Nations General Assembly endorsed the declaration.

¹⁴ iPS are superior to therapeutically cloned stem cells in that their mtDNA matches the person from whom the somatic cells originated, whereas in therapeutically cloned stem cells the mtDNA matches the ovum donor, see Scott and Weissman 2008, 27.

retains its cytoplasm, and with it, its mitochondria. Although human reproductive cloning has not yet been sanctioned within the scientific and medical communities, cloning technologies have found more acceptable application in MRT.

The first attempt at mitochondrial transfer was not for mtDNA replacement, but augmentation. In the late-1990s, a New Jersey fertility clinic attempted ooplasmic transfer – that is, harvesting an ovum from an infertile woman for IVF, but first injecting it with some cytoplasm from a second woman’s ovum, thereby transferring additional healthy mitochondria.¹⁵ The intent here was to “energize” the eggs of infertile women by injecting them with cytoplasm of younger donors. The FDA stopped this practice in 2002 since it was an experimental gene therapy and needed specific FDA approval, but not before thirty to fifty children had been born of this technique (Bleich 2015a, 62). Two of the first seventeen fetuses conceived using this method had Turner’s syndrome, in which one X-chromosome is either missing or partial.¹⁶ Two healthy children, however, were also conceived and brought to term through this treatment. It should be noted, however, that this fertility treatment mixes two types of maternal mtDNA, whereas MRT to avoid disease aims to create an embryo with only one type of mtDNA (Aldhous 2009).

The most promising procedures for mitochondrial replacement utilize techniques developed in cloning research, in addition to in vitro fertilization. In Pronuclear Transfer (PNT), the gametes of the intended father and mother are brought together through in

¹⁵ Ooplasm transfer is sometimes alternatively referred to as cytoplasmic transfer, see Bleich 2015a, 62.

¹⁶ Since older, ineffective ova were being utilized, it is likely that there were confounding factors contributing to chromosomal abnormalities.

vitro fertilization to create an embryo.¹⁷ A second embryo from a donor egg and sperm is simultaneously created. The pronuclei of both embryos are removed on day one, at the single-cell stage, and the pronuclei with the conjoined nDNA of the intended father and mother is inserted into the enucleated embryo that contains healthy mtDNA from the second ovum donor. Although sperm do contain some mitochondria, they do not contribute to the mtDNA of the developing embryo (Yabuuchi, et al. 2012; Craven, et al. 2010).¹⁸ In Nuclear Genome Transfer (NGT), a donor ovum is denucleated and the nucleus of the intended mother containing her nDNA is inserted into the donor ovum containing cytoplasm and healthy mtDNA. In vitro fertilization is then applied using the intended father's sperm (Amato, et al. 2014).¹⁹

While the potential therapeutic benefits of cloning failed to persuade many to license human reproductive cloning, MRT which utilizes cloning technology may seem like a more sophisticated version of IVF with two donor ova. The seriousness of mitochondrial disease also has given supportive argument to its allowance. On February 24, 2015, the House of Lords in Britain approved MRT, and the United Kingdom's Human Fertilisation and Embryology Authority began to develop pertinent regulations

¹⁷ Research in MRT began as early as the 1980s with animal trials before it was approved in the United Kingdom in February 2015 for use with humans. In 1983, PNT was successfully achieved with mice; in 2009, with four macaque monkeys. In 2012, Shoukhrat Mitalipov of the Oregon National Primate Research Center in Beaverton performed nuclear genome transfer (NGT) by replacing the nuclei of ova that contain healthy mtDNA with that of the primate donor. He fertilized the nucleated eggs with sperm and grew them in culture into blastocysts of 100 cells over 5 or 6 days, when they would normally be implanted into the womb. Of the 65 eggs, 48% grew into healthy looking blastocysts, but over 50% developed abnormally as the result of faulty cell division. Mitalipov argued that his success rate was sufficient to proceed to human clinical trials, see Coghlan 2012. With such success/failure rates one could understand the tensions between eager researchers and clinicians, conservative policy makers, and cautious but hopeful bioethicists.

¹⁸ See above, 326n7.

¹⁹ Other techniques utilized in the recent past include Maternal Spindle Transfer (MST), Metaphase Chromosome Transfer (CT) and Germinal Vesicle Transfer (GVT), see Yabuuchi, et al. 2012.

which they approvingly publicized on December 15, 2016 (Gallagher 2015; Herbert and Turnbull 2017).²⁰ On February 3, 2016, an advisory committee of the Washington, D.C.-based National Academies of Sciences, Engineering, and Medicine recommended approval of limited MRT (Claiborne 2016).²¹ However, the Congressional omnibus fiscal 2016 budget bill contained language that prohibits the FDA and other government agencies from reviewing applications for, let alone funding of, experiments that genetically alter human embryos (Achenbach, 2016a).

In September of 2016, it was revealed that on April 6, 2016, scientist John Zhang and his US team of the New Hope Fertility Center in New York City, working with an infertile Jordanian couple in Mexico, delivered the world's first three-parent baby boy (Hamzelou 2016). Zhang subsequently reported that some of the intended mother's disease-prone mtDNA was inadvertently transferred during Oocyte Spindle Transfer, potentially imperiling the future health of the child (Zhang, et al. 2017; Reardon 2017).²² However, since mtDNA is maternally inherited, the resultant baby boy does not constitute an occurrence of germline modification. In January 2017, though, it was reported that the Nadiya Clinic for Reproductive Medicine in Kiev, Ukraine used PNT to help an idiopathically infertile woman deliver a baby girl, thus producing the first three-parent baby girl, and the first MRT occurrence of germline modification (Scutti 2017).

²⁰ The Food and Drug Administration (FDA) of the United States held public hearings on MRT in 2014, which concluded without a formal decision or recommendation, see Bleich 2015a, 63.

²¹ In December 2015, however, the National Academies of Science, Engineering, and Medicine, took a more cautious stance on gene editing, i.e., Crisper Cas9, when it would constitute a germline modification, see Bleich 2015a, 64, n11.

²² See Alikani, et al. 2107, for a critical editorial that was published in the same issue in *Reproductive BioMedicine Online* as Zhang, et al. 2017. For heteroplasmy resulting from SCNT, see Evans, Gurer, Loike, et al. 1999.

Issues of General and Jewish Bioethical Concerns Relating to Cloning and Mitochondrial Replacement Therapy

The primary bioethical objection to cloning and MRT is the principle of non-maleficence. Although cloning research advances genetic understanding of human development and disease, animal-experimental failure rates raise serious concerns about SCNT's morality for humans. Consider, for example, the case of Dolly the sheep, who was the only successful birth among 277 attempts. Dolly only lived half her expected lifespan and died from cancer. It is unclear if her demise was a direct result of being a clone, but cloned animals, when they survive to birth, experience a range of serious anatomical and physiological abnormalities (Devolder 2014, 15-6). Non-maleficence is one of the primary reasons that the scientific, bioethical, and regulatory communities have been unsupportive of human reproductive cloning (Scott and Weissman 2008, 27).²³

However, even if SCNT was sufficiently mastered to produce healthy outcomes, there are still those who object to therapeutic cloning due to religious-metaphysical concerns regarding the personhood of human embryos. Human reproductive cloning is also perceived by some bioethicists as a threat to individual identity since clones are not genetically unique. If clones are generated for specific goals, human autonomy is compromised, perhaps even leading to new forms of enslavement. Cloning may legitimate eugenics, giving rise to designer babies and master races.²⁴ Being a clone also

²³ A related concern is non-maleficence on a larger scale – namely, the precautionary principle, which argues for conservatism and conservationism when facing scientific uncertainty. Genetic engineering of all types may unleash unanticipated global ills. See Steel 2014.

²⁴ Especially for Jewish bioethicists, mass enhancement-eugenics raises the specter of the Holocaust. For literature on Nazi eugenics, science, and medicine, and their legal aftermath, see Kevles 1985; Lifton 1986; Proctor 1988; Grodin and Annas 1992, 2007; Mukherjee 2016, 128-38. For eugenics, more generally, see Bashford and Levine 2010.

may result in social stigmatization. Further, asexual reproduction obviates coupling, undermining traditional mating patterns and family structures, thus introducing complex family dynamics. Cloning also reduces genetic diversity. A robust bioethical literature debates these and other concerns (Devolder 2014, 16-26). If applied toward mass human reproduction, cloning arguably compromises the fundamental dignity of humanity. However, as a therapeutic and assisted reproductive intervention on an occasional, need basis, many of these arguments lose their strength, or end up relying on slippery slope argumentation.

As with cloning before it, mitochondrial replacement therapy has generated scholarly research papers;²⁵ bioethical reports from government appointed committees, bioethics institutes, and science policy think-tanks;²⁶ summary and review articles and opinion pieces published in professional, generalized scientific journals like *Nature* or *Science*;²⁷ and, non-specialized reports published in news media or popular scientific magazines online or in print.²⁸ Each genre of sources plays its role and all contribute to the larger societal bioethical discussion. Summary and review articles make arcane scientific papers and their conclusions accessible. News media and science journalism further expand the public knowledge of laboratory achievements and bring transparency to the field of reproductive and genetic technologies. Through popular interviews and

²⁵ First-generation research papers on this new technology include Amato, et al. 2014; Bredenoord, Pennings, and de Wert 2008; Burgstaller, Johnston, and Poulton 2014; Craven, et al. 2010; Cree and Loi 2014; Evans, Gurer, Loike, et al. 1999; Mitalipov and Wolf 2014; Moraes, Bacman, and Williams 2014; Yabuuchi, et al. 2012.

²⁶ See The President's Council on Bioethics 2014; Nuffield Council on Bioethics 2012a,b; Hallowell 2012.

²⁷ See Check Hayden 2013; Cyranoski 2012; Darnovsky 2013; Personette 2014; Reinhardt, Dowling, and Morrow 2013; Tachibana, et al. 2009.

²⁸ See Aldhous 2009; Coghlan 2012; Berezow 2013, 2014; Raeburn 2014; Kelland and MacLellan 2015.

sound bites, scientists and practitioners share personal opinions that otherwise would not be communicated through their scientific publications. Moreover, contemporary bioethicists often emphasize the need for a new social framework to consider the ethical dimensions of these new technologies, as well as to help make medical decisions. Beyond the medical and academic scientific communities, other stakeholders include government regulators and legislators, the health care industry, and most importantly, the people whose lives stand to benefit from therapeutic interventions and reproductive technological advancements (Beradelli 1997).²⁹

The arguments against MRT combine some of the arguments previously waged against ovum donation and gestational surrogacy, with some newly raised in regard to cloning technologies. Bioethicist Francoise Baylis (2013) identifies four ethical objections to MRT: one, harms to egg providers; two, harms to potential offspring and future generations; three, harms to specific interest groups; and four, harms to society. “Harms to egg providers” raises ethical concerns not only about mitochondrial replacement, but any reproductive technology that requires harvesting donor ova. While there are indeed ethical concerns regarding safety and unnecessary risk, the commodification of body parts, and distributive justice, this argument falters in specific opposition to this genetic therapy which aims to serve a select patient-group. For “harms to specific interest groups,” Baylis cites the need to maintain uncorrupted mtDNA lineages for DNA genealogists and researchers of migration patterns and demographic

²⁹ See Fischbach, Benston, and Loike 2014, who use MRT as a bioethical case study to create multidisciplinary dialogue among researchers, scholars, and students to promote ethically responsible experimentation and clinical practice.

history. However important these disciplines, this too appears as a weak argument in the face of human suffering. For “harms to society,” Baylis wages three arguments. First, the slippery slope argument that this will lead to non-therapeutic uses, such as lesbian couples who desire to mix their DNA to create a child, as well as other efforts toward germline modification including enhancement. Second, tampering with the human gene pool violates the open-future rights of future generations. Third, scientific resources should be expended on more pressing needs of human health and welfare. Each of these is subject to counter-argumentation, especially the slippery slope argument.³⁰

Baylis’s strongest concern is the harm to potential offspring and future generations, a concern strongly articulated by others, but in truth shared by all parties to the debate (Genetics and Society 2014, Human Genetics Alert 2014, Right to Life 2014).³¹ A. Bredenoord and A. Braude (2011) warn that we do not yet fully understand the interactions between nDNA and mtDNA, and fear that interposing a third-party’s mtDNA may yield unforeseen deleterious consequences. Evolutionary biologists Klaus Reinhardt (et al. 2013) and Jonci Wolff (et al. 2014) likewise argue that mtDNA and nDNA “talk to each other,” mtDNA affects the expression of nuclear genes, and thus impact upon development, lifespan, fertility – especially in males, and cognition. Studies

³⁰ See Raeburn 2014, who dismisses the slippery slope argument since it can be applied to any new technology, and proper regulation can distinguish between therapeutic genetic engineering and designer babies. Darnovsky 2013, on the other hand, opines that until now there has been an international consensus that genetic engineering may be used to treat an individual’s medical condition, but not germline modification. Modifying gametes and early embryos transgresses the current agreement and opens the door to full-out germline modification and its attendant eugenic social dynamics. See also Quintavalle 2002; Sandel 2007; Schichor, Simonet, and Canono 2012.

³¹ The Right to Life organization is likewise concerned about the harm to embryos whether in research or during treatment given their Christian theology of personhood attaching at conception. See also Berezow 2013, 2014.

of the negative effects of mismatched nuclear and mitochondrial genomes have been performed with fruit flies, mice, seed beetles, and copepods. Mitochondrial transfer may even possibly introduce new genetic diseases into the gene pool (Nuffield Council 2012a,b). The challenge of an individual choosing to assume this risk is that replacing mitochondria constitutes a heritable genetic change. The only way to avoid heritable, genetically altered mitochondria is to sex-select for XY embryos during the ART phase of the process since any future offspring of a male “three-parent baby” will inherit its mtDNA from its non-genetically modified mother (Nuffield Council 2012).³² The ethics of sex selection obviously pertain.

While mitochondrial transfer is indeed a form of germline genetic engineering, supportive bioethicists argue that mitochondrial engineering is different from nuclear germline modification since the mitochondrial genome is small and contributes less than one-percent to the genetic make-up of a person. MtDNA do not make direct contributions to the traits that make us human: personality, intelligence, appearance. Blood transfusions also transfer “alien” DNA, but similarly do not effect personhood (New Scientist 2013). However, this may be too glib. Metabolism certainly does impact upon human activity, and thereby both person and personality (Darnovsky 2013). Additionally, it is unknown whether knowledge of having multiple sources of DNA will psychologically affect someone’s sense of identity (Holtug 1998). Changing family structures in larger society more generally further complicates the unknown social consequences of the new reproductive technologies. While some warn that children born of three (or more) sources

³² See Beekman, et al. 2014 for a study about male-expression mtDNA mutations.

of genetic material will suffer psychological damage, a similar concern applies to children born through gestational surrogacy and of donor gametes.

Questions of identity not only arise in the realm of psychology, but also in law. The establishment of maternal and paternal parenthood for a child conceived and gestated with the help of additional parties raises both secular and religious legal issues. Biological and social concepts of parenthood may clash, just like in classical adoption. Legislation, by necessity, must step-in to regulate the establishment of parenthood, and decide the legal, and even ethical obligations and rights involved in parenthood (Andrews 2005; Eekelaar and Sarcevic 1993; Rothstein, et al. 2005). The Nuffield Council on Bioethic's (2012a,b) six-month investigation into mitochondrial replacement recommended that the mitochondrial donor should not have the same status of an ovum or sperm donor, but rather should be seen as making a tissue donation. Accordingly, a mitochondrial donor needs to be anonymized and should not create any biological or legal notion of a child having a third parent or second mother. Therefore, children born through such reproductive technology should also not have the right to find out the identity of the donor.

In Judaism, since halakhah understands Jewish identity as maternally conferred, the identification of maternity is of primary importance, though paternity also has significant Jewish religious implications. Bastardy is also of great legal concern since halakhah identifies a bastard as the offspring of biblically illicit unions such as adultery or incest, though not of extra-marital pregnancies. If children born of reproductive technologies are deemed to have unknown, anonymous parents, there is fear of the

potential for unintended incest with a future mate, and the progeneration of bastards, especially given the relatively small size of the Jewish community and the preference for endogamy. Per halakhah, individuals with bastard status are unable to marry individuals without such status. It is important to note that a desire to avoid potential for bastardy may have an influential impact in the formation of halakhic positions on the determination of paternity and maternity in the new reproductive and genetic technologies. There has been extensive discussion, but little consensus, among Jewish bioethicists and medical halakhists regarding the parental implications of gamete donation and gestational surrogacy.

Similarly, parental-identity questions arise when manufacturing gametes from stem cells or creating embryos through cloning to treat cases of infertility. Just as gestation can have epigenetic impact, so too ovum donor mtDNA may influence gene activation and expression of the other donor's nDNA. Artificial gamete manufacture and therapeutic cloning thus raise many ethical questions impacting upon moral and legal concepts of kinship, family structures, and the relationship between parents and children (Newson and Smajdor 2005).

Cloning and Mitochondrial Replacement Therapy: Epistemological and Axiological Considerations

Cloning and MRT significantly complicate the Jewish-bioethical and medical-halakhic discussion heretofore. As genetic technologies, in addition to being ARTs, there are added valences to their larger bioethical consideration, as described above. Genetic engineering and gamete creation allow for additional genetic reproductive collaborators,

forcing a renewed consideration of a pluralist standard not only for maternity, but possibly also for paternity. Cloning likewise challenges traditional notions of dual parenthood, especially if a single woman's somatic cell and ovum are utilized, making her the sole nDNA and mtDNA donor, and if she gestates and delivers the resultant child. Therefore, scientific awareness and the role of new knowledge are potentially poised to play an important epistemological role in the adjudication of maternal and paternal identification in these novel assisted reproductive and genetic technologies. Once again, as legally oriented scholars, medical halakhists and Jewish bioethicists will seek out legal precedents and analogies to assess parental identification in cases of cloning and MRT. The imprint of scientific knowledge and its awareness need to be epistemologically discerned for each discrete analysis of such legal precedents and analogies. However, the unimagined novelty of these technologies raises the question of whether the received halakhic tradition has sufficient resources to adjudicate unanticipated phenomena born of scientific advancement. What methodological responses might emerge to accommodate such occurrences?

Axiologically, do Jewish bioethicists and medical halakhists view the reproductive and therapeutic benefits promised by such technologies as outweighing the potential harms and dangers? What ethical methodologies and discreet values do they apply to evaluate the legitimacy and morality of cloning and MRT? We now proceed to investigate this dissertation's four Jewish bioethical exemplars on cloning and MRT: Rabbis J. David Bleich, Michael J. Broyde, Elliot N. Dorff, Moshe D. Tendler, and Dr. John D. Loike.

Rabbi J. David Bleich on Cloning, Mitochondrial Replacement Therapy, and Parenthood

Bleich first wrote on cloning in 1998 in the aftermath of Dolly the Sheep. He republished this essay with minor edits in 2006 and 2015 (Bleich 1998c, 2006a, 1-56; Bleich and Jacobson 2015, 357-99).³³ As the United States and the United Kingdom began to consider permitting MRT in 2014 and 2015, Bleich (2015a) addressed MRT through the lens of Jewish bioethics and halakhah in the journal *Tradition*, in his column, “Survey of Recent Halakhic Periodical Literature.” We will first critically review his approach to cloning, then to MRT, especially regarding parental identification. Then we will assess the epistemological and axiological dimensions of both together.

Bleich on Cloning

The Talmud (TB Kiddushin 30b) teaches: “There are three partners [in the formation] of a person: The Holy One blessed be He, his father, and his mother.” Bleich understanding this statement as not only establishing natural parenthood as the ideal paradigm, but also as depicting humanity as partners with God in creation. “The question,” Bleich (Bleich and Jacobson 2015, 369) asks, “is whether procreative license is limited to sexual reproduction or whether it encompasses asexual or homologous reproduction as well.” Bleich points out, once again, that Judaism, unlike Catholicism, does not subscribe to a doctrine of natural law, and encourages beneficent intervention

³³ Bleich and Jacobson 2015, 395-9, adds discussion questions, and an appendix, “note,” on halakhic sources.

within the natural order, even regarding procreation.³⁴ Although the Torah does prohibit certain forms of botanical hybridization and mammalian interbreeding, Judaism largely affirms a theology of divinely mandated interventionism, especially regarding matters of health (ibid., 362-8; Bleich 1979b). Bleich avers that “there is ample reason” to believe that “Jewish teaching” would “not frown upon cloning either animals or humans simply because it is a form of asexual, and hence ‘unnatural,’ reproduction” (ibid., 368). To support this initial contention, Bleich points to talmudic and post-talmudic legends about the creation of a *golem* (artificial anthropoid), which while not quite an exact legal analogy, still represents a form of asexual reproduction approvingly discussed by Jewish sages (ibid., 369-82).

