

Rethinking Reprogenetics with Arendt and Heidegger

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Dedication

I dedicate this dissertation to my family, in particular to my grandmother, whose deafness has only ever been a small part of what—and not who—she is.

Abstract

In this project, I argue that we have yet to fully appreciate the *political* significance of assisted reproductive and genetic technologies. To draw out the political questions raised by reprognetics, I turn to the phenomenological methods of Hannah Arendt and Martin Heidegger. Both Arendt and Heidegger's works offer a glimpse at a mode of political thinking that simultaneously resists the urge to master uncertainty at the same time it allows us to take our bearings in response to an ever-changing world. Insofar as the phenomenon of reprognetics daily calls into question many of the conceptual distinctions upon which ethical thinking is based, reprognetics requires that we learn to think without these inherited standards of judgment. Thus, while we need to guard against conservative attempts to stifle scientific progress, we also need to pay greater attention to the ways in which these technologies might alter how human beings think and act together in the public realm.

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Preface: Life in the test tube

In the opening pages of *The Human Condition*, Hannah Arendt makes a quick reference to the “attempt to create life in the test tube,” which she equates with “the desire to mix ‘frozen germ plasm from people of demonstrated ability under the microscope to produce superior human beings’ and to ‘alter [their] size, shape and function’” (HC 2). For Arendt, this attempt, like the 1957 launch of Sputnik, manifests an escapist fantasy—the realization of a desire to be free from the exigencies of earthly existence. The creation of life in a test tube, Arendt suggests, brings human beings one step closer to “making life also ‘artificial,’ toward cutting the last tie through which even man belongs among the children of nature” (HC 2).

Un-cited in Arendt’s text, the source of her “test tube” quotation is likely a 1957 *New York Times* report on a symposium entitled “The Next Hundred Years” (Plumb 1957).¹ Held at the Waldorf-Astoria in New York City, the meeting brought together prominent nuclear scientists, chemists, biologists and geneticists to reflect on the state of modern science and technology. After questions from television commentators like

¹ While we cannot be certain that Arendt’s quotation comes from this article, we know that she was an avid reader of the *Times* and the overlaps are significant. For instance, the article contains a prediction by Dr. Hermann J. Muller, a preeminent geneticist, that tracks Arendt’s quotation word for word: “Dr. Muller predicted that frozen germ plasm from people ‘of demonstrated ability’ would be mixed under the microscope to produce superior beings” (Plumb 1957, 6). The idea that human beings could “alter [their] size shape and function” is attributed to Dr. John Weir, a psychologist, who made the additional comment that “[i]ntelligence can also be improved” (Plumb 1957, 6). However, these “alterations” are not, in the original article, explicitly linked to genetic technologies; that particular linkage is Arendt’s. Given her knowledge of the Nazi eugenics programs, it is perhaps unsurprising that she would characterize genetic technologies in this manner. Many of the other developments Arendt references in her prologue are also contained in this list. The article also references the idea that man’s lifespan could be significantly extended and that the “need for skilled and unskilled labor” could be “eliminated” (Plumb 1957, 6), predictions repeated in Arendt’s prologue (HC 2).

Edward R. Murrow, John Daly and Chet Huntley, the symposium ended with a series of predictions about what human beings might be able to accomplish in the coming century, all which were prefaced with an important caveat: IF “man himself [can] survive the century without causing catastrophe” (Plumb 1957, 6).

Although many of these predictions centered around innovations in biotechnology, *The Human Condition*, published in 1958, five years after James Watson and Francis Crick modeled the double helix and four years before they would receive their Nobel prizes, gives short shrift to genetics and the biological sciences; it is driven instead by Arendt’s engagement with inventions like Sputnik and the atom bomb.² With the exception of the brief and unacknowledged reference to so-called “test tube babies” in the prologue, Arendt never explicitly reflects on the kinds of assisted reproductive and genetic technologies that have since come to be known under the label “reprogenetics.”