The Talmud (TB Sanhedrin 65b) relates that, “Rava created a person, and sent him before Rav Zeira. Rav Zeira tried speaking to him, but he would not reply. Rav Zeira said to him: ‘You are from one of my colleagues, return to your dust.’” Immediately following this passage, the Talmud (ibid.) tells: “Rav Chanina and Rav Ush’aya would sit [together] every Sabbath eve, delving into *Sefer Yetzirah – The Book of Creation*, and would create for themselves a third-grown calf, which they would eat.” Most commentators understand both incidents as born of applications of Jewish mystical knowledge.³⁵

³⁴ Regarding cloning, the Congregation for the Doctrine of the Faith (1987, 1:6) states: “Techniques of fertilization in vitro ... are contrary to the human dignity proper to the embryo ... attempts or hypotheses for obtaining a human being without any connection with sexuality through ‘twin fission,’ cloning or parthenogenesis are to be considered contrary to the moral law, since they are in opposition to the dignity both of human procreation and of the conjugal union.”

³⁵ For Jewish mystical beliefs regarding a golem, legendary reports of golem creation, and their application to bioethics, see Bleich and Jacobson 2015, 369-82, 370nn35-6; 373n44; Rosenberg, 1909, translated in

These passages, and other legends of golem creation and destruction, have inspired numerous metaphysical, ethical, and legal questions: Does a golem have soul? Is an artificial anthropoid human?³⁶ If so, how could Rav Zeira destroy him? Wouldn't that be murder? Can a living golem count in a prayer quorum? Does a dead golem impart ritual impurity? Is a mystically created animal kosher? Does it require ritual slaughter? May its meat be eaten with milk? In the time of the Temple, could it have been offered as a sacrifice? (Bleich and Jacobson 2015, 373).

Bleich disclaims that a golem doesn't provide a legal precedent or analogy for cloning, but "is instructive for the purpose of establishing a framework in which the contemporary problem can be examined" (ibid., 369). On the procreative spectrum, Bleich sees parthenogenesis and embryonic fission as involving minimal intervention in nature, cloning through SCNT as engineering nature, and the creation of a golem as complete artificiality. Bleich identifies a golem as the "least natural" because "replication of existing human genetic material is completely lacking" (ibid.). A clone, on the other hand, not only has the same genetic make-up of a naturally reproduced human being, but until *ex vivo* artificial incubators are produced, clones also are products of human gametes, gestated *in vivo*, and delivered like any other child (ibid., 373). Thus, what holds true for a golem as an artificial anthropoid might all the more pertain to a child cloned through artificial genetic engineering. Here Bleich's scientifically oriented

Neugroschel 1976; Winkler 1980; Scholem 1996, 158-204; Idel 1989; Sherwin 1985, 2004; Kieval 1997; Leiman 2002.

³⁶ Azriel Rosenfeld 1966, 1970, 1971, 1972, 1977, was one of the first writers on futuristic Jewish bioethics, considering, for example, in addition to cloning, human personhood and artificial intelligence, for which he also cites golem literature.

epistemology impinges on his “issue-spotting” and analysis, allowing him to heuristically employ pre-modern sources, while recognizing fundamental differences.

Bleich reviews the mystical and halakhic literature concerning golems. Of particular note is his analysis of Rabbi Tzvi Ashkenazi’s (1658-1718) short responsum on whether a golem may count toward a prayer quorum. Ashkenazi writes:

I am in doubt as to whether a person created [mystically] through *The Book of Creation*, like the case that the [Sages] told in [TB] Sanhedrin (65b), “Rava created a person...,” and as they attest regarding my grandfather, our illustrious master and teacher Rabbi Eliyahu, chief justice of the holy community of Chelm,³⁷ if [such a creature] may count toward the ten [required for a prayer quorum] ... Since [the requirement of a quorum is based on] the verse “I will be sanctified amidst the Children of Israel” (Leviticus 22:32), he should not join in, or perhaps since they uphold in [TB] Sanhedrin (19a), “Whoever raises an orphan in his home, Scripture accounts it as if he had begotten him...,” here too since [the *golem*] is the handiwork of righteous ones, the [*golem*] is included in the Children of Israel since the handiwork of the righteous are in fact their progeny.

It appears to me, since we find that Rav Zeira said, “you are [the creation] of my colleagues, return to your dust” (TB Sandhedrin 65a), and we see he killed him, and if it should enter your mind that there was a benefit to add him to the ten [of a prayer quorum] for sacred matters, then Rav Zeira would not have removed him from the world, even though there is no prohibition of spilling [its] blood, as Scripture specifically [requires] “Whoever sheds the blood of *haAdam beAdam* – a person [born from] within a person, his blood shall be shed” (Genesis 9:6),³⁸ [meaning that] only a person who was formed within a person – that is, a fetus that was formed in its mother’s womb – is someone for whose killing one is culpable of bloodshedding. ... (Ashkenazi 1712, no. 93)

Bleich takes note of several points. First, Ashkenazi doesn’t dismiss the golem’s humanity, per se. He even is willing to consider a volitional account of parenthood strong

³⁷ For more on Rabbi Elijah Ba’al Shem of Chelm’s golem, see Bleich and Jacobson 374, nn45-6.

³⁸ Genesis 9:6 reads: “Whoever sheds the blood of man, by man shall his blood be shed; for in His image did God make man.” The Rabbis midrashically read the verse with alternate syntax as, “Whoever sheds the blood of a person within a person...,” thus establishing a Noahide prohibition against feticide. Ashkenazi here seems to extend that midrashic reading as limiting the prohibition against murder to people who were gestated within and delivered by a woman.

enough to confer Jewish identity.³⁹ In the end, despite asserting a technical exemption from a charge of homicide for the destruction of a golem, Ashkenazi concludes his responsum in the negative, judging by inference that were a golem able to count toward a prayer quorum, then the righteous rabbi would not have taken its life (Bleich and Jacobson 2015, 374-8).⁴⁰

Bleich identifies four positions regarding the metaphysical and legal status of a mystically created golem: one, it neither human nor a living creature; two, it has the status of a “brute animal” or slightly above it; three, he has full human status; four, he has full human status, including a soul, if he can speak.⁴¹ In relating these positions to a consideration of a human clone, Bleich states:

As stated at the outset, discussion of the halakhic status of a *golem* may appear to be esoteric and irrelevant to the status of a clone animal or person. That presumption, however, is incorrect. The *golem* literature demonstrates the unassailability of the status of a cloned human as a human being according to the view of Maharsha, R. Zadok ha-Kohen and R. Gershon Leiner [who believe a *golem* is fully human]. In order to establish the humanity of a human clone according to the authorities who espouse a conflicting view of the status of an anthropoid it is necessary to distinguish between a clone and a *golem*. (Bleich and Jacobson 2015, 382)

The primary difference between a clone and a golem, avers Bleich, is that a clone has a human progenitor, even if reproduced asexually. Bleich returns to the talmudic debate

³⁹ See Bleich and Jacobson 2015, 388n81, where Bleich says that even per this initial consideration, Ashkenazi would not credit the person who raises an orphan with the fulfillment of the mitzvah of procreation. Bleich’s comment speaks to the difficulty of Ashkenazi’s seeming taking of homiletical, figurative statements as literal, and, therefore, as halakhically significant.

⁴⁰ Bleich and Jacobson 2015, 375, also cites the critique of Rabbi Gershon Leiner, the Radzyner Chassidic Rebbe (*Sidrei Taharot*, Ohalot 5a), who challenges Ashkenazi’s requirement of homicide requiring human gestation and birthing by the example of Adam, who was created of earth by God. How could we resolve that would someone have killed the first person that one would not be culpable?

⁴¹ See Bleich and Jacobson 2015, 381-2. Respectively, the four positions are held by: one, *Tzofnat Pa’aneach*; two, *Chesed LeAvraham*, *She’eilat Ya’avetz*, and possibly *Chakham Tzvi*; three, possibly *Chakham Tzvi* and Rabbi Tzadok haKohen of Lublin; and four, *Maharsha* and Rabbi Gershon Leiner.

(TB Chullin 79a) regarding species identification in cases of mammalian interbreeding. While there is debate concerning the determinacy of “the seed of the father,” all agree that the offspring is identified as belonging to the same species as its birth mother. Further, Bleich invokes the halakhic principle of “*yotzei* – outgrowth,” which posits that an outgrowth shares the identity of its origin. Bleich quotes Rabbi Elchanan Wasserman (1874-1941) who claims that this principle is not confined to matters of forbidden and permitted foodstuffs, but is a universalizable conceptualization.⁴² Thus, a clone, gestated and born of a woman, and an outgrowth of human-cellular tissue, enjoys full human status. Bleich identifies transspecies incubation as a practical difference between the principle of “outgrowth” and maternal indication by parturition, i.e., a cloned pig incubated in a cow would be non-kosher per the first principle, but kosher per the second (ibid., 384). Theoretically, Bleich admits the possibility that geno-and-phenotypical cloned animals, such as primates, xenotransplanted and incubated in a woman, would upon birth be legally regarded as human. Conversely, a human clone carried and delivered by a primate, would be of doubtful humanity, since parturition is an agreed upon determinant for species determination, and the determinacy of “the seed of the father” is contested (ibid., 387).

Regarding parenthood, since *ex vivo* and transspecies incubation are not currently possible, Bleich reiterates his primary position that parturition determines maternity. At the same time, since per one opinion in the Talmud, “the seed of the father must be

⁴² See Bleich 2015a, 383n69, citing *Kovetz He'arot*, no. 33, sec.8, and no. 59, sec. 12; *Kovetz Inyanim*, Chullin 17a; and *Kovetz Shiurim*, vol 1., Pesachim, sec. 120.

considered,” Bleich believes that this determining principle in species identification in interbred animals may also pertain to human reproductive cloning. This is especially true if the conceptual basis of “the seed of the father must be considered” is itself fundamentally an alternate formulation of the principle of “outgrowth.” He writes:

It would appear that the principle of *hosheshin le-zera ha-av* (the seed of the father must be considered) is not founded on the fact that the father literally contributes *zera* (or sperm in a literal sense), but upon whether the father’s donation of chromosomes or perhaps even of cytoplasm is of sufficient halakhic significance to cause the developing embryo to be regarded as the ... outgrowth of the father. If so, the principle ... is applicable to any and all sources of genetic material that contribute to the development of an animal. Accordingly, from the viewpoint of Halakhah, the animal, male or female, from which the cloned cell is taken is regarded as the “father” regardless of the organ from which the cell is taken.” (ibid., 385)

However, when Bleich applies this argument to human beings, he is only willing to identify the nDNA donor of a clone as a “parent,” and not necessarily as a father. In a lengthy footnote, Bleich explains:

If the individual from whom the cell is taken is a male, his status is clearly that of a “father.” If the individual is a female, it would be reasonable to assume that her status is that of a “mother” and that the clone, in effect, has two mothers. This assumption is based upon the premise that *hosheshin le-zera ha-av* (the seed of the father must be considered) is a principle concerning parenthood rather than with regard to paternity specifically. ... On the other hand, one might insist that a non-gestational parent is, by definition, a “father” rather than a “mother.” (ibid., 385-6n76)

Bleich clearly does not want to disrupt the traditional gender alignment of fatherhood with males and motherhood with females, though intellectually he recognizes this as a conceptual possibility. Bleich also denies to a person who creates offspring through cloning the fulfillment of the *mitzvah* of procreation. Even if a sexual act is not required for the *mitzvah*, Bleich argues, children must still be begotten of human semen. In cases

of in vitro fertilization, even if conception is unnatural, the biological processes at play are fully natural, which cannot be said of SCNT.⁴³ While Judaism approves of intervention in the natural order, fulfillment of the mitzvah of procreation does entail, per Bleich, a degree of sexual naturalism.

Bleich's Halakhic and Bioethical Disapproval of Cloning

Bleich assails cloning mainly due to the significant risk of harm to the resultant child born of this immature technology. He supports therapeutic cloning for tissue and organ generation, but argues that reproductive cloning cannot be construed as a cure, as it is “not restorative in nature” (ibid., 391-3). It does not fulfill the mitzvah of procreation, and the emotional pain of infertility cannot justify an immoral risk. However, this line of argumentation would possibly permit reproductive cloning in limited therapeutic cases, such as, for example, cloning a healthy human counterpart to a child ill with leukemia in need of an exact bone marrow match (ibid., 392-3).⁴⁴ Bleich opposes cloning as a hubristic endeavor. It will likely cause serious harm to future generations. It is likely to be misused, such as for eugenic purposes. It may lead to demographic imbalances, and undermine familial and social structures that give stability and moral purpose to society. Therefore, per Bleich, society “has both the right and the obligation to regulate experimental endeavors,” and make sure that they are of societal benefit, and not detriment (ibid., 393-4).

⁴³ See Bleich and Jacobson 2015, 387-8, 388n80.

⁴⁴ See Bleich 1995a, 273-315, on whether tissue donations may be compelled.

Bleich on Mitochondrial Replacement Therapy

For Bleich, MRT raises anew all of the morally and halakhically problematic issues of collaborative reproduction in cases of gestational surrogacy and ovum donation: non-natural procreation may inflict currently unknown harms upon the resultant child; third-party gamete contributions disrupt the “traditional bionormative,” heterosexual-marital, family structure; IVF requires halakhically challenging semen procurement, and ovum harvesting and donation; questions regarding the ownership and disposition of excess or abnormal embryos; the bioethics of fetal reduction; and the conundrum of parental identity (Bleich 2015a, 65-6). He writes:

A "three-parent" implantation procedure presents a halakhic issue of maternal identity echoing a similar question that arose much earlier with regard to surrogate motherhood. Surrogate motherhood presents a fairly clear-cut issue. Who is the mother, the biological mother, i.e., the genetic mother, or the gestational mother who gives birth to the child by means of parturition? In instances of mitochondrial DNA donation, the issue is whether it is the donor of maternal mitochondrial DNA or the woman whose nuclear DNA is present in the child who is the mother, or both? It may also be possible to combine mitochondrial DNA from multiple donors. If that becomes actual, would Halakhah recognize multiple maternal relationships? (ibid., 66)

Here, Bleich, in framing the question of maternal identification for cases of MRT, not only continues to espouse a causal, pluralist standard of motherhood, but also more openly embraces genetic determinants as halakhically significant, something that he backed off from in his later assessments of IVF with ovum donation and gestational surrogacy, when he opined: “It must be clearly recognized that halakhah takes no direct cognizance of genetics as a significant factor in and of itself” (Bleich 1994, 53).

Although Bleich first proposed a partible maternal model in 1972 in the context of fetal transfer and “host-mothers,” in his 2015 consideration of MRT, for the first time, he

cites in support of a pluralist standard of paternity the medieval, Franco-German commentary, *Tosafot*, on a midrash agaddah cited in the Talmud. The Bible calls Goliath in Hebrew “*ish habeinayim*,” literally rendered as “man of the in-between” (Samuel I, 17:4), the exact meaning of which is uncertain,⁴⁵ but which the Babylonian Talmud (TB Sota 42b) understands as referring to the notion that Goliath’s extraordinary physical prowess was due to having multiple biological fathers. Goliath’s mother, who the rabbis identify as Orpah the Moabite, sister of Ruth and daughter-in-law of Naomi,⁴⁶ sometime after her return to her family in Moab had sexual relations with numerous male partners on the night of Goliath’s conception: “What is the meaning of ‘*beinyaim*’? ... Rabbi Yochanan said, ‘He was the son of a hundred *papi*, fathers, and one *nanai*, mother.’”⁴⁷

The medieval talmudic commentator, Rashi (ad loc., s.v. “*Bar Meah*”) denies the possibility of multiple fathers and understands the talmudic passage as identifying Goliath as being of obscure paternity: “one was his father, all of them were adulterers.”

Tosafot (ad loc., s.v. “*Meah*”), on the other hand, entertain the idea that the sperm of multiple men can contribute to a single pregnancy. Notably, Bleich utilizes this midrash,

⁴⁵ See Stein 2003, 607, whose Jewish Publication Society Hebrew-English TaNaKh (Hebrew Bible) tentatively translates the phrase as “the man of spaces between.”

⁴⁶ See Ruth 1:1-15.

⁴⁷ The talmudic Aramaic phrase is ambiguous. *Tosafot* follow Rabbi Natan ben Yechiel’s ‘*Arukh* (n.d., vol. 5, 296) which translates “*nanai*” as a dog, yielding “he was the son of a hundred fathers and one dog,” with either literal meaning (*Tosafot*), or pejorative reference to Goliath’s mother. Rashi translates “*papi*” as step-father, and “*nanai*” as father, yielding “one hundred would-be fathers and one (actual) father.” My translation, “he was the son of one hundred fathers and one mother,” following its potential relevance to MRT, follows Jastrow (1903, 866), who understands “*nanai*” as a corrupt form of *mamma*, which parallels “*papi* – fathers.” This is a scientifically unsupported claim of viable polyspermy, which is different from superfetation, i.e., a woman’s multiple ova can be inseminated by different male sexual partners, either in the case of twins, see Mueller 2015; or months apart within a single state of pregnancy, see Reichman 2009. Interestingly, tri-and-tetra-gametic chimerism, does occur in nature, even for humans, albeit usually with negative consequence, see Yunis, Zuniga, and Romero 2007. For genetically engineered chimeric rhesus monkeys, see Trounson and Grieshammer 2012. For others who cite this midrash agaddah regarding Goliath’s polygenomic paternity, see Dovid Lichtenstein 2014a; Loike and Tendler 2014a, 57n40.

presumably because of its citation in *Tosafot*, despite previous disavowals against using such non-halakhic sources, to support fundamentally a pluralist account of both paternity and maternity. He writes: “Tosafot’s analysis, even if rejected as empirically incorrect, is significant because it reflects Tosafot’s willingness to entertain halakhic recognition of two fathers” (Bleich 2015a, 67n16).⁴⁸

Bleich, however, recognizes that it may now become possible to create an embryo using an enucleated oocyte and nDNA formed from the genetic materials of two males, thus potentially creating a situation of multiple fatherhood (*ibid.*, 76-7n31).⁴⁹ Regarding multiple motherhood, Bleich asks again:

In instances of mitochondrial DNA replacement, who is the mother? Is the mother the woman who produced the ovum from which the nucleus was taken or the donor of the mitochondrial DNA? If only some defective mitochondrial genes are replaced, who is the mother? In as yet unanticipated situations in which replacement genes are donated by multiple women, who is the mother? Is it possible that the infant may have multiple mothers since each donor of genetic material is to be considered to be one of the neonate's mothers? (*ibid.*, 76)

Once again, Bleich embraces the theory-laden terminology of genetics, in part because the scientific technological advance of MRT cannot simply be considered using the traditional language of the pre-modern halakhic corpus. Bleich would claim that scientific understanding simply better details and defines the circumstances to which the unchanging halakhah can be more precisely applied. While it is indeed true that scientific awareness and understanding allows for a more sophisticated halakhic and Jewish

⁴⁸ Bleich thereby disputes noted Israeli posek, Rabbi Asher Weiss (2013), who opined: “It appears to me to be clear and simple, that, from the vantage point of halakhah, it is not at all possible for a person to have two mothers, just as it is impossible that he have two fathers” (translation by Bleich 2015a, 67n16).

⁴⁹ Bleich cites Orentlicher 2000-01, and Aloni 2011, regarding same-sex couples using ART and genetic technologies to produce chimeric tri-gametic offspring.

bioethical analysis, the impress of new knowledge goes beyond sharper terminology and better understood circumstance. The very act of interpreting halakhic sources is shaped by reading them through the lens of scientific understanding and awareness.

For example, Rabbi Asher Weiss (2013), a renowned Israeli posek, in a responsum appearing online, permits MRT, and argues that by the halakhic principle of “identification by majority,” nDNA defines maternity. The contribution of genetic material made by mtDNA, per Weiss, is quantitatively negligible, and therefore doesn’t impact upon maternal identity. In his responsum, Weiss displays rudimentary knowledge of the science involved, which when coupled with his insistence on a monist halakhic standard of parenthood, leads him to a self-admitted flawed application, in this instance, of “identification by majority.” Bleich, however, demonstrably fully knowledgeable of mtDNA and the essentiality of mitochondria to physiological viability, negates the application of the halakhic concepts of “nullification of minority” and “identification by majority” (*bittul* and *rov*, respectively), because “that principle does not apply in situations in which the lesser component remains readily discernible in the composite mixture” (Bleich 2015a, 77). Additionally, extending the legal analogy, Bleich likens mtDNA to a “*davar ha-ma’amid*,” literally, ‘a substance that holds up’ or stabilizes other substances,” which cannot be nullified because it fundamentally affects the mixture, even if, as a minority contribution, it is not immediately perceivable (ibid., 77-8). Bleich opines: “Arguably, genes that preserve physical or physiological integrity ‘stabilize’ the health of offspring with the result that those genes should be regarded as perceivable in the functioning of a normal, healthy human body” (ibid., 78).

Bleich also argues that the halakhic principles of “minority nullification” and “identification by majority” are limited in their halakhic application to admixtures with forbidden substances (*issur*), and not more globally to other areas of halakhah, especially those concerning constitutive identity (*ibid.*, 78). While this last methodological assertion is debatable, Bleich arguably is motivated to wage this argument because he believes that genetics is fundamentally different than cases of forbidden mixtures. In forbidden mixtures, the question is factual – can the minority component be discerned? In genetics, the complex interplay between genotype and phenotype, between inherited DNA and environmental influences regarding gene activation and expression, and the differential importance of genetic sequences and their chromosomal or mitochondrial location, make genetics subject to alternate consideration. To think of genetics in terms of minority and majority is to perpetrate a category error.

As in the earlier ARTs of ovum donation and gestational surrogacy, in the case of MRT, Bleich reasserts parturition as the primary determinant of halakhic maternity.⁵⁰ Although cloning and MRT are novel technologies, as long as it is a woman who gestates and delivers the resultant child, Bleich sees the question of maternal identity in cloning and MRT as fundamentally similar to the earlier cases of ART. However, as before, Bleich also proposes that there may be a pluralist standard to parenthood, and in cases of collaborative reproduction there may be more than one mother. Bleich once again cites

⁵⁰ See above, Chapter Six, p. 283 ff., for Bleich’s talmudic prooftexts in support of parturition. Bleich 2015a, 80n37 asks whether it is the actual delivery per se, whether vaginally or by caesarian section, that establishes maternal identity, or the culmination of pregnancy. The practical difference being a case in which a woman carries a fetus to term, but dies before the actual birth, whereupon the living baby is successfully removed from the expired woman. If parturition per se establishes maternity, can motherhood attach after death?

the talmudic discussion (TB Chullin 79a) of species classification in cases of interbreeding. One view defines species by maternal descent. Another view asserts that the “seed of the father is to be considered,” thereby implying that parturition is not the only determinant of identity. Bleich then argues:

The "seed" that transfers identity as a member of a species is clearly the male gamete. If that "seed" is to be regarded as a source for transmission of identity it would stand to reason that the female gamete should be regarded in a similar manner, i.e., the female seed should be recognized as a source of parental identity no less so than the male seed. In effect, the genetic mother would have a status comparable to that of a genetic father. (Bleich 2015a, 81-2)

Bleich’s scientifically altered “web of belief” lets him read genetics into talmudic considerations of identity, thereby allowing him to propose dual-maternity based on both parturition and genetics. If genetics serves as a determinant of motherhood, then in cases of MRT in which two or more women genetically contribute to the resultant embryo, there may indeed be a parturitional mother, as well as two genetic mothers. Bleich concludes that maternal identification in cases of assisted reproductive and genetic technologies remains legally uncertain. There is doubt as to whether there is a monist or pluralist standard to parenthood. There are also competing halakhic opinions as to the primary determinant of maternity. Further, there are poskim who believe that these novel scenarios cannot be resolved by pre-modern halakhic sources, and thus maternal identification in such cases are fundamentally in doubt. For Bleich, and others, legal doubt demands stringent accommodation of possible resolutions. Therefore, whether in principle, or in responding to legal uncertainty through stringent accommodation, essential collaborative reproductive partners to assisted reproductive and genetic technologies should all be considered halakhic parents.

Bleich's Halakhic and Bioethical Disapproval of Mitochondrial Replacement Therapy

Bleich unequivocally disapproves of MRT. He writes that, “even if not formally interdicted, is antithetical to moral principles announced by the Sages of the Talmud” (Bleich 2015a, 84). Bleich provides five “moral and halakhic problems” as the basis for his opposition: family values, lineage confusion, potential harm to the unborn, parental ambiguity, and adulterous parenthood, the last of which he identifies as a “novel concern” (ibid., 65-76, 82-4). Bleich opines that collaborative reproduction’s utilization of donor gametes and genetic materials, “do not conform to traditional notions of the nuclear family and, arguably, do not conform to notions of family values so deeply engrained in the social fabric as to be regarded by some as dictated by natural law” (ibid., 65). He upholds this hetero-and-bionormative standard for society at large, and especially for the Jewish community. He points over and over to the talmudic pronouncement that, “the Holy One, blessed be He, does not cause His *Shekhinah* (Divine presence) to rest other than upon genealogically identifiable families (*mishpachot meyuchasot*) of Israel” (TB Kiddushin 70b). Bleich contends: “The Creator established the institution of the family as the norm; confusion of parental identity and blurring of family lines thwarts the divine will and is a corruption of the divine blueprint for the development of civilization ... A clearly identified family unit is the *grundnorm* upon which all family values depend” (Bleich 2015a, 70).⁵¹ All of the above arguments may indeed oppose a Huxleyan

⁵¹ Bleich 2015a, 70, emphasizes that the family relationship is the ideal vehicle to transmit “the way of the Lord” from generation to generation. Bleich cites as a proof-text Genesis 18:19, in which God says of Abraham, “For I have singled him out, that he may instruct his children and his posterity to keep the way of the Lord by doing what is just and right, in order that the Lord may bring about for Abraham what He has promised him.”

reformation of normal human reproduction. However, it is unclear why any of the above propositions, other than safety, should proscribe MRT as an occasional medical intervention to assist an infertile couple or a woman struggling with mitochondrial disease.

Bleich also cites Rabbi Eliyahu Bakshi-Doron (b. 1941), a former Sephardic Chief Rabbi of Israel, as newly formulating a prohibition against creating parental ambiguity, even if that uncertainty is fundamental, and not just factual (*ibid.*, 82-3).⁵² Even worse than this prohibition, per Bleich, is that collaborative reproduction utilizing third-party gametes may constitute a novel form of adulterous parenthood. The late, prominent Israeli posek Rabbi Shmuel HaLevi Vosner (1913-2015; 2002, 221-4) understands Genesis 2:24, “Therefore a man shall leave his father and his mother, and cleave to his wife, and they shall become one flesh,” as requiring that their child be solely generated of their reproductive materials. The Talmud (TB Sanhedrin 58a) interprets “one flesh” as referring to the child born of husband and wife. Thus, AID, gestational surrogacy by a married woman, ovum donation, and the “utilization of any somatic material contributed by a married woman for purposes of conceiving a child,” should be prohibited as a form of adultery, despite the absence of a sexual act or the intent to betray the marriage covenant (Bleich 2015a, 83-4).

⁵² See Bakshi-Doron 2002, 441-5. The prohibition against creating parental ambiguity is based on Genesis 17:7, in which God says to Abraham: “I will maintain my covenant between Me and you, and your progeny after you, as an everlasting covenant throughout the ages, to be God to you and to your progeny after you.” Bleich 2015a, 82, writes: [This verse] “serves to establish a prohibition against suppressing family relationships...” See TB Yevamot 41a, 42b, which cites this verse to require a three-month waiting period after divorce or the death of a husband before remarriage to be able to identify clearly the paternity of any subsequent children.

Beyond halakhic lineage-related concerns, Bleich objects to the risk of potential unknown harms to a cloned or MRT child, as well as to future generations in cases of germline modification. Bleich legitimates the risks attendant to natural child-bearing as inherent to the “divine design” (Bleich 2015a, 71-6). However, despite his expressed empathy for the those struggling with infertility, “there is absolutely no obligation to harness use of heroic or artificial measures in the genesis of life,” and the alleviation of emotional pain, “does not justify the risk of imposing congenital burdens upon the yet to be born” (ibid., 72, 72n20). Although Bleich does not espouse naturalism or natural law, and upholds Judaism’s interventionist mandate in medicine, he self-identifies as having been a “prophet of doom” time and again throughout the history of ART (ibid., 73). Bleich, like Paul Rasmey (1970, 1975) who he frequently quotes, considers ART immoral fetal experimentation which may inflict unintended suffering upon its subjects. The fact that ART has made safe and significant strides does not inductively lead Bleich to trust older technologies, let alone new ones. While he posits that he is of open to being proven wrong, he opines that it has been too short a time to make conclusive judgments about ART’s safety.

Epistemological and Axiological Analysis of Rabbi J. David Bleich on Cloning and Mitochondrial Replacement Therapy

Bleich’s masterful, comprehensive Jewish bioethical analyses consistently display a scholar whose epistemological resources are wide-ranging and varied. In his “high-theory” writings on cloning and MRT, he utilizes acute scientific understanding to interrogate the relevant bioethical and halakhic issues. Although he accepts scientific

claims *pro tanto*, he is also confident enough as an ethicist to challenge the surety of their findings, especially regarding social and long-range health consequences. His concerns would be more justifiable would he cite current longitudinal studies statistically reporting on health and social outcomes. As with earlier ARTs, axiologically, Bleich's moral judgments and affirmed values are quite conservative, and, in his view, fully based on the values ensconced within Judaism's heteronomous legal tradition, and its robust aggadic and midrashic sources. As presented in Chapter Five, Bleich denies halakhic change. Scientific and technological advances, per Bleich, only alter circumstance, not fundamentals. However, Bleich's writings on cloning and MRT, even more than his earlier writings on ART, manifest how deeply his scientific understanding and awareness have been assimilated into his "web of belief," how much they impact on how he reads pre-modern and contemporary halakhic sources, and how they contribute to his interpretive choices and conceptual formulations.

For example, in his article on cloning, Bleich applies the halakhic principle of "yotzei – outgrowth," which originates in talmudic discussions regarding permitted and forbidden foodstuffs, to validate the parental significance of genetic contributions toward reproduction, whether such contributions are gametes or somatic cells with nDNA, or cytoplasm with mtDNA. However, in his article on MRT, when a contemporary Israeli posek similarly applies a halakhic principle that originated in discussions of permitted and forbidden foodstuffs, i.e., identity by majority and minority nullification, Bleich says that its application overreaches since it is limited to admixtures with forbidden substances, as well as of faulty application given the scientific understanding of mtDNA

and its metabolic role.⁵³ Bleich's interpretive choice to embrace one principle's pertinent application to genetic technologies, and reject another principle's application, is arguably influenced by his scientific understanding and awareness. The dialogic encounter of science and religion in Bleich's thought thus directly impacts upon halakhic development.

In considering parental identification, the novel assisted reproductive and genetic technologies of cloning and MRT forces Bleich to move beyond pre-modern conceptual frameworks of conception, gestation, and parturition, and more fully engage the halakhic significance of new genetic knowledge. Table 7.2 shows the practical impact of this engagement on Bleich's analysis of paternal and maternal identification for cloning and MRT. For the first time, Bleich considers a pluralist standard of fatherhood, in addition to motherhood. He questions the gendered designations of motherhood and fatherhood in cases in which genetic material beyond gametes is contributed. In his analysis of Ashkenazi's responsum, Bleich considers, albeit rejects, Ashkenazi's claim of a volitional account of halakhic parenthood. The encounter of science and religion in Bleich's Jewish bioethical writings thus develops, and even changes, Jewish law and ethics.

⁵³ For non-food and non-forbidden substance applications of "*bittul* – minority nullification" and "*rov* – identification by majority," see Berlin and Zevin, eds. 1982, *Talmudic Encyclopedia*, vol. 3., 70, s.v. "*pasul bekasher*," and 70n84. For a non-compositional application of identification by majority in establishing identity and personal status, see Tosafot, ad loc., TB Yevamot 47a, s.v. "*bemuchzak lakh*," and Tosafot, ad loc., TB Pesachim 3b, s.v. "*va'ana*."

Table 7.2. Summary of Attitudes Toward Cloning and MRT with Definitions and Account of Parenthood

Rabbi J. David Bleich	
Attitude Toward Cloning and MRT	Reproductive Cloning: Negative Therapeutic Cloning: Positive Reproductive-Therapeutic Cloning: Hesitant MRT: Negative
Definition of Maternity	Pluralist Causal Account, crediting primary motherhood to parturition by gestational surrogate, and secondary motherhood to ova donors of nDNA and mtDNA, and possibly other female genetic contributors.
Definition and Account of Paternity	Newly considers a pluralist causal account of multiple male genetic donors.
Definition of Parenthood	In cases of cloning and multiple genetic donors, possibly dispenses with gendered parental designations, preferring “parent.” Also, entertains, but rejects, a volitional definition of parenthood.

Rabbi Michael J. Broyde on Cloning, Mitochondrial Replacement Therapy, and Parenthood

Broyde first published on cloning in 1997, shortly after the cloned sheep Dolly’s birth was announced. In the preface to his “preliminary analysis,” he shared that, “it is designed not to advance a rule that represents itself as definitive normative Jewish law, but rather to outline some of the issues in the hope that others will focus on the problems and analysis found in this paper and will sharpen or correct that analysis” (Broyde 1997a, 27). Broyde republished three updated versions of his cloning article (1998a; 1999a; 2005d), each time reiterating this point. Beginning with his second iteration in 1998, and thereafter, he added a preliminary epigraph from Proverbs 19:2: “A person without knowledge is surely not good; he who moves hurriedly blunders.” Broyde (2001a) also published on “Genetically Engineering People: A Jewish Law Analysis of Personhood,” in which he adumbrates more fully his definition of human personhood, which he started

in his studies of cloning.⁵⁴ Broyde references MRT in his writings on cloning, as well as in a post-script to his 2004 article on “Pre-Implantation Genetic Diagnosis, Stems Cells and Jewish Law.” Throughout these writings he emphasizes their exploratory, rather than authoritative, voice. While this reflects a sincere humility befitting “the way that Jewish law seeks truth,” it also arguably stems from an uncertainty as to how halakhah and Jewish ethics should respond to revolutionary scientific knowledge and technological capabilities (Broyde 1997a, 28).

Broyde on Cloning

As a legally oriented Jewish bioethicist, Broyde (2005d, 309) asks whether cloning is an affirmative duty (*mitzvah chiyuvit*), a commendable duty (*mitzvah kiyumit*), a permissible act (*mutar*), to be discouraged but not forbidden (*bittul mitzvah*), or prohibited (*assur*)? Does cloning help a Jewish male fulfill his biblical obligation to procreate, or a Jewish man or woman to settle the world?⁵⁵ Since this is a question without precedent in the annals of Jewish law, innovative interpretation is required. Armed with the knowledge of genetics, Broyde (*ibid.*, 310) opines: “One could argue that the activity which defines the obligation to be fruitful and multiply solely involves a man giving genetic material to produce a child who lives. ... Why then should no mitzvah be fulfilled, or at least a child born that exempts one from the future obligation to procreate?” One could also argue conversely, says Broyde (*ibid.*), that to fulfill the

⁵⁴ He also prefaces this article with his earlier articulation of a “preliminary analysis,” see Broyde 2001a, 878.

⁵⁵ For the affirmative religious duty to procreate, see Chapter Four, p. 129 ff.

biblical commandment of procreation requires, at least, “the combination of the genetic materials of a man and a woman,” perhaps through sexual intercourse, but maybe even asexually in vitro. Broyde (ibid.), however, declares that, “It seems to me that the first approach is superior to the second.” Notice that even in the counter-argument, Broyde focuses on “genetic contributions,” and not on “gametic contributions,” i.e., sperm and ovum, or in the language of pre-modern rabbinic sources, “seed.” Thus, in his preliminary analysis, Broyde concludes that in cases in which reproductive cloning is the only option available to a man to bring a child into the world, it would be a commendable act, if not a full fulfillment of the mitzvah of procreation.⁵⁶ For women who are not biblically obligated to procreate, Broyde (ibid., 311) judges cloning as “religiously neutral” and “simply permissible,” though it is unclear why Broyde wouldn’t see a woman’s reproductive cloning as religiously net-positive given that she is helping to settle the world, which per many authorities is a rabbinical affirmative duty incumbent upon women.⁵⁷

Broyde also considers the definition of human personhood. The common rabbinical definition of humanness is whether the person was born of a woman, regardless of cognitive function or physical appearance. This standard still obtains for cloning in which the embryo is implanted in a woman’s uterus, and develops through gestation and parturition (ibid., 306-8; 2000, 209). However, should ex vivo artificial

⁵⁶ See Broyde 2005d, 301-2.

⁵⁷ See Chapter Four, p. 130, regarding the “mitzvah of *shevet* – settling the world.”

incubation be developed, or embryonic xenotransplantation and incubation within an animal, Broyde argues for a secondary determination based on the Palestinian Talmud:

Rabbi Yasa [said] in the name of Rabbi Yochanan: “If it is entirely human, but with an animal face, it is not [human] progeny. If it is entirely animal, but with a human face, it is [human] progeny.” [The Talmud then challenges:] If it is entirely human, but with an animal face, and it is standing and reading the Torah, [shall] we say, “come to be slaughtered”? If it is entirely animal, but with a human face, and it is standing and plowing in the field, [shall] we say, “come divorce your dead brother’s wife or perform levirate marriage”? (TJ Niddah 3:2)

From this passage, the Talmud concludes that there is no list of necessary conditions for humanness, but some indicators which then must be contextually assessed. Broyde (2005d, 307) interprets this passage as establishing a functional definition of human personhood: “By that (i.e., the Talmud’s) measure, a clone, even one fully incubated artificially, would be human, as it would have human intellectual ability, and human attributes.”⁵⁸

Broyde, like Bleich, also points to rabbinic analyses of legendary creatures, such as golems, mermaids, and primate-like creatures, to ground a halakhic and Jewish bioethical consideration of the definition of humanness in cases of artificially created or unconventionally interbred and incubated human life. For Broyde, these sources are halakhically significant for their theoretical conceptualization, regardless of their

⁵⁸ Broyde 2005d, 321n56, cites Hershler 1980, 4:90-5, as contending that an artificially incubated clone who is fully incapacitated or severely cognitively impaired may not meet this functional standard of humanness. However, one can counter that given the Talmud’s recommendation of contextual adjudication, if under normal circumstances such a clone would be defined as human, then this should hold true in abnormal incidences, as well.

historical verisimilitude. They too, per Broyde, mostly attest to a functional standard of human personhood (2001, 888-93).⁵⁹

Regarding parenthood and cloning, Broyde first turns to the traditional maternal determinant of gestation and parturition:

The Jewish legal tradition would, in my opinion, be inclined to label the gestational mother (the one who served as an incubator for this cloned individual) as the legal mother of the child, as this woman has most of the apparent indicia of motherhood to Jewish law. While this child bears no genetic relationship to its gestational mother, particularly when the donor is a male, there are no other possible candidates whom Jewish law could label the mother.... (2005d, 298-9)

Broyde references the criteria he established for motherhood in his 1988 article on “The Establishment of Maternity and Paternity in Jewish and American Law.”⁶⁰ Since in both the cases of IVF and cloning, conception occurs in vitro, and thus, in Broyde’s view, is not halakhically significant, then despite the absence of a genetic relationship, gestation and parturition determine maternity. In support, he cites ovarian transplantation as establishing a maternal model in which genetics is not always determinative. However, Broyde also acknowledges that in the fifteen years since his original consideration of parenthood in ART for which he adhered to a monist account of parenthood, Bleich, and others halakhists following Bleich’s example, have upheld a pluralist account of, at least, maternity. Broyde writes:

If such was the (Jewish) law, there would be little doubt that the one who contributes the genetic materials would also be considered the mother according to Jewish law were she a woman – as her contribution is clearly greater than the egg donor, who is considered a mother by this analysis. Indeed, it is quite possible

⁵⁹ A functional standard may create too broad a definition absent further constraining qualifications, especially should robotic and artificial intelligence develop to a human-like level, see above n36.

⁶⁰ See Broyde 1988, 139-40.

to argue that both the cloner and the egg donor, who contributes the mitochondrial DNA, would be considered “mothers” ... (ibid., 300)

Even per those who insist on a monist standard of parturition as the halakhic maternal determinant, Broyde wonders whether in a case of cloning if the female genetic donor should be preferred to the gestational surrogate given that in a standard case of surrogacy, the ovum donor only contributes half the nDNA, with the other half coming from the sperm donor. In a case of cloning by a solitary woman, however, she is contributing all the genetic material (ibid.).

Although Broyde prefers to resolve legal uncertainty through definitive ruling, in cases of cloning, the legal doubt is substantial enough that he recommends considering the female nDNA contributor a mother, thereby prohibiting consanguineous relationships with her and her family, and possibly even recognizing the mtDNA contributor also as a mother, pending a better understanding of the role of mtDNA. Regarding mtDNA, Broyde (2005d, 320n33) writes: “Mitochondrial DNA contains the encoded information for a variety of proteins or protein portions. How changes in one person’s mitochondrial DNA would subtly affect that person’s characteristics is quite unknown.” Broyde explicitly conditions maternal identification on perceivable genetic causality. Similarly, in a case of a male cloning himself, while the gestational surrogate would be the resultant child’s mother, the male genetic contributor should be considered the father, because if in IVF the sperm donor who contributes half of the nDNA is always the father, then even more so here where a man provides all the nDNA.