Given that the first child conceived in a test tube (actually a petri dish) would not be born until 1978, three years after Arendt’s death, it is hardly surprising that reprogenetic technologies did not figure largely in her work. Today, however, Louise Joy Brown is turning thirty, and despite the controversy surrounding her birth, in vitro fertilization (IVF) has become a commonplace procedure, with more than three million children having been born as a result of its use (Ornstein 2008). In 2006 alone, close to 500 fertility clinics in the United States helped women give birth to more than 54,000

² Like Martin Heidegger, Arendt sees physics as the paradigmatic science of the modern age, perhaps because is so explicitly connected with space travel and a physical “escape” from the earth.

infants using IVF.³ Moreover, newer technologies of reproductive medicine that employ our ever-increasing knowledge of the human genome, like prenatal testing and preimplantation genetic diagnosis (PGD), have also been developed to allow parents an unprecedented degree of control over the genetic makeup of their offspring. And even more extraordinary achievements, like reproductive cloning and gene therapy, are already in development—prospects of a not-so-distant future.

Despite the fact that Arendt never explicitly reflected on reprogenetic technologies, her work is nonetheless deeply engaged in questioning the desire to free ourselves from the constraints of biology, and modern science and technology form the background against which she theorizes political action. In response to inventions like Sputnik, human space travel, and the atom bomb, Arendt urges her readers to consider the following: “[t]he question is only whether we wish to use our new scientific and technical knowledge in this direction” (HC 3). This is the question I take up in the following pages.

³ Data on IVF cycles must be reported to the CDC, which then publishes its results in a yearly report. Its latest report, just published, gives data for 2006 (see <http://www.cdc.gov/ART/ARTReports.htm>)

Introduction

I. THE MOST UNFAIR COURSES OF HUMAN EVOLUTION

In an early editorial defending genetic engineering, James Watson argues that human beings must have the “courage to make less random the sometimes most unfair courses of human evolution” (1999). “Moving forward,” he says, “will not be for the faint of heart. But if the next century witnesses failure, let it be because our science is not yet up to the job, not because we don’t have [this] courage” (Watson 1999).

It is difficult to find fault with Watson’s desire to make fairer the “courses of human evolution.” Indeed, this yearning to improve the human condition has been at the heart of the astonishing scientific and medical advancements of the nineteenth and twentieth centuries. Surrounded by the oft-touted miracles of modern medicine, it is hard to imagine that little more than a century has passed since blood letting was an accepted medical practice. Given how far we have progressed, Watson’s faith in modern science is hardly surprising. Nor is his skepticism toward government regulation and control without merit.⁴ In the ten years since his editorial was published we have witnessed astonishingly blatant examples of political interference with the freedom of scientific inquiry. From stem cells to climate change, there is extensive documentation of government interference in the conduct and dissemination of

⁴ Watson bases his skepticism toward regulation, either by the government or by the scientific community, on the response to discovery of recombinant DNA in 1973. Because recombinant DNA involves the rearrangement and/or splicing of DNA sequences (sometimes from different organisms) scientists were extremely concerned about its potential risks and called for a self-imposed moratorium on recombinant DNA research. This moratorium, Watson believes, led to an undue delay in the advancement of genetic research. It is for this reason, he says, that scientists should “never postpone experiments that have clearly defined future benefits for fear of dangers that can’t be quantified” (Watson 1999).

scientific research (Maassarani 2007, Waxman 2003). In 2006, over ten thousand scientists signed a statement charging the Bush administration with systematically misrepresenting scientific data for political gain (Amos 2006). In the context of genetic research, there have even been calls to criminalize certain lines of inquiry –i.e. human cloning (Kass 2001). Given the degree of political interference with scientific research, it is understandable that Watson would urge his fellow scientists not to succumb to what he sees as exaggerated fears about genetics’ potential for misuse.