Broyde recognizes that assigning gestation and parturition the role of primary maternal determinant for women, and genetic donation paternal determination for men,

leads to a problem of parity, i.e. there is a different account of parenthood for men and women. For Broyde this leads to “a normative rule of Jewish law,” that only men can be fathers and only women can be mothers. Broyde (ibid., 302) writes that “this seems consistent with the normative values found within Jewish law.” While Broyde entertains the idea that the genetic donor should be considered the father regardless of gender, he ultimately rejects this possibility, as he does the notion that a clone and its genetic provider should be considered time-lapsed, identical twin siblings, rather than parent and child (ibid., 302-5). While Broyde privileges genetics as new knowledge helpfully informing the Jewish-bioethical and medical-halakhic analysis of unprecedented cases born of modern technology, he still believes that halakhic and bioethical conclusions must be formulated in light of parental traditions in Jewish law and ethics.

Broyde on Mitochondrial Replacement Therapy

Although Broyde references MRT in his articles on cloning, he has yet to publish a full treatment of this assisted reproductive and genetic technology. In a post-script to a 2004 article on “Pre-Implantation Genetic Diagnosis, Stem Cells and Jewish Law,” Broyde anticipatorily considers five future assisted reproductive and genetic technologies: human artificial chromosomes (HAC); “ooplasmic transfer,” i.e., MRT; intentional human-chimerism; human-animal chimeras; and reproductive xenotransplantation for fetal incubation (Broyde 2004, 68-70). In HAC, scientists synthesize a human genome, which can then be utilized to create an embryo through a genetic reproductive technology akin to SCNT. Broyde (ibid., 68) writes: “It would seem

to this author that there is no father according to Jewish law in that situation.” Broyde (ibid.) assign maternity to the gestational mother, “independent of any other genetic contribution,” though he acknowledges that “this matter is quite disputed.”

Regarding MRT, Broyde writes (ibid., 69): “This creates complex models of motherhood, in that one has to evaluate the various contributions of the possible mothers. However, as noted above, the author’s view is that the mother is the person who carries the child to term independent of any other genetic contribution.” Axiologically, Broyde believes it proper halakhic protocol and good social policy to resolve legal uncertainty through adjudicative principles that allow for consistent rulings. Thus, he reasserts his preference for gestation/parturition as a maternal determinant. However, his scientific appreciation of genetics moves him to qualify the certainty of his position by admitting that better knowledge will lead to a more conclusive determination.

Intentional human-chimerism involves the creation of an embryo by fusing the embryonic cells of two fertilized ova. While this might be done therapeutically to correct an anticipated immune deficiency, Broyde says it is being requested by single-sex couples who wish to create a poly-genomic child generated from both partners’ genetic materials, as well as donor gametes (ibid., 69, 75n52).⁶¹ Broyde writes:

This child would appear to have more than one father and/or maybe more than one mother, depending on the genetic contributors in each case, and depending further on one’s view of the birth mother as the mother according to Jewish law, at least as a matter of doubt, and maybe even as a matter of certainty. There is some precedent in halakha for the possibility of more than one mother or father, and doubt about these matters is clearly a possibility in halakha. On the other

⁶¹ In 2010, Masahito Tachibana and his team used a similar technique to create poly-genomic monkeys by injecting two early-stage monkey embryos into a seven-day monkey embryo, generating a six-genome embryo that was implanted, gestated, and successfully delivered. See Margalit, Levy, and Loike 2014, 131n88.

hand, one could well see halakha simply following the rule of majority to determine who is a parent, and the other potential parent is just a ‘*safek*’ (uncertain). (ibid., 69)

Although here too, only one woman would gestate and deliver the resultant child, Broyde doesn’t reiterate his normative ruling of gestation and parturition as the maternal determinant. The halakhically significant role of genetics cannot be ignored. Note also that contra Bleich’s later opinion, Broyde applies to genetic influence the halakhic principle of “identity by majority.”

Human-animal chimerism involves the creation of a poly-genomic entity utilizing both animal and human DNA. Xenotransplantation refers to a case of a fully human fetus being incubated within an animal, creating a situation in which there is no gestational/parturitional human mother. Here Broyde applies his developed definition of human personhood to affirm the humanity of a child born of an animal or who looks and functions like a human being, even though the child has a chimeric genome. Broyde doesn’t address the question of parentage. However, based on his analysis of the previous cases, here too he may apply to genetics the principle of majority to determine parental identity. It is also possible that Broyde would say in such cases that the child has no legal parentage.

Broyde’s Halakhic and Bioethical Approval of Cloning and Mitochondrial Replacement Therapy and Parental Identity

As opposed to Bleich, Broyde approves of cloning as “a form of assisted reproduction – no different from artificial insemination or surrogate motherhood – which, when technologically feasible, should be made available to individuals who need assisted

reproduction” (Broyde 2005d, 298).⁶² Whereas Bleich claims that alleviating infertility is not a restorative cure, Broyde, viewing infertility as illness, disagrees.⁶³ Similarly, regarding MRT, Broyde argues: “Indeed, consider what is most likely to be the first use of this new technology, the donation of an oocyte to a woman who has a mitochondrial disease, where her embryo is transplanted into a disease-free oocyte, thus eliminating the mitochondrial disease from the fetus. Why should that be opposed?” (Broyde 2000, 208-9).

Bleich had provided at least three reasons why cloning and MRT should be opposed: non-maleficence, slippery slope, and a prohibition of creating parental confusion. Broyde addresses each concern. First, the biblical mandate to heal permits the assumption of reasonable risk. Prohibiting something permanently because its consequences are unknown stifles human creativity and medical intervention (Broyde 2005d, 316-7; 2004, 67-8). Second, slippery slopes can be managed with proper regulation and supervision. Reproductive cloning and MRT are treatments “for drastic infertility,” and help fulfill humanity’s charge to improve the world (Broyde 2000, 209-10). Third, Broyde recognizes that there is an unresolved, robust Jewish bioethical and medical halakhic debate as to the determination of parenthood for cloning, MRT, and most ARTs. Broyde argues that, “the fact one is not sure exactly what the family tree looks like is no reason to stop the process in its tracks. Surrogate motherhood also has its

⁶² However, Broyde also raises the possibility that even if cloning technologies are permissible, or even “a good deed (mitzvah),” there is license for authorities to prohibit temporarily practices that may lead to destructive outcomes or other violations, see Broyde 2005d, 298.

⁶³ Both Broyde and Bleich concur that cloning a person to both create an immunological match is curative and moral, such as in the case of cloning a child with leukemia in need of a bone marrow transplant, see Broyde 2000, 210.

uncertainties about who is the mother, yet it serves a valuable role in allowing those unable to reproduce naturally to have children. Cloning will serve the same function and should not be prohibited because of this uncertainty” (Broyde 2000, 209).

Epistemological and Axiological Analysis of Rabbi Michael J. Broyde on Cloning and Mitochondrial Replacement Therapy

Bleich might be categorized as a conservative-traditionalist, intellectually open to a broad array of high-minded conceptualizations, but, in practice, quite restrictive. Broyde, in contrast, presents as a progressive traditionalist, more hesitant to create new conceptual paradigms of parenthood, perhaps because he more freely licenses the new assisted reproductive and genetic technologies as practical therapies for extreme cases of infertility and illness. Practical implementation requires formulating halakhic rulings which are clear, decisive, and relatively easy to apply.

Broyde welcomes the dialogic encounter of religion and science to deepen knowledge, accepts *pro tanto* scientific claims, and unlike Bleich, speaking approvingly of “the march of scientific progress,” thus trusting in medical science to overcome obstacles and unintended harmful consequences (Broyde 2005d, 313). At times, Broyde highlights the tentativeness of his analysis pending advances in scientific knowledge.⁶⁴ Broyde’s epistemological resources, as before, include scientific literature, secular bioethics, and western law, in addition to Torah sources. While Broyde, like Bleich, looks primarily to Jewish law as the “touchstone” of its “moral system,” Broyde and Bleich

⁶⁴ For example, see Broyde 2005d, 326n92, “... If the scientific data indicates that the mitochondrial DNA is significant then logic would analogize the egg donor to the genetic donor.”

emphasize different Jewish meta-ethical values that are informed by secular bioethics.

Bleich focuses on the Hippocratic imperative of “do no harm,” while Broyde emphasizes “the obligation to help those in need,” extending it to infertility (*ibid.*, 296-7).

Like his teacher Bleich, Broyde appreciates the “general inherent moral conservatism associated with the Jewish tradition’s insistence that there is an objective, God-given morality, and that not everything that humanity wants or can do is proper” (*ibid.*). What then accounts for the fact that Bleich, the teacher, prohibits, and Broyde, the pupil, permits? While it is impossible to account comprehensively for their differing orientations, one major self-articulated epistemological and axiological difference between them is that Bleich denies halakhic change and Broyde embraces its responsible implementation when done with integrity per the interpretive rules of the halakhic system. In practice, as this dissertation continues to endeavor to demonstrate, both Bleich and Broyde develop, and even change halakhah by incorporating scientific knowledge and awareness into their theoretical system which in turn impinges upon and influences their reading of pre-modern sources and their innovative interpretation.

Table 7.3. Summary of Attitudes Toward Cloning and MRT with Definitions and Account of Parenthood

Rabbi Michael J. Broyde	
Attitude Toward Cloning and MRT	Reproductive Cloning: Positive Therapeutic Cloning and Genetic Engineering: Positive Reproductive-Therapeutic Cloning: Positive MRT: Positive
Definition of Maternity	Primarily a Monist Causal account, however, newly considers a Pluralist Causal Account, crediting primary motherhood to gestation/parturition, and secondary motherhood to ova donors of nDNA and mtDNA, and possibly other female genetic contributors.
Definition and Account of Paternity	Primarily a Monist Causal account of genetic provision, but newly open to a Pluralist Causal account.
Definition of Parenthood	Constrains fatherhood to males and motherhood to females in keeping with perceived normative values of Jewish law.

Rabbi Elliot N. Dorff on Cloning, Mitochondrial Replacement Therapy, and Parenthood

On March 14, 1997, fifteen days after Dolly's birth made headlines, Dorff traveled to Washington D.C. and presented a paper on Jewish bioethical views on reproductive cloning to the National Bioethics Advisory Commission (Dorff 1998a, 117). In 1998, Dorff published an article in a law journal, "Human Cloning: A Jewish Perspective," based on his prior presentation (ibid.). Later that year, Dorff republished an expanded version of that article in his book-length treatise, *Matters of Life and Death: A Jewish Approach to Modern Medical Ethics* (1998b). Dorff did not place his discussion of reproductive cloning in "Part Two: Moral Issues at the Beginning of Life," where one might have expected it. Rather, he framed it as "Medical Research: The Case of Cloning," and placed it within "Part Four: The Communal Context of Medical Care," in a chapter on "Nonmedical Aspects of Medical Care," along with a discussion of the

distribution and cost of health care (*ibid.*, 310-24). It should therefore not come as a surprise that Dorff does not address the question of paternal and maternal identification in the cases of assisted reproductive and genetic technologies of reproductive cloning and MRT.

For Dorff, unlike AI, IVF, and gestational surrogacy, human reproductive cloning is not a live issue, and thus he does not address its reproductive halakhic aspects within his bioethical treatment.⁶⁵ Likewise, the Committee on Jewish Law and Standards of the Rabbinical Assembly, which Dorff has chaired since 2007, has not to date published any responsa directly speaking to reproductive cloning or MRT. In a responsum approved by the Committee on Jewish Law and Standards penned by Dorff on “Stem Cell Research,” Dorff permits and advocates for therapeutic cloning, while writing of reproductive cloning: “We clearly do not want to support reproductive cloning, at least at this stage of development of the technique, for it is neither safe nor effective” (Dorff 2002c, 14).⁶⁶ Theoretically, would reproductive cloning be proven safe, Dorff (1998b, 319-20) would endorse its occasional application “to cure disease or overcome infertility,” as “it is a permissible activity for us as God’s partners, on condition that we take due regard of the moral issues” relating to cloning. Dorff adumbrates those moral issues as including: distributive justice and equitable access; foresightful consideration of environmental consequences on the genetic diversity of the biosphere; treating the resulting cloned human beings with full dignity and rights, especially for less than successful results;

⁶⁵ MRT, however, has recently become a contemporary issue of practical concern, although Dorff may judge this technology too immature to be used on humans.

⁶⁶ On Dorff’s views on Stem Cell research, including therapeutic cloning, see Dorff 2000; 2002c; and Rabbinical Assembly 2011.

regulating cloning so as not to allow for eugenic enhancement, i.e., designer babies, or the commodification of cloned human beings (ibid., 313-8).⁶⁷

In March 2015, when the United Kingdom legalized MRT, Dorff was interviewed by *The Washington Jewish Week*. In reporting Dorff's answer to questions regarding maternal identity and Jewishness in cases of MRT given the quantitative and qualitative differences between nDNA and mtDNA, the article states:

Such distinctions don't concern Rabbi Elliot Dorff, a medical ethicist and professor of philosophy at American Jewish University in Los Angeles. About 20 years ago, the Conservative movement's Committee on Jewish Law and Standards, which Dorff currently chairs, published an opinion that religious inheritance should pass from the mother who carries and bears the child, rather than the one who donates her egg. (Kotz 2015)

Assuming this reporting to be accurate, one wonders why "such distinctions don't concern" Dorff? Absent a fuller exposition by Dorff, one cannot answer for certain. However, three plausible reasons come to mind.

First, Dorff's halakhic methodology resolves legal doubt through the Rabbinical Assembly's Committee on Jewish Law and Standards. For Dorff, it is good religious and social policy to promote an easily understandable and implementable consistent position. Always pointing to the birth mother as the halakhic mother makes maternal determinations simple and fair. A child's Jewishness may always be resolved through conversion.

Second, for Dorff, it is quite possible that he views Jewish parental designations not as ontological verities, but as conventional social constructs. While Jewish law and

⁶⁷ For Dorff's policy recommendations, see Dorff 1998a, 128-9; 1998b, 322-4. Cf. English and Sommerville 2002.

tradition compels him to take such social constructs seriously, as constructs he is less concerned by fine distinctions.

Third, for Dorff, there is a moral cost to over-focusing on causal accounts of parenthood, especially genetic-based ones. As early as 1993, Dorff (1993, 58) writing on AI highlighted aggadic sources that emphasize, “that the people who raise the child, and not the natural father and mother, are called the parents.” He thereupon expressed hopefully: “perhaps Jewish law will develop in that direction” (ibid.). Dorff (1998b, 70, 93-5) has also already warned that over-occupation with genetics in assisted reproduction may induce racist views. Dorff might very well judge the Orthodox Jewish bioethical occupation with parental determinants as “leading to blind legalism without a sense of the law’s context or purpose” (Dorff 2000, C-3). In Dorff’s (ibid.) testimony on “Human Stem Cell Research” to the National Bioethics Advisory Commission, he prefatorily states his “fundamental theological conviction” that, “the Jewish tradition uses both theology and law to discern what God wants of us.” Legalism without theological guidance and theology that ignores Jewish law, for Dorff, both fail the task. It is possible that for Dorff the question of who is the causal halakhic mother and father is less important than the question who volitionally will act as the mother and father in nurturing and rearing the child.

At the same time, in cases of AI/IVF with donor semen, adoption, and possibly ovum donation and gestational surrogacy, Dorff advocated for rabbinically decreeing that adoptive parents, and the direct collaborators in ART, as well as their immediate relatives, all be considered the child’s *sheniyot*, secondary relatives, regarding

consanguineous relationships. As the number of collaborators increase in poly-genomic offspring, would Dorff halakhically rule and bioethically advise similarly?⁶⁸ Or would he constrain this rabbinical decree to certain cases or specific contributors? For now, Dorff views both therapeutic and reproductive cloning, as well as MRT, as medical experimentation rather than clinical assisted reproduction.⁶⁹ Further elaboration awaits.

Dorff's Provisional Disapproval of Cloning and Mitochondrial Replacement Therapy

Although generally progressive, Dorff applies mid-level bioethical norms to his bioethical assessments. The principle of non-maleficence strongly impinges upon his trust in the safety of the current state of the genetic technology.⁷⁰ Were the technology to advance within ethical experimental parameters to a sufficiently safe level, Dorff would endorse human reproductive cloning, and presumably MRT, to treat infertility and illness if responsibly considered, supported, and implemented.

Epistemological and Axiological Analysis of Rabbi Elliot N. Dorff on Cloning and Mitochondrial Replacement Therapy

Dorff here demonstrates that, for him, Jewish bioethics transcends medical halakhah and he concerns himself solely with moral issues. In his responsum on stem

⁶⁸ Cloning, of course, can have fewer genetic contributors, especially if the clone is female.

⁶⁹ See Dorff and Zoloth 2015, 241, where in their introduction to “The Science of Genetic Intervention,” Dorff and Zoloth write of MRT: “Given the still very investigatory state of the science and the regulatory barriers to human subject experimentation, such fears seemed then, and still, to be designed for a future that is still extraordinarily distant.” Experimentation’s primary goal is to gain knowledge, even if the purpose of that knowledge is to ultimately develop therapies. Human experimentation, therefore, requires Institutional Review Board oversight, as well as a heightened sense of informed, understanding, and knowing consent.

⁷⁰ See Botelho 2013.

cells, Dorff (2002c, 1-7) displays in-depth knowledge of the current science which fully informs his bioethical analysis. He accepts the knowledge as sufficient, and subject to further development pending further, hopefully ethical, experimentation. Although he doesn't explicitly cite the secular bioethical literature in his writings on cloning, he is clearly familiar with the primary issues engaging bioethicists, and as a participant in the National Bioethics Advisory Commission he is sharing ideas and concerns in an interfaith setting within a larger bioethical consideration of the issues. For Dorff, the scientific theory and technology is morally neutral, with moral-axiological commitments manifest in the goals of its experimental and clinical application. Dorff looks to the metaethical values of Judaism, within a context of larger ethical consideration, to make his ultimate moral judgments. Jewish metaethics, are likewise sharpened and informed by larger philosophical consideration. Dorff does not exhibit his methodology of scientifically and ethically informed halakhic stretchiness because he is solely in bioethical mode, and not making halakhic recommendations regarding human reproductive cloning. His reported remarks about being uninterested in the question of parental identification may indicate that as assisted reproductive and genetic technologies continue to complexify procreation that he would advocate for Jewish law and ethics to switch from focusing on causal biological accounts of parenthood to social, volitional accounts, but this is admittedly speculative. The dialogic, bi-directional encounter of science and religion as experienced through bioethics, for Dorff, makes for a more humane scientific practice, and a better informed and more sophisticated Jewish way of life.

Table 7.4. Summary of Attitudes Toward Cloning and MRT with Definitions and Account of Parenthood

Rabbi Elliot N. Dorff	
Attitude Toward Cloning and MRT	Reproductive Cloning: Provisionally Negative Therapeutic Cloning: Positive Genetic Engineering: Provisionally Negative Reproductive-Therapeutic Cloning: Provisionally Negative Negative MRT: Presumably, Provisionally Hesitant
Definition of Maternity	Monist Causal Account: Parturitional.
Definition and Account of Paternity	Monist Causal Account, unclear in cases of cloning
Definition of Parenthood	Maternity determined by birth-mother. Paternity by genetic contribution, though not discussed in poly-genomic context. Interested in social parenthood, i.e., who raises the child.

Dr. John D. Loike and Rabbi Moshe D. Tendler on Cloning, Mitochondrial Replacement Therapy, and Parenthood

Tendler, like Dorff, also testified in the immediate aftermath of Dolly's birth in Washington in March 1997 at the National Bioethics Advisory Commission (Tendler 1997a). Shortly thereafter, Loike independently began to publish on Jewish views on reproductive cloning, jointly authoring an article on the subject with Dr. Avraham Steinberg, a noted Jerusalem-based physician and bioethicist, and participating in a *Torah u-Madda* journal symposium in 2000 (Loike and Steinberg 1998; Loike 2000).⁷¹ Tendler and Loike joined forces in 2002, co-authoring six articles over the next seven years on different types of genetic engineering, especially addressing the definition of humanness (Loike and Tendler 2002, 2003, 2006-7, 2007, 2008, 2009). In 2014 and 2015, they

⁷¹ For other notable submissions to the symposium, see Adlerstein 2000; Fiorino 2000; Grazi 2000; Jakobovitz 2000; Kaplan 2000; Rosner 2000; Rosner and Shafran 2000; Shatz and Wolowelsky 2000; Steinberg 2000; Waxman 2000.

jointly authored three Jewish bioethical articles on cloning, gene editing, and MRT (Loike and Tendler 2014a, 2014b, 2015). In 2013 and 2014, Loike also authored and co-authored several secular-bioethical treatments of transspecies chimerism, MRT, and multiple parenthood (Loike 2013; Loik, Hirano, and Margalit 2013; Margalit, Levy, and Loike 2013; Fishbach, Benston, and Loike 2014). Beyond manifesting great interest in the subject matter, Loike and Tendler's prolific output on these subjects attest to the maturation of Jewish bioethics, as well as to the cultivation of a broad and varied audience interested in Jewish bioethics and medical halakhah.

Loike and Tendler on Cloning

In 1997, Tendler expressed opposition to most reproductive cloning based on both pragmatic and theological grounds. In his testimony to the National Bioethics Advisory Commission, he recognized potential benefit in reproductive cloning to overcome infertility, but in the shadow of Nazi eugenics, he expressed wariness. "Are we good enough to handle this good technology?" Tendler rhetorically asked. "Of course, we are, if we can set limits on it," to which he added sarcastically, "and when we can train a generation of children not to murder or steal, we can prepare them not to use this technology to the detriment of mankind" (Tendler 1997a). Tendler cited the Talmud as teaching that sometimes we must say to the bee, "We want neither of your honey, nor of your sting" (ibid.).⁷² In a letter to *The New York Times*, several months later, Tendler

⁷² The source is midrashic and not talmudic, see *Midrash Tanchuma, Parshat Balak*, 6, cited by Rashi, ad loc., Numbers 22:12.

wrote: “As an Orthodox Jew and rabbi, I oppose ‘elective’ or ‘autonomous’ cloning on biblical grounds. . . . As a professor of biology, I see it as a form of assisted sexual reproduction. But the salient issue for me is under what circumstances cloning could be morally acceptable” (1997b). In addition to the case of cloning a bone marrow match for a child stricken with Leukemia, Tendler also cites a case of “a young man who is sterile, whose family was wiped out in the Holocaust, and [who] is the last of a genetic line.” For which, Tendler asserted: “I would certainly clone him” (Tendler 1997a).⁷³

If Tendler expressed ambivalence about reproductive cloning, he was unequivocal in his support of therapeutic cloning and stem cell research in his testimony on the subject for the National Bioethics Advisory Commission in 2000, as well as at the Senate in 2001 (Tendler 2000; Pew Research Center 2001). Tendler argued that the separation of Church and State in the United States should not only safeguard minority rights, but also prevent the establishment of Christian theological views on the personhood of embryonic cells from deciding scientific policy (ibid.).⁷⁴ Tendler forcefully advocated for stem cell research, which he sees as crucial to the development of life-saving therapies (ibid.).⁷⁵

While Tendler was serving as an unofficial bioethical spokesperson on behalf of the Jewish community, Loike co-authored with Avram Steinberg (1998) an article on

⁷³ See Tendler 1997b, where Tendler reiterates this position in his letter to the *New York Times*. See also Bleich and Jacobson 2015, 392, where Bleich deems reproductive cloning immoral even, “in order to preserve the family line of a Holocaust survivor who has no other living relatives.”

⁷⁴ At the same time, Tendler defended stem-cell research from a Jewish point of view, arguing that per biblical morality the embryo enjoys no metaphysical status before quickening at forty days, whether in vivo or in vitro. He also asserted that using legally aborted tissue, even in cases in which religious authorities would not have condoned the abortion, is not unethical, nor does it promote discretionary abortion (Tendler 2000).

⁷⁵ See also the policy statements of the Rabbinical Council of America (2004, 2009) on Stem Cell research, which we drafted in consultation with Tendler.

“Human Cloning and Halakhic Perspectives.” After rehearsing the basic science, they explain therapeutic and reproductive cloning’s benefit to treat and cure disease, including cancers, infertility, and organ and tissue regeneration. In favor of human cloning, they advance two primary supports for permitting this genetic technology: first, halakhically, safe activities not explicitly prohibited should be permissible;⁷⁶ second, theologically, Jewish law and ethics generally favor medical interventionism, allowing humanity to master and further develop natural processes to heal illness. They also acknowledge that there are counter-viewpoints that limit interventionism to within certain naturalistic parameters. Asexual reproduction that utilizes gametes from a man and a woman, or perhaps even from more gametic collaborators, is arguably still within the realm of natural processes. Autonomous homologous reproduction is not.⁷⁷ They too discuss the concerns of unintentional harms, eugenics, and other issues (ibid., 31-9).

Loike and Steinberg explore the question of the parentage of a cloned child through a test-case of a woman who clones herself, using nDNA derived from her own somatic mammary cell. Regarding paternity, they offer three possibilities: one, the mother’s father, since half of her nDNA came from her own father; two, the nDNA donor would also be the halakhic father, even though she is also the halakhic mother; or three, no one can claim halakhic paternity. Although they find options one and two more

⁷⁶ See Lifshitz, *Tiferet Israel*, ad loc., Mishnah Yadayim 4:3.

⁷⁷ Loike and Steinberg 1998, 37, distinguish between cloning a male through SCNT, which still requires a female ovum, in addition to a male somatic cell, and cloning a female which only uses the cellular and genetic materials of one or more women. However, Loike and Tandler 2014a, 43n14, point out that in nature both simple organisms, such as bacteria, and complex species such as worms, fish, lizards, and frogs, reproduce by parthenogenic cloning.

logically compelling than three, one and two have no precedent in Jewish law, while there are occasions in Jewish law in which a child is deemed to have no halakhic father.⁷⁸

Regarding maternity, the mother would clearly be the sole woman who donated all the genetic and cellular materials, and gestated and delivered the child. However, maternity is harder to decipher in more complex cases of multiple genetic donors, especially if there is a different gestational carrier. If not all the female reproductive collaborators are Jewish, there may also be questions concerning the resultant child's Jewishness (ibid., 41-3). Loike and Steinberg end their essay on cloning by calling for the creation of an international committee of "leading rabbinical figures and religious scientific experts to discuss the halakhic ramifications of cloning using these technologies" (ibid., 45). They recognize the social importance of communal consensus on halakhic paternal identity, and Jewishness-conferring maternity.

Sixteen years later, in 2014, Loike and Tandler (2014a) co-authored an article on, "Creating Human Embryos Using Reproductive Cloning Technologies." The primary focus of the article is an analysis of "Halachic Parenthood" (ibid., 47-60). They state:

Specifically, this technology raises two related halachic issues that are rarely discussed.⁷⁹ First, what is the role of genetics in establishing a parental halachic relationship? Second, what is the role of *zarah* (sperm) in establishing fatherhood? Specifically, does halacha recognize fatherhood (paternity) status only in situations when a man provides sperm or can the status of halachic paternity be established when a man donates a non-sperm cell to generate an embryo that leads to a live birth? (ibid., 48)

⁷⁸ A *shetuki* is a child who knows not his paternity. A convert is considered akin to a newborn babe, without familial relations. See Loike and Steinberg 1998, 42.

⁷⁹ Strangely, they do not reference the well-known writings of Bleich and Broyde, and others, but only cite Steinberg 2009. See Loike and Tandler 2014a, 48n24, 41n8.

Absent dispositive halakhic precedent, they turn to contemporary science to refine halakhic understandings of parenthood: “The current consensus within the scientific community regarding the definition of human reproduction can be summarized as ‘the union of two nuclei in an egg to produce an embryo that can be gestated and where the mitochondrial genes are provided by the egg’” (ibid.).⁸⁰ Thus, the genetic donor of a somatic cell’s nDNA “can be considered the halachic father of the child” (ibid.). This is a revolutionary halakhic methodological approach that privileges scientific knowledge in its historical and social context over legal formalism and positivism. Fatherhood is redefined as genetic contribution, even when not gametic.

Loike and Tendler apply their newly conceived genetic-based definition of halakhic parenthood to four cases: one, SCNT with husband’s somatic cell and wife’s ovum; two, MRT with two females and one male; three, one woman using her own somatic cell and ovum to clone herself; four, SCNT with a man’s somatic cell and a non-spousal, married woman’s ovum. In case one, Tendler and Loike determine that the male somatic cell donor is the father, and the ovum donor is the mother. Since they are married, this cloning technique, if safe, would be a permitted treatment of infertility. Furthermore, Loike and Tendler credit the father in such a case of reproductive cloning with fulfillment of the mitzvah of procreation, which they understand is “concerned not with how the union is carried out but rather with the result – the birth of a living child”

⁸⁰ They do not cite the golem literature in this article, though Loike had previously explored its pertinence as a precedent, see Loike and Steinberg 1998, 40; Loike 2000. Loike 2000, 240-1, surmises that if a golem is defined by a being created through unnatural processes, i.e., Jewish mystical prayer, rather than asexually, then a genetically human clone incubated within a woman, or even incubated within an animal, would be considered human.

(ibid., 50). In case two of MRT, since the procedure is therapeutic in intent, it “might be halachically permissible” (ibid., 57). Lacking clear precedent, all genetic donors, as well as the gestational carrier, should be considered halakhic parents out of legal doubt. In the third case of a woman cloning herself, since she is the sole genetic donor, and will carry and bear the child, she is certainly the unique halakhic mother. However, since “there is no halachic precedent to claim that this mother could serve as both the halachic mother and father,” then it is likely that paternity will not attach and the child will be fatherless (ibid., 59). In the fourth case of SCNT utilizing the ovum of a non-spousal married woman, Tendler and Loike opine that it is likely, absent forbidden sexual relations, that the resultant child is not a *mamzer*, i.e., bastard, just as Rabbi Moshe Feinstein ruled in cases of AID.⁸¹ The genetic donor is the father, and the ovum donor is the mother (ibid.). If a gestator is involved, she would also be considered a doubtful mother (ibid., 50n26). Tendler and Loike adjudicate these cases by their new definition of halakhic parenthood as primarily genetic contribution. They also seek to maintain the correlation of traditional gender roles and identifications of paternity and maternity.

However, Loike and Tendler also importantly ask: “Should genetics be the sole determinant of parenthood?” (ibid., 49). Should halakhah consider non-causal accounts of parenthood, akin to secular law which acknowledges both genetic parental relationships, as well as adoptive relationships. They coyly let this question hover unresolved, other than to identify instances in halakhah when genetics are ignored, such as in conversion to Judaism which severs previous familial ties since a convert is likened to a newborn babe,

⁸¹ See Chapter Four, p. 157 ff.

as well as in several other atypical and/or transgressive procreative relationships (*ibid.*). They do, however, reference here in a footnote (*ibid.*, 49n25) Loike's co-authored article, "The New Frontier of Advanced Reproductive Technology: Reevaluating Modern Legal Parenthood" (Margalit, Levy, and Loike 2014).⁸²

Loike, along with Yehezkel Margalit of Tel Aviv University Law School, and Bronx Assistant District Attorney, Orrie Levy, argue that poly-genomic children born of advanced ARTs, i.e., cloning technologies, challenge bionormative parental determinations by fragmenting parental causal contributions like genetics and gestation, as well as obfuscating the intentions of collaborating parties, leading to untenable legal conundrums with potentially multiple competing claims of parenthood (*ibid.*, 112-5). They propose that to avoid these costly conflicts damaging to all involved, law courts should adopt an "intent-based approach" to parenthood, that "transfers the source of parental designation from the auspices of biology and the traditional marital presumption to the realm of freedom of contract and market principles" (*ibid.*, 116). This model of pre-procreative, court pre-authorized, contractually determined social parentage, which takes both biological-causal and volitional factors into account, best avoids legal gridlock and human suffering. An intent-based approach also is flexible enough to accommodate both bionormative and non-traditional family structures, including same-sex couples, as well as multiple parenthood arrangements (*ibid.*, 129-39).

⁸² See also Loike, Hirano, and Margalit 2013, which Loike and Tandler (2014a, 45n20) referenced earlier in their article.

Returning to Loike and Tendler's halakhic bioethical analysis, it is not entirely clear what they are theoretically proposing. They footnote Margalit, Levy, and Loike's article to a sentence asserting that legal parenthood in secular law can be established through adoption, thereby legally overriding genetics. However, this is too great a simplification of Margalit, Levy, and Loike's legal proposal. For them, advanced ARTs fragment parenthood into indeterminate parental associations with the resulting child. If parenthood is simply a social and legal construct, their proposal aims for construct reconstruction: "The paradigm of intentional parenthood is largely premised on incorporating contract law and its principles of agency and self-determination into family law" (Margalit, Levy, and Loike 2014, 137). However, for Tendler and Loike, halakhic parenthood is likely an ontological verity with metaphysical consequences. The theological unity of God's revelation through both Torah and nature provides the epistemological license to redefine halakhic parenthood as genetic contribution in light of advanced scientific understanding. For Tendler and Loike to consider parenthood simply as a social construct subject to intent-based determinations would surely constitute an even greater interpretive revolution.

Loike and Tendler's Qualified Approval of Cloning and Mitochondrial Replacement Therapy

Despite Tendler's early objections to reproductive cloning, in 2014, Loike and Tendler express their qualified approval of human reproductive and therapeutic cloning and MRT. As research scientists, they value the benefit of advancing biological understanding and medical technological capability. Cloning technologies hold great

promise for the development of patient specific treatments, organ and tissue regeneration, infertility treatment, and allowing women afflicted with mitochondrial diseases to bear healthy children. Although they affirm Judaism's interventionist attitude toward nature, they also assert that cloning "is an established biological phenomenon" found within nature, and thus, self-legitimizing (ibid., 43-44, 43n14). While MRT has no normative biological parallel in nature, Loike and Tendler subsume its license under the duty to heal.

Epistemological and Axiological Analysis of Dr. John D. Loike and Rabbi Moshe D. Tendler Cloning and Mitochondrial Replacement Therapy

Loike and Tendler continue to espouse an integrationist model of the Torah and science relationship, paradoxically claiming, on the one hand, that halakhah must accommodate new scientific knowledge, while, on the other hand, claiming that the Jewish sages of yore had advanced scientific understanding beyond their times. Loike and Tendler rehearse in brief the scientific history of reproductive understanding from Aristotle to Galen in the Greco-Roman Era, to Harvey, Von Leeuwenhoek, and Hertwig in the Modern Period.⁸³ They then cite the Talmud (TB Niddah 17b, 30b) as viewing both male and female equally contributing, along with God, to the conception of a child, writing triumphally: "The Talmudic description ... preceded the secular world's understanding of human conception by about 1500 years" (Loike and Tendler 2014, 40). However, they reference Dr. Edward Reichman's scholarship (1996) as a source for their

⁸³ See Chapter Four, p. 141 ff.

general and Jewish history of conception and embryology. Reichman's method specifically seeks to demonstrate that the rabbis of every age base their views on the scientific knowledge of their times, and were not autonomous generators of natural philosophy, i.e., science.⁸⁴ Loike and Tendler avowedly affirm this historical truism in their own halakhic bioethical method. They further forcefully assert that proper halakhic methodology requires scientific consultation:

In response to a scientific-or-medically-based halachic question, a *posek* must navigate information obtained from medical scientists. If the information is accurate, then the halacha generated can be based on that information. If the factual accuracy of the scientific or medical information is questionable or controversial, then the *posek* must rely on established halachic principles to arrive at a *psak*. ... If that (i.e., scientific) information changes over time, halacha must reevaluate its conclusions in accordance with halachic principles. Thus, scientific consensus can serve as the basis of halachic decisions and as a precedent in addressing new halachic issues including those emerging from new reproductive biotechnologies. (Loike and Tendler 2014a, 42-3)

They themselves attest that, “regrettably few of our halachic decisors have the scientific background to render a *p’sak* on” assisted reproductive and genetic technologies (Loike and Tendler 2015, 6). Perforce, if the scientific knowledge of the talmudic rabbis preceded secular scientific enterprise by 1500 years, Tendler and Loike would have to claim that the rabbis were prophets with access to hermetic scientific knowledge. Tendler and Loike understand full well that scientific advancement is born of a historical process of theorizing and experimentation, failures, successes, and reformulations. Despite their penchant for Jewish triumphalism, their epistemological position is to accept *pro tanto* scientific consensus as a valid baseline for halakhic bioethical analysis and adjudication.

⁸⁴ See Chapter Four, pp. 151-2.

Loike and Tandler's enthusiastic support for the research, therapeutic, and reproductive applications of cloning technologies is noteworthy. Arguably, they are epistemologically and axiologically influenced by their knowledge of secular bioethics and bio-law, as well as by their professional callings as research scientists. Their commitment to mid-level halakhic bioethical norms, rather than high theory, likewise lead them to more easily license and adjudicate the permissibility and consequences of assisted-reproductive and genetic technologies. While they frame their Jewish bioethical principlism in Jewish sources, their idiom of discourse and methodological application likewise demonstrate the shaping influence of halakhically independent metaethical evaluation. Their revolutionary halakhic-bioethical methodology of realigning halakhah with advances in scientific understanding epistemically privileges hard science, which they then overlay upon their Torah knowledge. Their mere raising the question of whether parenthood should be accounted for causally, or possibly based on intent, displays an intellectual openness to changing paradigms of parenthood born of advanced ARTs. It also manifests a commitment to a societally workable halakhic bioethic that allows for the utilization of beneficial medical technologies that severely complicate traditional parental paradigms.

Table 7.5. Summary of Attitudes Toward Cloning and MRT with Definitions and Account of Parenthood

Dr. John D. Loike and Rabbi Moshe D. Tendler	
Attitude Toward Cloning and MRT	Reproductive Cloning: Positive Therapeutic Cloning: Positive Genetic Engineering: Positive Reproductive-Therapeutic Cloning: Positive MRT: Positive
Definition of Maternity	Pluralist Genetic and Gestational-Causal Account.
Definition and Account of Paternity	Fundamentally Monist Genetic-Causal Account. No paternity in cases of female cloning. Possibly Pluralist Genetic-Causal Account in cases of multiple male genetic contributors.
Definition of Parenthood	Redefine parenthood primarily by genetic contribution. Surprisingly, raise question of non-genetic social parenthood, i.e., who raises the child.

Chapter Conclusion

The introduction of genetic technologies into ARTs represents a major development that not only holds great promise for disease treatment, prevention, and cure, but also for overcoming previously insurmountable forms of infertility. While the science of cloning and MRT and their clinical applications are still in their infancy, as a now more mature field, Jewish bioethics readily engages their attendant bioethical and halakhic issues, with many new voices participating, and an expectant broad readership awaiting further publications.⁸⁵ American Jewry is also more established, and communally and politically confident, bringing Jewish bioethical opinion into the public

⁸⁵ See Shatz and Wolowelsky 2000, who edited a forum on “Judaism, Genetic Engineering and the Cloning of Humans.” See also Werber 2000; and Breitowitz 2002.

square, as demonstrated by Dorff and Tandler's testimonies in Washington D.C.⁸⁶ American Jewry, even its Orthodox communities, confront a social-cultural landscape in which there have been seemingly irreversible, cultural seismic shifts over the past forty years regarding sexuality, reproduction, and family structures. The fragmentation of parenthood claims engendered by assisted reproductive and genetic technologies has required of Jewish bioethicists and medical halakhists to reevaluate the grounds of parenthood, to consider pluralist accounts of maternity, and with genetic engineering technologies, even of paternity. While considering the cloning technologies under study, new conceptualizations of parenthood and innovative interpretations of pre-modern and contemporary rabbinic sources has led to further anticipatory bioethical reflection upon experimental and futuristic technologies, such as artificial wombs, synthetic human genomes, and human-animal chimeras.

Table 7.6 (below) demonstrates the evolution of each exemplar's views of maternal and paternal identification in the ARTs we have studied. Three of the four (Bleich, Broyde, and Tandler/Loike) have adopted *de facto*, if not *de jure*, pluralist accounts of parenthood. All four (Bleich, Broyde, Dorff, and Tandler/Loike) have contemplated, even if summarily dismissed, intent-based accounts of parenthood. Both these observations raise questions about the sociology of knowledge and its impact upon epistemology. The Jewish bioethical writings of this dissertation's four exemplars continue to demonstrate the imprint of scientific knowledge in developing a bioethical and halakhic discussion of greater nuance, as well as a more sophisticated philosophy and

⁸⁶ See, for example, Diamant 2004.

methodology of halakhah and bioethics. Their writings ART also show how their growing and changing epistemologies and axiologies influence their readings of ancient and contemporary sources. Novel technologies force new considerations of definitions, like those of paternity and maternity, considered clear and settled for much of human history. The relationship between epistemology and axiology, as well as the Jewishly internal and external sourcing of knowledge and ethical values, likewise impact upon their contemporary Jewish bioethical and medical halakhic viewpoints regarding ART and its outcomes. Changing moral value judgments under the influence of evolving social and cultural attitudes, and the increasing widespread use of new technologies, also play roles in Jewish bioethical assessments of ART.