Watson’s enthusiasm for genetic research has not waned in the 10 years since his oft-cited editorial was published; indeed, the ensuing years seem only to confirm both his distrust in politics and his confidence in modern science. Yet, I will show in the coming pages that Watson’s unbridled enthusiasm for and faith in the promise of genetic research fails to appreciate the complex political, legal and ethical difficulties posed by the confluence of genetic and assisted reproductive technologies. These technologies, which have come to be known under the rubric of “reprogenetics,” have the potential to drastically alter our understandings of human capabilities and relationships; in the words of one scholar, they have given rise to “a fundamental rethinking of the identity of the human self and its place in larger natural, social and political orders” (Jasanoff 2005, 7). In this dissertation, I argue the following: while we need to guard against conservative attempts to stifle scientific progress, we also need to pay greater attention to the specifically political challenges posed by reprogenetics—challenges that go to the heart of how we speak and act together in the public realm. These matters are political because, as Arendt puts it, “wherever the relevance of speech is at stake, matters become political by definition, for speech is what makes man a

political being” (HC 3). I will lay out these challenges in more detail in the coming chapters, but first, a brief discussion of what constitutes rerogenetics, the major issues at stake in the use of rerogenetic technologies, and my own approach to these questions.

II. WHAT IS REPROGENETICS?

The product of a powerful merger between the fields of reproductive biology and genetics, rerogenetics refers to the emerging field of reproductive genetics, which combines technologies of assisted reproductive medicine with genetics (Silver 1997). Coined by Lee Silver in 1997, the term rerogenetics is a relatively new one; according to his definition it denotes the “use of genetic information and technology to ensure or prevent the inheritance of particular genes in a child” (Silver 2000). Silver’s definition includes a wide range of technologies—both those that are currently feasible, like IVF and PGD, as well as future technologies that might offer near “complete control over [children’s] genetic destiny” (1997, 8).⁵ As such, rerogenetics can involve the gathering of genetic information,⁶ the use of this information in reproductive decision-

⁵ Although many scientists doubt that this kind of “complete control” will ever be possible, Silver highlights the “incredible power that emerges when current technologies in reproductive biology and genetics are brought together” (Silver 1997, 8). Moreover, Silver uses the term, at least in part, to distinguish rerogenetics from the even more controversial language of eugenics. For Silver, individuals and not governments will be the primary users (and proponents) of rerogenetic technologies. For the purposes of his argument, Silver simply takes for granted that “the use of rerogenetic technologies is inevitable” and will take place according to the dicta of the global marketplace (Silver 1997, 11).

⁶ Genetic information can be understood as any information used to define a hereditary component of risk, including, but not limited to, DNA and RNA-based tests; chemical, blood and urine analyses; the results of physical examinations; and family history information.

making, as well as the technologies used to implement these decisions.⁷ Combining the fields of reproductive medicine and genetics, each with their own particular histories and challenges, reprognetics is a complex phenomenon comprised of an intricate network of technologies and practices that have the potential to alter human relations and reconstitute our understandings of biological ‘normality.’

Genetic testing is perhaps the most familiar aspect of reprognetics.⁸ Prospective parents have long sought genetic information in order to determine their risk of passing on hereditary conditions to their children. With the development of amniocentesis as a part of routine prenatal care, it became possible to test individual fetuses for genetic mutations associated with disease.⁹ More recently, preimplantation genetic diagnosis (PGD) has enabled prospective parents to determine which embryos to transfer when

⁷ Because reprognetics is newer term, definitions vary. For instance, some definitions of reprognetics do not include procedures that are performed “on embryos or fetuses that are *inside* a woman’s body” (e.g. Knowles 2007). This restriction is intended to make easier discussions of the regulatory issues involved in reprognetics. According to Knowles’s definition, prenatal testing would not be considered a technique of reprognetics. Knowles justifies her restrictions by arguing that including procedures that are performed on embryos and fetuses inside a woman’s body only confuses matters, because it forces a discussion of the existing laws and ethical maxims regarding research on human subjects (the mothers, in this case) and the various common and statutory laws surrounding research on pregnant women. Because Knowles wants to delineate the distinctive legal issues posed by reprognetics, a more restrictive definition makes sense for her purposes. However, I will employ the slightly broader definition offered by Silver (1997, 2000)—primarily because I want to underscore the commonalities between reprognetics and other manifestations of modern technoscience.