While each exemplar manifests a differentially nuanced philosophy, methodology, and application of Jewish law and ethics, common to all of them is an affirmative, dialogical relationship of religion and science that recasts ancient texts in the light of new scientific knowledge. Three out of four of the exemplars (Broyde, Dorff, and Tendler/Loike), consciously adapt halakhah and Jewish ethics to new scientific knowledge, representing more of an integrationist approach to science and religion, and one (Bleich) gives credence to scientific advancement, even while guarding Jewish tradition's legal patrimony, at times defending religion and science's independence from one another. Not only do religion and science relations make for a more sophisticated, scientifically informed, Jewish bioethical analysis, but also when matched with axiological progressivism, more easily halakhically license the new ARTs. Furthermore, the expansion of Jewish bioethical and medical-halakhic epistemologies fundamentally

transforms halakhic and ethical discourse, allowing for the organic development of Jewish law and ethics, and sometimes even engendering innovative rabbinic interpretations and unprecedented halakhic rulings.

Table 7.6. Summary of Attitudes Toward Cloning and Mitochondrial Replacement Therapy, Account of Parenthood, and Epistemological and Axiological Findings for Four Exemplars

C = Cloning; R = Reproductive; T = Therapeutic

x: Exemplar y: Intellection Orientation	Rabbi J. David Bleich	Rabbi Michael J. Broyde	Rabbi Elliot N. Dorff	Rabbi Moshe D. Tendler and Dr. John D. Loike
Attitude Toward AI and IVF From Chapter Five	AIH/IVF-H: Negative AID/IVF-D: Prohibiting	AIH/IVF-H: Positive AID/IVF-D: Permitting	AIH/IVF-H: Positive AID/IVF-D: Cautiously Positive	AIH/IVF-H: Positive AID/IVF-D: Permitting if D is non-Jewish
Def. of Maternity	Monist Causal	Monist Causal	Monist Causal	Monist Causal
Definition of Paternity	Always sperm donor. Monist Causal Account	Always sperm donor. Monist Causal but differentiates <i>Genetic father</i> of sexual and non- sexual procreation <i>Biological father</i> through sexual reproduction.	AIH/IVF-H: sperm donor AID/IVF-D: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father. Pluralist Causal & Volitional/Labor.	Always sperm donor. Monist Causal Account: Genetic Father
Attitude Toward Ovum Donation (OD) and Gestational Surrogacy (GS) From Chapter Six	OD: Negative GS: Negative	OD: Permitting GS: Permitting Unclear from published work if preference for Jewish or non- Jewish OD & GS	OD: Positive to both receive & donate. GS: Positive to commission & serve as. No preference for Jewish or non-J.	OD & GS: Permissible to receive and commission if OD & GS non- Jewish.
Account of Parenthood	Pluralist Causal Account	Pluralist Causal Account	Monist Causal Account	Pluralist Causal Account
Definition of Maternity	Dual-maternity, principally parturition, but in legal doubt as to adding OD.	Parturition when conception legally insignificant. Conception when legally significant.	Parturition. Surprising that not Pluralist Causal & Volitional/Labor, like in AI/IVF-D.	Begins as Monist: parturition. Currently, Pluralist Causal with fundamental doubt.

Attitude Toward Cloning (C) and MRT <i>From Chapter Seven</i>	R-C and MRT: Negative T-C: Positive R-T C: Hesitant	Positive for all.	R-C and MRT: Provisionally negative due to safety concerns. T-C: Positive	Positive for all.
Def. of Maternity	Pluralist Causal	Primarily Monist, but possibly Pluralist	Monist Causal: Parturition	Pluralist Account: Genetic and Gestational
Definition of Paternity	Newly Pluralist Causal.	Primarily Monist, but possibly Pluralist	Monist-Causal Genetic Contribution.	Genetic-Causal, possibly Pluralist.
x: Exemplary: Intellection Orientation	Rabbi J. David Bleich	Rabbi Michael Broyde	Rabbi Elliot N. Dorff	Rabbi Moshe D. Tendler and Dr. John D. Loike
Account of Parenthood in RC and MRT	Pluralist Causal, possibly non-gendered, entertains, but rejects volitional definition.	Constrains causal fatherhood to males and motherhood to females.	Committed to traditional bionormative categories, but likely interested in social parenthood.	Redefines parenthood primarily as genetic contribution. Newly interested in social parenthood.
Methodological Basis	Halakhic high-theory. Legal analogy & reasoning. Avoids anachronistic readings. Rejects aggadah as legal source.	Halakhic high-theory. Legal analogy & reasoning. Interpretive innovation by conceptualizing pre-modern sources through contemporary science.	Legal precedent and bioethical principlism. Intentional stretching of both Halakhic and aggadic sources. Suspicious of specious legal analogies. Policy consensus.	Halakhic-bioethical principlism. <i>Pro Tanto</i> privileged credence to science. Conceptualize pre-modern sources through contemporary science.
Epistemological Dimensions	Torah with science.	Torah and science.	Torah + science = Jewish bioethics	Torah through scientific progress
Axiological Dimensions	Traditional-conservative.	Traditional-progressive	Liberal-progressive.	Tradi.-conserv. & progressive

CONCLUSION

At the dialogic junction of religion and science stand competing sources of authority, epistemologies, axiologies, and worldviews. The study of the relationship of religion and science thus invites a multi-disciplinary investigation into the cognitive challenge of assimilating new knowledge within a longstanding religious tradition of theology, law, and ethics. Likewise, moving in the other direction, the encounter of science with religion, especially in bioethics, encourages an evaluation of the ethical application of scientific experimentation and invention rooted in skillful, seasoned wisdom traditions. Religious bioethics helps society attune science to its particularistic religious cultures, as well as mediate both science and religion's posture in our shared human experience.¹ This is true for Judaism, no less than for other religions. Rapidly evolving scientific understandings and biomedical technologies, amidst changing moral judgments in larger society, may perturb religion and science relations, requiring ongoing bioethical reevaluation. For the devout Jew, such reassessments likewise empower personal-life and public-policy decision-making in line with Jewish covenantal commitments.² This dissertation has examined how Judaism's robust textual tradition, creative legal process,

¹ Religion and science relations, in this sense, serve to countervail scientism, the belief that science is the best source of true knowledge and human learning, and the most effective basis for decision making. See Sorell 1991 for a full philosophical analysis of scientism. See Burnett 2017, for a short introduction.

² This statement raises the questions of whether and how religious groups should advocate for public policies conditioned by their religious convictions within a polity that separates church and state per both the religious anti-establishment and free-exercise clauses of the first amendment of the United States Constitution. For a Jewish view, see Broyde 1997b, and 2005c.

historical legal precedents, and religious and ethical instruction, respond to and develop in light of scientific and technological advancement.

The interaction of religion and science is especially prominent at life's beginning, and even more so, when the genesis of life is assisted through laboratory-based, asexual, collaborative reproduction, and scientific technologies that engineer our genetic make-up. The new knowledge of molecular genetics, biochemistry, cell biology, physiology, and bioengineering fundamentally impact upon the way we understand conception, gestation, and fetal development. Our novel, scientific awareness and understanding alters our perception, comprehension, and appreciation of our causal, generative, biological relationships. It also more deeply highlights the essential role of human intentionality in child-rearing, and recasts our sense of personal, and even human, identity. The fragmentation of natural parenthood in ART, the artificial manufacture of human embryos, and the reaffirmed role of social parenthood in human development, thus presents a fruitful study of how advances in science challenge and change the modes and methodologies of Jewish legal and bioethical inquiry. The observational and analytic findings of such a case study, in turn, are arguably extrapolatable, thereby informing a larger, farther-reaching consideration of Jewish religion and science relations, more generally.

To gauge how advances in science change Jewish law and ethics, this dissertation has sought to analyze the epistemological and axiological dimensions of the contemporary Jewish bioethical debate concerning the identification of maternity and

paternity in four current cases of ART: in vitro fertilization, gestational surrogacy, cloning, and mitochondrial replacement therapy, for four Jewish bioethical exemplars: Rabbi J. David Bleich; Rabbi Michael J. Broyde; Rabbi Elliot N. Dorff; and the collaborative writings of Dr. John D. Loike and Rabbi Moshe D. Tendler. These cases of ART were chosen because the first two are older, now more commonplace, with ample Jewish bioethical literature; while the second two are more cutting-edge. As scientific research experimentation, fertility treatments, and medical therapies, the respective cases developed successively and cumulatively, allowing the tracking of Jewish bioethical development in line with scientific and technological advancement. This select group of Jewish bioethicists were chosen because of their prolific scholarship regarding the aforementioned four cases of ART, and halakhic and bioethical methodology, as well as for their contextualizing oeuvre of Jewish-bioethical and medical-halakhic writings.

This study proceeded in two parts. Part I, “Context and Method: Jewish Bioethics, Epistemology, and Moral Axiology,” developed a conceptual scaffolding for the pressing practical Jewish bioethical issues to be interrogated in the discrete analyses of Part II. Part I thus surveyed: the philosophical, historical, and halakhic grounds of parenthood; the history and foundational models of contemporary Jewish bioethics and medical halakhah; the gendered nature of legally oriented Jewish bioethics; introduced this dissertation’s four exemplars of the legally oriented model of Jewish bioethics; and outlined the scope of the larger bioethical consideration of assisted reproductive and genetic ethics within which this dissertation’s bioethical focus fits. Part I also clarified more precisely what is meant by “epistemological and axiological dimensions,” and

contextualized this investigative dialectic by critically reviewing: the process and methodologies of halakhah; schemata of religion and science relations; strategies for contending with conflicts between Torah and science; the interrelationship of ethics and halakhah; and methodological parallels in contemporary bioethics.

In Part II, “Application and Analysis: The Identification of Maternity and Paternity in Four Current Cases of Assisted Reproductive and Genetic Technologies,” for each case of ART, I examined the relevant, biological science and biotechnology in historical context. Jewish bioethical concerns were also located within the larger bioethical discussion. Finally, and more focusedly, this study scrutinized the epistemological and axiological dimensions of the legally oriented bioethical analyses of the four Jewish bioethical exemplars as they considered parental identity in ART, and redefined parenthood in Jewish law and bioethics. This dissertation demonstrated four ways in which advances in science change Jewish law and ethics. One, scientific awareness leads to greater sophistication and nuance of analysis. Two, Jewish bioethicists grapple with religion and science relations, and speak directly to these overarching considerations. Three, the epistemological and axiological influence of religion and science relations correlate with greater openness to new technologies, theoretical conceptualizations, and their practical applications. Four, advances in science change Jewish legal and bioethical analyses and outcomes through (at least) four possible methodological mechanisms – namely, theoretic holism, innovative interpretation, indeterminate gaps, and realist realignment. Jewish bioethics are thus shown to illumine

the intricate interrelationship between religion and science and its impact on Jewish law and ethics.

In this conclusion, I will review in broader strokes the redefinition of parenthood as ART progressed, and the manifest sociology of knowledge and subjective intuitionism at play within the epistemological and axiological dimensions of the contemporary Jewish bioethical debate among this dissertation's four Jewish bioethical exemplars concerning the identification of maternity and paternity in ART. I will also explain in summative greater detail the four methodological ways that advances in science change Jewish law and ethics. Finally, I will close with an assessment of this dissertation's importance and implication, as well as recommendations for further study.

The Redefinition of Parenthood in the Assisted Reproductive and Genetic Technologies

Before the advent of ART, there were two primary Jewish paradigms of parenthood: natural and social. Within natural parenthood, paternity and maternity are respectively defined by a man (i.e., the father) whose seed inseminated a woman through sexual intercourse (i.e., the mother), who in turn conceived, gestated, and gave birth to a child. In other words, natural procreation begets natural parenthood, and every child, therefore, has but one natural father and one natural mother. Social parenthood speaks to who raises the child to independence. With the rise of ART, the complexities of collaborative reproduction have challenged viewing parenthood solely through the lens of natural and social parenthood. Collaborative reproduction involves many participating actors and agents, thus fragmenting the procreative process. Furthermore, the new

scientific knowledge that helped develop the biotechnologies of ART has changed the way we understand the partible process of procreation, and endowed us with new theory-laden language we now use to describe procreation's dissevered parts. Thus, new scientific knowledge, joined with unanticipated biotechnological capability, coming together in an increasingly complex, collaborative reproductive process, all challenge earlier conceptions of paternity and maternity, forcing redefinitions of parenthood.

Just as there are monist and pluralist accounts of maternity and paternity, so too for definitions of parenthood. In other words, have advances in scientific understanding and technological capability forced a global, fundamental redefinition of paternity, maternity, and parenthood? Must one monist definition fit all cases? Or, has ART created a pluralist ladder of definitional options, depending on the biological processes and technologies involved, as well as the number of reproductive collaborators? If the clear majority of children born are products of natural procreation, why should the complexities of occasionally used ART redefine parenthood for everyone? A benefit of a definitional ladder and a pluralist standard is that such an account more accurately speaks to situational complexity. A deficit of promoting a variety of case-specific definitions of parenthood is that they encumber law, and thereby may be difficult to manage or monitor. Since parental-child relations are also an important constituent of personal identity, having variable definitions of parenthood psychologically and socially complicate one's sense of self and familial ties.³

³ Cf. Haslanger 2009.

When AI was first introduced as a modern fertility treatment, asexual reproduction dislocated a definition of parenthood dependent on natural procreation. This intensified when IVF was next introduced as a fertility treatment, since now both female, in addition to male, participation occurred *ex vivo*, through IVF. Some medical halakhists claimed that fatherhood was fundamentally defined by natural procreation, and thus cases of AI and IVF negated the possibility of legal fatherhood. However, most affirmed the contributor of male seed as the father, whether he was the husband or not. Judgments of whether adultery is transgressed through AI or IVF are secondary to the identification of paternity. While Hebrew does not linguistically distinguish between the pre-modern notion of generative “male seed” and the modern genetic conception of “sperm,” calling both “*zer’a*,” Jewish bioethicists writing in English adopted the theory-laden language of “sperm donor,” rather than “inseminator” or “seed contributor.” “Sperm” now points to cellular spermatozoa, and the genetic information they carry.

While IVF, unlike AI, dislocates motherhood from natural procreation because of *ex vivo* conception, subsequent *in vivo* gestation and parturition re-naturalizes motherhood, perhaps partially inclining Jewish bioethicists, at least initially, to prefer natural processes, such as gestation and parturition, as maternal determinants, which logically would also be more easily supported by pre-modern rabbinic sources. Here too, Jewish bioethicists writing in English utilize the nomenclature not only of natural reproduction, such as gestation and parturition, but also of modern science, speaking of “ovum contribution,” “genetic mothers,” “genetic fathers,” and “biological fathers.” The very act of reading ancient sources through the lens of modern science, and writing in

such terms, constitutes an act of innovative interpretation. This is prevalent in the writings of all this dissertation's exemplars.

Gestational surrogacy and ovum donation further fragmented the procreative process and increased the number of procreative collaborators. While each pregnancy required a unique sperm donor, and thus father, now more than one woman could be biologically involved in bringing a child to life. Those who embraced a monist standard for maternity needed to decide which female reproductive collaborator makes the best claim for unique motherhood: the ovum donor/genetic contributor or the gestational carrier/parturitional actor? Parenthood is still being accounted for causally, but Bleich argued early-on for the possibility of a pluralist-causal account of maternity, whether out of legal doubt or acknowledged complexity. In the ensuing Jewish bioethical and halakhic debate, classical rabbinic sources were marshalled to argue for all the different possibilities, often using the theory-laden language of modern science: ovum/genetic donor; gestational mother; birth mother; no mother; multiple mothers. Tandler who earlier embraced monist conceptions of parenthood, likewise, in partnership with Loike, came to consider pluralist accounts considering the emerging field of epigenetics, which gave new appreciation to the genetically influential role that gestation plays. As the new knowledge of genetics proliferated among halakhists, a preference for genetic-causal accounts of parenthood, especially maternity, increased in Jewish bioethical writings and medical halakhic responsa and articles. This is arguably due to the epistemic privileging of scientific knowledge, and the realist, theological belief that both science and Torah originate in, and thereby necessarily reflect, a single divine truth.

Orthodox Jewish bioethicists and medical halakhists only considered causal biological accounts of paternity and maternity, finding possible precedents for modern scientific scenarios in pre-modern, rabbinic exegesis and talmudic legal discussions. Dorff, a Conservative Jewish bioethicist expressed his skepticism regarding the methodological propriety of what he considered were farfetched legal analogies and precedents. His assessment recognized indeterminate gaps within Jewish law born of new knowledge and scientific progress. He argued that such indeterminate gaps require adjudication through novel, intentionally creative, “stretchy,” interpretive readings of both legal and narrative rabbinic-textual traditions, guided by Jewish metaethics. Brody argued that innovative interpretation is native to the Jewish legal process and doesn’t require intentional, pre-conceived, interpretive-stretchiness. The late Israeli posek, Rabbi Shlomo Zalman Auerbach, likewise opined that there may be fundamental legal doubts born of unprecedented technological achievements and new knowledge which cannot be easily accommodated within a halakhic tradition that could not have envisioned or anticipated these scientific developments. In this instance, his approach to fundamental legal doubt required stringent accommodation of a pluralist account of possible parental determinations, rather than adjudication by creative interpretation and halakhic ruling.⁴ Tandler, along with Loike, moved from an avowedly monist standard to a pluralist standard in deference to Auerbach’s assessment and advances in scientific knowledge.

⁴ See Avraham 1993, vol. 4., *Evan Ha'Ezer* 5:2: 186; 2004, 17; and Steinberg 1997, 5. It should also be noted that Auerbach disapproved of such collaborative reproduction, deeming it contrary to Torah values, see Mashiach 2013, 106-8.

When cloning technologies advanced ART to new frontiers, they altered the natural, genetic processes preserved *ex vivo* in the earlier ARTs of AI and IVF, further fragmenting the procreative process. Until the advent of an artificial incubator, there still needs to be a maternal biological process of human gestation and parturition, thus maintaining these procreative stages as a baseline maternal standard. However, genetic accounts of parenthood in the new ART of reproductive cloning and MRT grow more complicated. Now there are questions about how to define fatherhood, absent male gametic, genetic contribution. Fatherhood is either neutralized in such cases, and therefore legally, and possibly, even metaphysically negated, or must now be halakhically redefined as a genetic contributor, rather than a sperm donor or male seed inseminator. Pluralist standards of motherhood, which were previously developed in the consideration of gestational surrogacy and ovum donation, are now extended to plural, genetic donors and ova contributors. In even more extreme cases, such as laboratory engineered, intentionally created, human chimeras, for which there are more than one nDNA contributor of each sex, there may very well be a pluralist standard of paternity, in addition to maternity. Once parenthood is redefined as genetic contribution, rather than gametic contribution, then non-gametic nDNA donation also raises the question of whether fatherhood is male-sex dependent or possibly gender-neutral in such extreme cases of ART. Broyde rejects this possibility as contrary to Torah ethics. Bleich too, preferentially dismisses it, though conceptually entertains its possibility.

When AI and IVF introduced the prospect of non-adulterous sperm donation by a non-husband donor, Dorff began to reconsider the importance of social parenthood,

leading Conservative Judaism's Committee for Jewish Law and Standards to rabbinically endow the social father with greater standing than simply "one who raises another's child." When the Jewish bioethical considerations of cloning, and other futuristic reproductive options, such as synthetic genomes, manufactured gametes, and artificial incubators, recognize that such technologies completely upset standard definitions of biological parenthood, each of this dissertation's bioethical exemplars, either explicitly or implicitly, raise the possibility of redefining parenthood in terms of social agency – at least, in cases akin to a golem – that is, in which there are no biological parents.⁵ Even though this was rejected by all of this dissertation's exemplars, the raising of the question is noteworthy, and further invites the question of whether in the future parenthood may still be halakhically redefined in social terms in such extreme cases, should they ever become common modes of human reproduction.⁶

Table C.1 (next page) presents the changing lexicon of Jewish bioethical definitions of parenthood. Table C.2 (page after next), once again, surveys the evolving views on maternal and paternal identification for this dissertation's four exemplars.

⁵ *Chakham Tzvi* (Ashkenazi 1712, no. 93) raises the possibility that a golem may be Jewish, human, and "parented," by virtue of having been literally and figuratively raised by a righteous sage. See above, Chapter Seven, p. 344 ff.

⁶ Irhsai 2012, 311n87, cites Shifman 1987, 132, and Zohar 1997, 78-82, per his analysis of the first Sephardic Chief Rabbi of Israel Benzion Uziel (1880-1953), as potentially supporting a volitional, labor-based account of halakhic paternity.