⁸ A genetic test is any test, result of an exam, or information about a test or an exam that produces genetic information.

⁹ For more on the question of how the experience of pregnancy has been transformed by different reproductive technologies, in particular amniocentesis, see Rothman (1993) and Rapp’s (2000) work. Both authors detail the ways in which amniocentesis has become normalized as a part of prenatal care. Rapp’s work (2000), in particular, details the various power dynamics that inhere to every woman’s decision about how to use (or not use) of the information that amniocentesis provides. Haraway (1997b) looks more closely at the practices of visualization enabled by technologies like the sonogram.

using in vitro fertilization (IVF).¹⁰ All of these practices involve the use of genetic information in order to make reproductive decisions.

In addition to genetic testing, rerogenetics also encompasses those technologies parents might use to alter the genetic makeup of their children. As yet, gene therapy has encountered numerous difficulties in research (Savulescu 2002), but in theory, it might allow parents to insert genetic sequences into a fetus or embryo's DNA. These sequences could repair or replace missing genes or might be used to "enhance" a child's genetic makeup. Reproductive cloning, which produces a genetic copy of an existing nuclear genome, also falls under the rubric of rerogenetics, although it is currently banned in many countries from being performed on human embryos.

In the coming pages, I will focus primarily on preimplantation genetic diagnosis or PGD as a site through which to engage the more extensive political questions modern science and technology raise. Like most rerogenetic technologies, PGD blurs the line between science and technology, highlighting the almost immediate implications of academic genetic research in a clinical setting (Longino 1995; Andrews 2001). Made possible, in part, by the invention of laboratory techniques that use DNA's own natural replicating abilities to create samples large enough for analysis, PGD is simultaneously tool and technique, biological discovery and technical innovation; it thus offers a prime example of what Donna Haraway has dubbed "technoscience" (Haraway 1997a).

Haraway's fusion between the terms technology and science metonymically invokes the

¹⁰ In vitro fertilization (IVF) is a technique of reproductive medicine used primarily in cases of infertility. It denotes the practice by which an egg is joined with a sperm in a laboratory dish rather than in a woman's body.

intersection of molecular genetic research, clinical medicine and the corporate world of biotechnology:

. . . like all the other chimerical, condensed word forms that are cobbled together without-benefit-of-hyphen in the hyperspace of the New World Order, Inc., the word technoscience communicates the promiscuously fused and transgenic quality of its domains by a kind of visual onomatopoeia (Haraway 1997a, 4).¹¹

According to PGD's proponents, it "extends the reach of both medicine and science, conjoining them in the effort to increase reproductive choice, by attempting to alleviate the suffering caused by genetic and chromosomal pathology at a stage where the embryo is still 'in glass'" (Franklin and Roberts 2006, xv). An extension of in vitro fertilization, PGD "is a multi-step process involving ovarian stimulation, egg extraction, IVF, cell biopsy, genetic analysis, and embryo transfer" (Baruch et al. 2008, 2). Approximately three days after a woman's eggs have been fertilized, technicians remove a single undifferentiated cell (blastomere) from each embryo, extract the genetic material needed for testing and then use the information gleaned from these tests to determine which embryo to transfer into the mother's uterus. The cells are subject to both chromosomal analysis, in which doctors look for alterations in the structure and number of chromosomes, and DNA analysis, to detect genetic mutations associated with disease.