Table C.1 A Changing Lexicon: The Redefinition of Parenthood in ART

pre-ART	<p>Parenthood. A human being that sexually generates another.</p> <p>Father. A man who inseminates a woman, who herself carries a child to live-birth.</p> <p>Mother. A woman who conceived, gestates, and delivers a living child.</p>
Post-AI/IVF	<p>Parenthood. A human being that asexually generates another.</p> <p>Father. A man whose seed inseminates a woman.</p> <p>Mother. A woman whose inseminated fertilized ovum develops into a live-birthed child.</p> <p>Or A woman who gestates a fetus and delivers a living child. Possibly neither or both.</p>
Post-Cloning	<p>Parenthood. A human being whose genetic material generates another.</p> <p>Father. A man or person who contributes (somatic) nDNA to an embryo that develops into a live-birthed child. This may be a new global definition or restricted to cases of cloning.</p> <p>Mother. A woman who contributes an ovum with either nDNA or mtDNA to an embryo that develops into a live-birthed child. This may be a new global definition or restricted to cases of cloning.</p> <p>Or a woman who gestates an embryo/ fetus and delivers a living child. Possibly neither or both.</p>
Post-MRT	<p>Parenthood. A human being whose genetic material generates another.</p> <p>Father. A man or person who contributes (somatic) nDNA to an embryo that develops into a live-birthed child. This may be a new global definition or restricted to cases of cloning technologies.</p> <p>Mother. A woman who contributes part of an ovum, either nDNA or mtDNA, to an embryo that develops into a live-birthed child. This may be a new global definition or restricted to cases of MRT.</p> <p>Or a woman who gestates an embryo/fetus and delivers a living child. Possibly neither or both.</p>
Futuristic Reproductive Modalities , such as synthetic DNA, manufactured gametes, artificial incubators.	<p>Parenthood. Father and Mother. Any biologic contribution? Creative agency, such as DNA designer or lab technician? Social parenthood?</p>

Table C.2 The Redefinition of Parenthood in ART Per the Four Exemplars.

	IVF	Gestational Surrogacy and Ovum Donation	Reproductive Cloning and MRT	Account of Parenthood
Rabbi J. David Bleich	Paternity: Monist-Causal: Sperm Donor Maternity: Monist-Causal: Parturition	Paternity: Monist-Causal: Sperm Donor Maternity: Pluralist-Causal: Dual-maternity, principally parturition, but in legal doubt as to adding ovum donor.	Paternity: Pluralist-Causal: Male (?) Genetic Donor(s) Maternity: Pluralist-Causal: Parturitional, ova donors, female genetic donors.	Pre-Modern categories => genetics. Pluralist-causal, possibly non-gendered, entertains, but rejects volitional definition.
Rabbi Michael J. Brojde	Paternity: Monist-Causal. Differentiates <i>Genetic father</i> of sexual and non-sexual procreation <i>Biological father</i> through sexual reproduction. Maternity: Monist-Causal. Parturition when conception legally insignificant. Conception when legally significant.	Paternity: Monist-Causal. Differentiates <i>Genetic father</i> of sexual and non-sexual procreation <i>Biological father</i> through sexual reproduction. Maternity: Monist-Causal. Parturition when conception legally insignificant.	Paternity: Monist-Causal. Male genetic donor. Possibly pluralist. Maternity: Monist-Causal. Female Genetic donor. Though in deference to Bleich and Auerbach, possibly Pluralist-Causal.	Constrains causal fatherhood to males and motherhood to females. Introduces genetic definitions early on.
Rabbi Elliot N. Dorff	Paternity: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father. Pluralist-Causal & Volitional-Labor. Maternity: Monist-Causal Parturitional.	Paternity: Two fathers: <i>Biological father</i> is sperm donor. <i>Social Father</i> is custodial father. Pluralist-Causal & Volitional-Labor. Maternity: Monist-Causal Parturition. Surprising that not Pluralist-Causal & Volitional-Labor, like in AI/IVF-D for paternity.	Paternity: Monist-Causal Genetic Contribution. Maternity: Monist-Causal: Parturition	Committed to traditional bionormative categories, but likely interested in social parenthood. Introduces Genetic definitions early on.
Rabbi Moshe D. Tendler and Dr. John D. Loike	Paternity: Monist-Causal Sperm Donor Maternity: Monist-Causal, gestation/parturition	Paternity: Monist-Causal Sperm Donor Maternity: Begins as Monist-Causal, parturition. Later, Pluralist-Causal with fundamental doubt.	Paternity: Genetic-Causal, possibly Pluralist. Maternity: Pluralist Account: Genetic and Gestational	Redefines parenthood primarily as genetic contribution. Newly interested in social parenthood.

The Sociology of Knowledge, Subjective Intuitionism, and Embodied Experience

Ever since Emile Durkheim, sociologists have shown how each society constructs its own values, norms, and webs of meaning, often including what is perceived as “natural.”⁷ Scientists, as members of larger society, as well as of scientific society, do the same. There is a fundamental sociality to scientific inquiry, which per some philosophers of science, needs to be accounted for epistemologically and axiologically. This sociality affects: the method and manner of scientific investigation and enterprise; the saliency of issues addressed; the respective roles and values of consensus and disagreement; and the impacts of result-based conclusions upon society at large, as well as upon the social life of a particular community and its individual participants (Longino 1990; 2016, 1). Whether working with a realist, consensualist, or constructivist theory of truth, an epistemology recognizing the sociology of knowledge acknowledges that sociality is, at least partly, constitutive of rationality, and affirms that “critical interaction” between scholars is central to the production of knowledge and its justification (ibid., 2-5).⁸ Historical, cultural, sociological, and feminist studies of science raise new questions about the objectivity of science, the nature of truth and rationality, and the roles that meta and discrete values play in knowledge production, its justification, and warranted application (ibid., 17-22).⁹

⁷ See Durkheim 1972; Giddens and Duneier 2016.

⁸ Longino credits John Stuart Mill, Charles Sanders Peirce, Karl Popper, Thomas Kuhn, and their successors in the sociology of science for this view. For a survey of theories of truth, see Kirkham 1995; Lynch 2001.

⁹ Scientists, to one degree or another, recognize this, and that is partly why scientific method insists upon experiments that can be independently reproduced with the same results. This sociological critique of

What is true of science, arguably is even more accurately descriptive of the humanities and divinities, including religious traditions. Rabbi Joseph B. Soloveitchik (1903-1993), the twentieth-century talmudist and theologian who shaped American Jewish Modern Orthodoxy, espoused such an epistemology of cognitive pluralism to articulate a theology of Jewish law (1984, 1986).¹⁰ The social processes involved in the production of Jewish knowledge, more generally, and of Jewish law and ethics, more specifically, are often the subjects of intellectual, cultural, and social Jewish history, as well as of feminist critique.¹¹ Thus, like for science, there is a fundamental sociality to halakhic and Jewish bioethical investigation, which likewise needs to be accounted for epistemologically and axiologically.

For the purposes of this dissertation's conclusion, we need to account for four observations. First, over the past five-decade-long, Jewish-bioethical and medical-halakhic consideration of the identification of paternity and maternity in ART, there has been an identifiable shift toward the incorporation of genetic awareness into halakhic and Jewish-bioethical conceptualization, analysis, and adjudication.¹² Second, for three of this dissertation's four Jewish bioethical

context-independent objectivity need not relativize all human inquiry and knowledge, nor deny universal principles of evidence or rationality, see Longino 2016, 24-35.

¹⁰ See Sacks 1988; and Shatz 2016. The complexity of Soloveitchik's overall philosophical theology requires further analysis and exposition because in addition to cognitive pluralism, his theology also exhibits religiously informed, strong, ontological commitments, while simultaneously espousing a phenomenological focus on the radical individualism of religious experience, see Soloveitchik 1964, 1965, and Zeigler 2012.

¹¹ See Irshai 2010; 2012, 269-75; and Ross 2004.

¹² See Halperin 2011, 278-98. Westreich 2016, 106n30 cites a private conversation with Bleich, in which Bleich asserted that Halperin's assessment is not accurate. However, Sinclair 2003, 107 ff. had proposed a similar observation to Halperin's regarding a shift toward genetics ten years earlier. See Irshai 2012, 266-7,

exemplars, Bleich, Broyde, and Loike-Tendler – all Orthodox – there has been a halakhic convergence of upholding, at least in stringent response to legal uncertainty, a pluralist account of parenthood. This is so even though in their detailed, discrete analyses they each propose different conceptualizations, and even differing definitions of parenthood. Third, said three exemplars, articulate different moral judgments concerning the practical utilization of the different ARTs despite sharing the same textual Torah tradition, being educated, trained, and employed as rabbis and teachers in shared educational and communal institutions, and belonging to a common, Jewish denominational community. Four, the vast majority of legally oriented Jewish bioethicists writing on ART, including those studied in this dissertation, are men, with the consequence that the primary Jewish-bioethical and medical-halakhic consideration of reproductive ethics lacks the insight, influence, and embodied experience of female readers and interpreters.¹³

These observations can be explained by the recognition of the social production, justification, and application of Jewish legal and ethical knowledge. Robust technical debate and convergent, stringent, normative practice, especially regarding communally important matters of Jewishness, lineage, personal status, and identity, speak to a shared tradition of “critical interaction,” intellectually, experientially, and socially. On the one hand, the mitzvah, i.e., affirmative duty, of the study of Torah encourages intellectual pluralism with multiple viewpoints and

who posits that until 2006, her read of “mainstream halakhic discourse” favored the birth mother, which she interprets as advancing the pronatalist interests of Orthodox Jewish society. However, she acknowledges that post-2006, genetic factors may be ascendant in halakhic deliberations.

¹³ Ronit Irshai calls this the “maleness” of Jewish law and commentary (Irshai 2012, 1-21).

opinions. On the other hand, communal cohesion demands normative standards and behaviors, especially regarding matters affecting personal status. Differing moral judgments likewise point to a certain measure of axiological pluralism within a shared religious tradition, as well as admits a role for subjective moral intuition born of societal influence and personal experience. Lastly, legally oriented Jewish bioethics and medical halakhah generated within Jewish Orthodoxy have heretofore been primarily the domain of male readers, interpreters, and decisors, due to the privileging of men's halakhically obligatory Torah study, the gender-differentiated religious culture shaping the institutions and curricula of male and female education, and the male-oriented authority and social structures inhering in the media of traditional Jewish textual scholarship. The sociology of knowledge in its epistemological and axiological dimensions thus acknowledges a process in which social factors help account for both overall coherence, individual differentiation, as well as its gender biases.

For Dorff, this dissertation's sole Conservative Jewish bioethicist, the sociology of Jewish knowledge, its production, justification, and application, also play a pronounced role. Dorff processes his Jewish bioethical adjudications and recommendations through the Rabbinical Assembly's Committee on Jewish Law and Standards to establish denominationally authoritative legitimized options for personal praxis and normative communal standards. While Conservative Judaism acknowledges the authority of individual rabbis to make their own halakhic rulings, "the Committee on Jewish Law and Standards sets halakhic policy for Rabbinical

Assembly rabbis and for the Conservative movement as a whole” (Rabbinical Assembly 2011). Dorff credits the need for communal consensus by way of the Committee on Jewish Law and Standards as the reason for his adherence to a monist-causal definition of maternity, i.e. parturition, despite the increasing fragmentation of parenthood and genetic awareness. While his advocacy for a more significant status within Judaism for social parenthood arguably stems from his own moral intuition, as well as from larger trends within American culture and jurisprudence, once again, he turned to the Committee on Jewish Law and Standards to give his view communal recognition and normative force. Similarly, the sociality of Jewish Conservative halakhic process has likewise, heretofore, prevented the endorsement of Rabbi Elie Kaplan Spitz’s recommendation to adopt intentionality, i.e. social parenthood, as a basis for legal parenthood.¹⁴

Finally, as more Jewish women enter the heretofore male province of the talmudic academy and begin to contribute writings to the halakhic corpus (see above pp. 49-50), female voices will increasingly impact upon Jewish legal and ethical analyses and adjudications, especially regarding gender-sensitive topics such as reproduction. Professor Ronit Irshai questions why medical halakhists primarily focus on parental identification, however important, given the overall moral complexity of collaborative reproduction. She opines that many ethical considerations, especially from a woman’s gender-oriented perspective, are ignored in the medical halakhic and Jewish bioethical analyses. She writes:

¹⁴ See Mackler 1997c, 182; above, p. 305.

What are the psychological and emotional aspects of “dividing” motherhood, and are they not likely to have a bearing on the halakhic determination regarding the offspring’s maternity? What are the halakhic aspects of commerce in a woman’s reproductive organs? What are the likely effects of surrogacy on the family life of the couple employing it and on the surrogate and her partner? Do any of the decisors consider the objectification of women and their transformation into receptacles for almost anything designed to increase fertility and birth, be it sperm from an outside donor or a fertilized egg that is not in any way hers and her partner’s and that will not belong to her after it is born? Doesn’t fertility therapy, under prevailing patriarchal notions, construe the primary role of women to be that of bearing and raising children? Doesn’t it entail excessive control of women’s procreative abilities? ... the decisors’ silence only heightens the sense that if the establishment entrusted with formulating and interpreting the halakhah had not been exclusively male, the picture we see today might have been significantly different. (Irshai 265, 268)

Dr. Michal Raucher (2013), in an unpublished doctoral dissertation, likewise, argues that the raw textual analyses endemic to legally oriented Jewish bioethics ignores the contextual, embodied, reproductive experiences of women, i.e., the anthropology of reproduction. Text may be the hallowed precincts of male religious Jewish culture, but reproduction, especially for women, is experienced, not just studied. She advocates for an ethnographically based Jewish bioethic that takes into account narrative subjectivity and its socio-cultural context.¹⁵ For example, Professor Pamela Laufer-Ukeles (2016) argues that if Jewish law asserts multiple motherhood in cases of collaborative reproduction, then Jewish communal society, family structures, and parenting arrangements, should grant some measure of responsibilities and rights to all those designated as legal parents, in addition to those who voluntarily assume social parenthood. If there is indeed a sociality to

¹⁵ See also Levine 2003; Kahn 2000; Seeman 2010; Lockshin and Winberg 2013.

knowledge production, justification, and application in Jewish law and ethics, expanding the society of learned participants to scholars of both genders will likely impact learning processes and outcomes.

Four Ways Advances in Science Change Jewish Law and Ethics

Greater Sophistication and Nuance of Analysis

The first way in which advances in science change Jewish law and ethics relates to how scientific awareness and understanding influence the development of medical halakhah and Jewish bioethics by demanding greater sophistication and nuance of analysis. It is a well-worn bioethical truism that good information makes for good decisions. The same holds true for halakhah, whether the needed data is theoretical or circumstantial, foundational or contextual, citational or logical. Jewish bioethics and medical halakhah, therefore, not only require expertise in Jewish law and values, but also in scientific knowledge, and its experimental and clinical application. Tendler and Loike emphasize several times the need for halakhists to consult with scientists and physicians.¹⁶ Scientific knowledge must be sufficiently understood to ground adequately the context and circumstance for competent Jewish legal and ethical consideration and adjudication.¹⁷ Similarly, familiarity with bioethical principles and argumentation, more general philosophical conceptualization, and civil-legal analysis, also impinge upon the way Jewish bioethicists think about the subjects of their study, and influence their

¹⁶ See above, p. 387 ff.

¹⁷ This is a challenge in secular bioethics too, see Bacchetta and Richter 2012.

analyses and conventions of literary expression. Each of this dissertation's exemplars demonstrate that they researched the relevant science, conferred with pertinent bioethical treatments, and at times, even reviewed the applicable family law in America and Israel. Such consultation impacts one's epistemology and axiology, and thereby shapes thinking and influences presentation.

Here the sociology of knowledge, once again, impresses upon an appreciation of the Jewish-bioethical and medical-halakhic process. Poskim unschooled in science will adjudicate questions of medical halakhah in their non-scientifically informed frame of reference. Their scholarship will then in turn be utilized by Jewish bioethicists. Jewish bioethicists count among their important readers medical and scientific professionals, demanding a high level of scientific knowledge, in addition to Jewish textual and intellectual competency. Jewish bioethicists may also count among their important readers other niche audiences, such as scholars or practitioners of secular civil-jurisprudence, adding disciplinary dimensionality to their analysis and presentation. Comparative law, for example, is of special interest to Bleich and Broyde, both of whom teach in law schools, highlighting a social dimension particular to their academic careers.¹⁸

Legally oriented Jewish bioethical writings, especially published in Hebrew, in turn will be utilized by second and third generation medical halakhists, building a more scientifically based analysis. Additionally, the proliferation of legally oriented Jewish

¹⁸ See Sinclair 2003 who also models and demonstrates this. Westreich 2017 argues that the very interaction of civil law and Jewish law regarding family law matters in Israel has substantively changed both.

bioethics and the recent specialization of medical halakhah arguably pressures non-specialized poskim of wider-scoped expertise to consult with medical and scientific resources. Broad access to scientific knowledge, as well as to Jewish-bioethical and medical-halakhic scholarship, through electronic archives and internet media, likewise expands the epistemological and axiological resources of interested scholars and lay readers. This pattern conjoins with a larger trend of the past century of the influence of academic writing conventions on halakhic scholarship, discerned in the formatting of Torah journals, the modern academic layout of constructive argumentation in Torah articles that is substantively different from the literary conventions of traditional talmudic commentary and responsa literature, as well as in the near-ubiquitous use of footnotes or endnotes. The epistemic privileging of scientific knowledge among nearly all strata of Jewish religious society legitimates using such knowledge and the conventions of their academic study and communication.¹⁹

Jewish Religion and Science Relations

The second way in which advances in science change Jewish law and ethics directly concerns Jewish religion and science relations. While most medical halakhists operating within the narrow confines of Jewish legal analysis may seem to ignore larger questions of epistemology and moral axiology, Jewish bioethicists indeed grapple with religion and science relations, and speak to these overarching considerations in their

¹⁹ For the qualification, “nearly all,” see below, “Strategies for Contending with Conflicts between Torah and Science,” p. 107 ff.

respective analyses. Each of this dissertation's Jewish bioethical exemplars deliberate the ways science and religion relate in Judaism, more generally, and specifically in the context of Jewish bioethics and medical halakhah. Bleich philosophically utilized the metaphor of "Science and Art" to describe halakhic method. While he emphasized the primacy of Torah within his epistemology, he also recognized the importance of science to establish credible context and to illuminate circumstance. Although Bleich denies halakhic change, Part II of this dissertation has endeavored to demonstrate how advances in science have impinged upon and influenced his Jewish-bioethical and medical-halakhic analyses and adjudications. While Bleich's way of relating science and religion may perhaps be represented by "Torah with science," Broyde embraces more of a "Torah and science" orientation. Broyde reads and conceptualizes pre-modern, as well as modern, talmudic and halakhic sources through the lens of science, as demonstrated in the chapters of Part II. For both Bleich and Broyde, Jewish bioethics is primarily an exercise in medical halakhah. Dorff, like Bleich, is suspect of anachronistically endowing pre-modern sources with current scientific awareness. However, in Dorff's view, Jewish bioethics requires a synthesis of Torah knowledge with scientific understanding, Jewish values, human philosophical insights, and social-scientific findings, to yield a competent and relevant, modern Jewish bioethic. Tendler and Loike, as both Torah scholars and research scientists, conceive of "Halakhic Bioethics" as an exercise in realistically realigning Torah with the progressive findings of science, all considered in light of Torah values. All the above exemplars espouse a "*Torah u-Madda*," i.e., Torah and science,

worldview, however, each thinker conceives of the philosophical and functional relationships of Torah and science in different ways.

Utilizing Ian Barbour's (see above, pp. 99-100) reductionist four-fold typology of "Conflict, Independence, Dialogue, and Integration," all four exemplars model "dialogue," or in Ted Peters's (see above, pp. 100-1) slightly more expanded phenomenology, "hypothetical consonance," with Tendler and Loike leaning more toward integration. However, as Willem Drees (see above, pp. 101-2) argues, this minimalist categorization too narrowly only tracks new knowledge with cognitive claims. New knowledge also affects religious experience and changes linguistic-cultural traditions by expanding the holistic "web of beliefs" through the newly embedded interaction of new and old ideas, and the adoption of theory-laden terminology. Per the study of this dissertation, the redefinition of parenthood, social changes in reproductive processes and family structures, and larger-scale impacts of biotechnological achievement on social mores demonstrate that religion and science relations extend beyond cognitive claims. Drees additionally argues that religion and science relations do not only focus on the content of new knowledge, but also on new ideas about the nature of knowledge, and new appreciations of our world and universe, as these advances in awareness and perspective also impact upon cognitive claims, religious experience, and lived linguistic-cultural traditions.

Regarding cognitive claims, new scientific knowledge and technological capability may lead one to a critical-realist perspective, which ultimately aspires to

a unity of knowledge of which science and religion are a part.²⁰ All the bioethical exemplars match this description to a great degree. The success of science in medicine and biotechnologies certainly supports this, and endows science with epistemic privilege. At the same time, new ideas about the nature of knowledge, its production, justification, acquisition, and application, may also lead to an embrace of cognitive pluralism, as it did for Rabbi Joseph B. Soloveitchik, allowing Jewish law and ethics to fashion its own religio-cultural reality. Niels Henrik Gregersen (see above, pp. 104-5) proposes a “contextual coherence theory” in which science and theology interface when the consequences of science are interpreted in cultures. In the context of Jewish bioethics, science and Judaism interface when the consequences of science are interpreted in the religio-cultural tradition of Jewish law and ethics. Although Tendler and Loike most strongly seek to realign halakhah with a realist account of science, all the Jewish bioethical exemplars also recognize that in their theological view the religious categories and regulations of Jewish law affect how a scholar reads the collected data, meaningfully correlates data with theory, and ultimately arrives at an interpretation and conclusion. For example, in the Jewish bioethical consideration of parenthood, the fragmentation of human reproduction in ART, along with new scientific understandings of genetics, epigenetics, and biological processes, must first be read, understood, and

²⁰ Critical realism affirms a correspondence theory of truth and reality, but recognizes that since all data are theory-laden, theoretical truth claims must be evaluated by a complex set of (Kuhnian) criteria, such as: agreement with data; coherence; scope; and fertility. Thus, critical realism is confident in its realism, but humbly tentative and critical in its certainty about specific truth claims. See Barbour 1997, 106-10.

assimilated, then correlated with Jewish legal categories, then squared with meta and discrete Jewish values, and finally interpreted toward an operative conclusion.

***Correlating Scientific Understanding and Awareness
with Jewish Legal and Bioethical Outcomes***

The third way in which advances in science change Jewish law and ethics addresses how the epistemological and axiological influences of religion and science relations correlate with greater openness to new technologies, theoretical conceptualizations, and their practical application. In the analyses of the four exemplars' scholarship regarding the four ARTs in Part II, this dissertation has tried to identify patterns pointing to larger axiological orientations, in addition to discrete values, in order to discover such correlations. In general, Bleich disapproves of the various ARTs studied as immoral fetal experimentation, risking unknown health hazards, and as intrinsically immoral per the Jewish values of modesty, and clarity and purity of lineage. Broyde, Bleich's student, considers infertility as disease, and ART therefore as restorative. Medical fertility therapies are thus legitimated by the Jewish values of safeguarding human health and life, as well as honoring the dignity of human beings and their existential personal aspirations. Dorff, like Broyde, considers fertility treatments through ART Jewishly licensed medical interventionism, but, also like Bleich, is warier of the still experimental status of some ARTs, thereby currently recommending against the more advanced ARTs, and requiring for all a high degree of voluntary, informed, and understanding consent. Loike and Tendler, like Broyde and Dorff, value ART as legitimate

medical interventions, though they also worry for unintended harms, albeit to a lesser degree. They license utilization of all the ARTs reviewed, at least in certain circumstances, and concern themselves with the halakhic principles of participant selection, such as whether to use a Jewish or non-Jewish genetic contributor or gestational surrogate. Thus, great nuance attends to the larger patterns discernable for each exemplar.

Here the sociology of knowledge and subjective intuition likely impinge upon individual orientations and determined outcomes. Loike and Tendler actively participate in the scientific and medical communities, for whom ongoing scientific research, ethical human trials, and utilization of available therapies comprise the ambition and purpose of their profession. It is not surprising that they are supportive of ART's utilization. Broyde is a scholar and practitioner of family law, and in his communal rabbinate has supported and counseled couples desirous of overcoming fertility challenges. His philosophy of Jewish law and his analysis of its methodology and evolution depict him as a progressive traditionalist, open to halakhic responsiveness to both scientific and sociological change. Bleich, like his student Broyde, is also a scholar and practitioner of family law, with copious experience in the communal rabbinate, and yet his axiological orientation is much more conservative than that of Broyde, Loike, and Tendler. One would expect Dorff, a traditionally grounded thinker functioning as a rabbi, philosopher, and ethicist within a liberal Jewish denomination, would accordingly be more permissive regarding the utilization of ART. While this assessment holds true to a

great extent, Dorff's expertise in general bioethics and active participation in its society attunes him, like Bleich, to constraining concerns, such as his judgment that cloning technologies, including MRT, are very much still in an experimental stage.

Simple correlations therefore are defied by nuanced thinking and complex orientations confounded by multiple factors. What can be stated in generalized conclusion is that the epistemological and axiological influence of religion and science relations do indeed correlate with greater openness to new technologies, theoretical conceptualizations, and their practical applications. However, it is more precise and accurate to qualify this generalization by opining that those Jewish bioethicists who embrace a more dialogical or integrative relationship of religion and science, and whose axiological commitments are likewise influenced by new knowledge and cultural norms, and for whom meta-ethics guide moral judgment independent of strict halakhic analysis, more easily license utilization of novel, assisted reproductive technologies, and/or are more prone to consider new halakhic maternal and paternal classifications informed by scientific knowledge. Axiological conservatism, however, will limit the progressive application of scientific knowledge and technological capability. Conversely, it logically follows that scientific ignorance combined with either axiological liberalness or conservatism will lead to underdeveloped medical halakhah and Jewish bioethics.

Four Mechanisms of Halakhic Change

Finally, the fourth way that advances in science change Jewish law and ethics is through its impact on bioethical and halakhic analysis and adjudication by way of (at least) four possible methodological mechanisms, derived from the bioethical writings of this dissertation's four exemplars – namely, theoretic holism, innovative interpretation, indeterminate gaps, and realist realignment.

Theoretic Holism

In his reflections on halakhic methodology, Bleich invokes theoretic holism, often associated with the thinking of Willard Van Orman Quine (1908-2000):

In order to appreciate the nature of Jewish law, it is necessary to recognize that it constitutes a self-contained system. It is founded upon a complex set of axiological premises, or grundnorms, that serve as the matrix of its internal coherence. A philosopher of science understands full well that the entire complement of the laws of nature as posited by science cannot be tested simultaneously. Any given hypothesis can be confirmed or disconfirmed only by assuming, at least for the purposes of that investigation, the constancy of all other axioms comprising the corpus of scientific knowledge...Much the same is true of the nature of halakhic discussion and dialectic. (Bleich and Jacobson 2015, vii)

Quineian Holism goes even further. It posits that that theoretic holism is undergirded by semantic holism – that is, the meanings of words are also interdependent.²¹ Furthermore, words themselves, especially scientifically specialized nouns, are theory-laden. Their specific meaning relies on a larger theoretical matrix. For example, body parts, such as reproductive organs, will derive

²¹ See Jackman 2017 for an introduction to “Meaning Holism.”

their meaning from a larger anatomical mapping, and an understanding of the physiological processes which involve them. The words signifying bodily exudates, like sperm, “the generative substance or seed of male animals,” derived from the Latin “*sperma*,” and Greek, “σπέρμα,” both meaning seed, will also change in semantic meaning depending on the contextualizing understandings of physiological processes, or what Thomas Kuhn calls, “the scientific paradigm.” Chaucer’s use of “mannes sperme,” i.e., man’s sperm, in “the Monk’s Tale” of *The Canterbury Tales*, circa 1386, the oldest known literary usage of the word in English, points to the same bodily issuance, but signifies something very different to a twenty-first-century Jewish bioethicist, knowledgeable of molecular genetics, thinking of haploid spermatozoa, carrying a genetic code of ordered deoxyribonucleic acid base-pairs (OED 2017, s.v. sperm).

Scientifically aware and knowledgeable Jewish bioethicists and medical halakhists think about reproductive issues within a Torah and science holistic framework, using theory-laden terminology.²² This dissertation has endeavored to demonstrate that the scientific-theory infused, halakhically oriented, Jewish bioethical analysis of the identification of maternity and paternity in ART has led to an ongoing redefinition of parenthood.²³ The same words signify new meanings with marked legal and ethical consequences. The Jewish bioethical exemplars of

²² See Reifman 2012, 2013 for a similar critique regarding the use of terminology in the halakhic debate surrounding brainstem death. For a comparable phenomenon in the history of biological sciences, see LaPorte 2003.

²³ See, for example, above, p. 354, regarding Bleich’s developing and expanding semantic interpretation of the word “*zer’a* – seed.”

this dissertation often have adopted the new terminology of modern science. However, even when there has been a continuity of terminology, new holistic theoretical frameworks create variance in semantic meaning. Advances in science thus change Jewish law and bioethics in the subtle exercise of theory-laden word choice and meaning signification, which in turn affect understanding, conceptualization, analysis, adjudication, and communication.

Innovative Interpretation

In his theory of halakhic evolution, Broyde opines that Jewish law, like Constitutional Law in the United States, changes less through legislation, and more through innovative interpretation (Broyde 2010, 1-3). Consider the below passage by the former Chief Rabbi of the United Hebrew Congregations of the British Commonwealth, Rabbi Lord Jonathan Sacks, in his weekly Torah series, “Covenant and Conversation,” writing on Leviticus, chapter 12:

Which is decisive: nature or nurture? Medical science has developed in astonishing new directions since Mendel’s nineteenth-century research into genes, Crick and Watson’s 1953 discovery of DNA, and the decoding of the human genome. In February 2001, it was announced that the human genome contains not 100,000 genes, as originally postulated, but only 30,000. This surprising result led scientists to conclude that there are not enough human genes to account for the different ways people behave. We are shaped by nurture as well as nature. The two are not separate, but interact in complex and still not yet fully understood ways (for an excellent survey, see Matt Ridley’s *Nature via Nurture*, 2003). Contemporary science is thus writing a new commentary to the ancient phrase in this week’s *sedra*: “when a woman conceives *and* gives birth.” Conception (genetic endowment) and gestation (the foetus’ pre-birth biological environment) both play a part in the formation of a child. There are two aspects of maternity, not one – genetic and gestational; nature and nurture. Thus does science reveal new depths of meaning in the ancient but ever-renewed word of G-d. (Sacks 2010)

Sacks's Torah commentary demonstrates two things: one, semantic holism, i.e., reading the ancient words of the Torah through the lens of modern science; and two, innovative interpretation, i.e., consciously, deliberately, and innovatively reinterpreting the Torah – what Sack's calls “revealing new depths of meaning.”

Sacks's commentary belongs to the genre of homiletics. However, this dissertation has endeavored to demonstrate that what Sacks does in a sermon, the four Jewish bioethical exemplars do, to one degree or another, in their bioethical and halakhic analyses. Broyde, and Tendler and Loike, reinterpret pre-modern sources this way, with Tendler and Loike at times even claiming that such new meanings were the original intent of pre-modern sources. Bleich and Dorff display conscientiousness of avoiding anachronistic readings, with Bleich protesting such innovative readings, and Dorff supporting self-aware, deliberate, “stretchy,” novel interpretations. All, however, engage in innovative interpretation, which per Broyde, is endemic to halakhic process and Jewish commentary. This is especially true and necessary when confronting unprecedented and unanticipated scenarios born of advances in scientific understanding and biotechnological capability. Without the license and legitimacy of innovative interpretation, whether through creatively identifying legal analogies, relatable precedents, novel readings, and fresh conceptualizations, Jewish law and ethics would not be able to accommodate change amidst continuity.

Indeterminate Gaps

Sometimes changes engendered by advances in scientific understanding and technological capability, such as those of ART, are so dramatic, even revolutionary, that they fundamentally challenge the capacity of a longstanding tradition to accommodate new knowledge and new realities. Such radical changes generate what may be referred to as “indeterminate gaps.” There can exist many types of legal doubt. The law may be clear, but the circumstances ambiguous. The circumstances may be evident, but the law contested. Then, there may be times when the circumstances are so eccentric and unparalleled that no cogent legal precedents may be found, legal analogies remain unpersuasive, and innovative interpretation may feel forced or factitious. In such circumstances, halakhists may look to mine the larger Jewish rabbinic tradition for halakhically non-normative precedents, analogies, and opportunities for interpretation, such as in midrash aggadah and rabbinic narrative. Of the four exemplars, Dorff was the first to posit indeterminate gaps, but believes that intentional, inventive interpretation can stretch the meanings of pre-modern texts to designedly meet unexampled challenges. Bleich seems to deny the existence of indeterminate gaps, and believes that precedents, analogies, and legitimate, credible interpretations can always be found within a theologically pluripotent, divinely revealed tradition. Broyde explicitly believes that innovative interpretation can responsibly be marshalled to meet novel challenges. It is precisely through such legal exercise that Jewish law grows, adapts, and evolves. Tandler and Loike acknowledge the possibility of indeterminate gaps

and are willing to create new Jewish legal opinions that integrate legal indeterminism into a determined legal outcome, such as upholding plural maternity not out of legal doubt or acknowledged complexity, but out of fundamental indeterminism.

Here the relationship between Jewish bioethics and medical halakhah potentially may experience strain, because ethical judgments of unprecedented biomedical conundrums may be arbitrated by metaethical analysis or by application of principlism, whereas legal determinations in halakhah are constrained by more narrow rules of legal analysis and adjudication. This strain may be alleviated depending on how formalistic, positivistic, or contextualist one's legal philosophy and methodology. A legal method that grants ethical review halakhic significance may more easily navigate indeterminate gaps without requiring the stringent accommodation of all possible positions. For example, in the case of indeterminate maternity, plural motherhood may cover all bases, but arguably engenders an unwieldy complex of intimate family relations with individuals with whom the resultant child will have no relationship, as well as endows multiple women with legal motherhood, while situationally depriving such designated mothers of the rights and responsibilities attendant to parenthood.²⁴ A axiologically conservative Jewish bioethicist, like Bleich, might assert that it is indeed for these reasons, and more, that these ARTs should not be utilized for non-Torah-obligated, discretionary procreation. For more progressively oriented Jewish bioethicists who license the

²⁴ See Laufer-Ukeles 2016. Cf. Bayne 2003.

utilization of such technologies, they are arguably obligated to arrive at Jewish legal and ethical determinations of halakhic integrity and moral responsibility that are also realistically manageable.

Realist Realignment

Advances in scientific knowledge and technological capability can also be accommodated by “realist realignment.” Tendler and Loike model this methodological mechanism most consistently. Adopting a theological cosmology and epistemology of critical realism that posits science and religion share in a common divine truth, they assert that halakhah can and should be updated to align with the contemporary findings of science. Tendler largely arrives at this notion through an innovative interpretation of the medieval Tosafist principle of “*nishtaneh ha-teva*,” i.e., “nature has changed.” Affirming that the talmudic sages enjoy no privilege of infallibility when it comes to scientific theory or medicinal therapies, Tendler and Loike embrace “the empirical knowledge approach” toward conflicts between Torah and science (see above, pp. 109-10). Every generation of Torah scholars, including medical halakhists and Jewish bioethicists, have a right, even an obligation, to accord with the consensus of the scientific community, and reread traditional Jewish sources in light of new scientific knowledge. They argue that nature indeed is perceptually and conceptually transformed when our understanding of science changes (see above, pp. 109-10; 259-61; 313-4). All four bioethical exemplars subscribe to scientific progress in biological understanding

and biotechnological capability, and do not insist upon rabbinical inerrancy in scientific and medical matters. While Dorff likely would espouse Tendler and Loike's method here, Bleich and Broyde do not believe that Jewish legal methodology allows for unfettered realist realignment, but would require its justification through the normative rules of Jewish legal process.

Significance of this Dissertation and Implications for Further Study

I believe that the meta-analysis of this multi-disciplinary dissertation is significant for several reasons. First, it represents a study of the historical reception of assisted reproductive and genetic technologies in Jewish bioethics and medical halakhah in the late-twentieth and early-twenty-first centuries. In broader strokes, it also tells of the evolution of legally oriented Jewish bioethics and medical halakhah over the past seven decades. Jewish history is the study of continuities and discontinuities, and the adaptive negotiation of tradition and change. The redefinition of parenthood in the Jewish bioethical consideration of ART presents a fertile study of a specific topic bearing larger historiographic implications.

Second, this dissertation demonstrates the central roles epistemology and axiology play in Jewish bioethics and medical halakhah. It highlights the challenge of assimilating new scientific knowledge into a longstanding religious tradition, the changes incurred, and the methodological mechanisms by which such changes transpire. It also underscores the tensions between: critical realism and cognitive pluralism in the Jewish religious epistemology; formalism and contextualism in

Jewish law and ethics; and the sociology of knowledge and moral intuitionism. It also invites feminist critique of the missing perspective of the embodied experience of women in legally oriented Jewish bioethical deliberations. The responsibility to incorporate the perspective afforded by women's embodied experiences into bioethical and medical halakhic analyses applies to male scholars, and not just female scholars and feminist critics.

Third, this dissertation illumines Jewish ways of relating religion and science and accentuates the importance of the ongoing symbiotic dialogue between them. Finally, and more focusedly, this "Science and Religion" dissertation raises the question of whether greater scientific awareness, changes in scientific understanding, and advances in technological ability challenge the fundamental methodology of Jewish legal and bioethical inquiry. There is an extant literature discussing cases of long known phenomena in which current understandings need to be reconciled with past, conflicting, rabbinical understandings, but there is precious little written in the philosophy of halakhah and Jewish bioethics about anticipating paradigmatic changes in scientific understanding, and novel, emergent biotechnologies. The meta-analysis of this dissertation invites contemplation of the development of a halakhic-bioethical methodology that can better process and respond to such changes. Such a theoretic-holistic method would require the formulation of a theory and theology of knowledge, including the relationship of law and ethics, as a philosophy and methodology of halakhah, all in light of a

philosophically attuned understanding of scientific progress and achievement: a Jewish bioethic promoting halakhic-bioethical methodological holism.

Halakhic-Bioethical Methodological Holism

Halakhic-bioethical methodological holism requires four stages of deliberation: epistemic orientation, axiological clarification, halakhic analysis, and bioethical consideration. Subscribing to a theory and theology of knowledge that affirms Torah and science, revelation and reason, as sources of knowledge, wisdom, and truth, the first stage of “epistemic orientation” directly confronts the mixing of old and new knowledge. Does the bioethical issue or dilemma being examined represent a case of new scientific understanding or unforeseen technological capability? Is the new knowledge tentative, sufficient, or complete? How does it align with previous scientific and traditional Jewish understandings? Is the relationship one of conflict, independence, integration, or dialogue? It would also take into account not only new knowledge, but multiple perspectives and ways of knowing. “Axiological clarification” intends to elucidate Jewish values and metaethics. It presupposes three foundational propositions: one, that there exists an ethic independent of Jewish law; two, that halakhic and Jewish bioethical investigation are related, yet distinct activities; and three, that it is legitimate for one’s clarified values and ethics to help direct both halakhic and bioethical examination.²⁵ Both stages of “epistemic orientation” and “axiological clarification” seek to assess how new

²⁵ See Shatz 2013b for a similar Jewish ethical framework and protocol.

scientific understandings and elucidated values and ethics impact upon the anticipated halakhic analysis and bioethical consideration. “Halakhic analysis” entails a proficient evaluation of the relevant Jewish legal issues, a thorough review of their discussion in rabbinic textual sources, and the formation of a halakhic argument and/or recommendation. “Bioethical consideration” will explore any pertinent extra-halakhic concerns, consult with germane general and Jewish bioethical literature, and likewise arrive at a recommendation complementary to the halakhic conclusions. “Methodological holism” denotes an openness to multiple perspectives and the synergy born of the interaction of all four stages of deliberation. The rigorous development of such a Jewish bioethical methodology would make for a worthy future project, and be of positive contribution to Jewish bioethics and medical halakhah.

New Generations of Jewish Reproductive Bioethics and Medical Halakhah

“One generation goes, another comes, but the earth remains the same forever. ... Only that shall happen which has happened, only that occur which has occurred; there is nothing new beneath the sun!” – so laments the wise king, Qohelet (Ecclesiastes 1:4). This ancient, observation-based lament seems to deny the advancement of knowledge and technological capability. Contrarily, ART demonstrates that in our time, with the coming of new generations, there is indeed something new under the sun. Never before have human beings been capable of generating human life in such earthshaking manners. Yet, the epistemological and axiological reception and assimilation of new knowledge and technology into an abiding religious tradition helps maintain and stabilize a sense of

continuity with the past, while acclimating community and society to a brave new world.²⁶ Novel understandings give rise to new-fashioned questions, demanding education, elucidation, legal determination, and ethical judgment. Redefinitions of parenthood perpetuate familiar familial roles and structures, amid fractured natural processes and ethically fraught invention. Reproductive Jewish bioethics and medical halakhah represent a successful model of open, even if guarded, religion and science interrelations.

Reading the Bible with contemporary scientific awareness, the verse, “Be fruitful and multiply, fill the earth, and master it,” appears to link human reproduction with human progress and development (Genesis 1:28). The scientific enterprise aspires to advance humanity’s cause even to the extent of mastering the very matrix of life itself. Yet, this verse only signals the beginning of a much longer and involved human story, whose larger message is that integral to the process of human advancement is ethical refinement. This dissertation represents a narrative of how advances in science change Jewish law and ethics. However, it also tells of how Jewish law and ethics aspires to guide adherents through scientific change.

²⁶ See Berger 1967, regarding world construction and maintenance, and the roles of plausibility structures.

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