The political challenges posed by PGD are, in some sense, hardly unique to this particular confluence of biology, reproductive medicine, and technology. As I will show, PGD can be understood as but one facet of the larger phenomenon that is modern

¹¹ This attempt to physically remind her reader of the hybridity inherent in technoscience is typical of Haraway's style; she also uses symbols such as TM and © to evoke connections to ownership and the global economy. This physical reminder is also, oddly enough, typical of Heidegger's style, in that he, too, uses oddly "cobbled together" neologisms in order to call into question the assumptions engrained in language itself.

technoscience. And yet, PGD provides a fruitful site through which to think about the political dilemmas raised by reprogenetic technologies (and modern technoscience more generally). Because PGD is performed before an embryo is transferred into a woman's body, it, unlike other forms of prenatal testing, sidesteps many debates about selective abortion.¹² Moreover, unlike many of the more speculative (and spectacular) technologies mentioned in the paragraphs above, PGD is clinically feasible; discussing it thus requires minimal conjecturing about what might and could happen. And whereas technologies like IVF have become normalized—accepted as common practice in reproductive medicine¹³—PGD still, if ever less frequently, can engender public attention and discussion (e.g. Boseley 2009). For my purposes, then, PGD functions as a kind of “condensed signifier” (Franklin and Roberts 2006, 218)—that is, a site of contestation onto which arguments regarding modern technoscience are projected.

Between 1990 and 2000, the first ten years after PGD's discovery in 1989, over 3,000 cycles of PGD were performed around the world.¹⁴ In the years since, the use of PGD has only increased; in 2004, 2,701 cycles of PGD were performed in Europe alone, resulting in 789 pregnancies and 331 deliveries (Andersen et al. 2008).¹⁵ A recent

¹² As these debates can only further confuse what is already a complex topic, I set them aside in my discussion. Although some would argue that the destruction of an embryo is abortion no matter where it occurs, I suggest that there are other, more important, issues at stake in the use of PGD. See Mahowald (2000, 209-224) and Ard and Zucker (2002) for a discussion of PGD and abortion.

¹³ Despite the controversy surrounding the birth of the first child conceived using IVF, Louise Joy Brown, in vitro fertilization (IVF) has become a commonplace procedure, with more than three million children having been born as a result of its use (Ornstein 2008).

¹⁴ See the report of the 11th annual meeting of the International Working Group on Preimplantation Genetics (2001) for an overview of PGD's prevalence in these early years.

¹⁵ This kind of data is more readily available in Europe, where assisted reproductive technologies are more closely regulated, data is more readily. These figures are gathered from 12 European countries and represent an increase of over 200 cycles from 2003; Spain, the United Kingdom, and France accounted for the majority of PGD treatment cycles (Andersen et al. 2008).

study by the Genetics and Public Policy Center at the Johns Hopkins University reports that approximately 74% of the U.S. fertility clinics it surveyed have provided preimplantation genetic diagnosis to their patients (Baruch et al. 2008).¹⁶

Because of its hefty price tag, as much as \$25,000 depending on how many cycles of IVF are performed (Harmon 2006), PGD is beyond the means of most Americans. In the context of the American health insurance system, PGD raises serious questions about equal access to rerogenetic technologies and the commodification of embryos (Holland 2007; Ard and Zucker 2002). Even in Europe, where health care is often more equitably distributed, patients must sometimes travel to other countries in order to utilize PGD, since its use is prohibited and/or severely restricted in places like Germany, Switzerland and Ireland. These restrictions on PGD also function to limit its availability to wealthier patients who can afford the cost of travel and treatment (Corveleyn et al. 2007). That said, as faster and cheaper DNA sequencing technologies become available, it is expected that more women will make use of this technology; already the Johns Hopkins study indicates that clinics are recognizing a growing demand for PGD and many plan on introducing it to their repertoire (Baruch et al. 2008).¹⁷

Because PGD is banned in some European countries, such as Germany, Switzerland and Ireland, it is estimated that women are crossing borders in order to receive treatments unavailable in their own countries (Corveleyn et al. 2007).

¹⁶ However, because PGD is utilized by patients using IVF, it represents a only a portion of all uses of rerogenetic technologies. See Baruch et al. (2005, 2008) for a discussion of the need for better data re: PGD.

¹⁷ Although only a small sector of women will actually use PGD, Robertson reminds us that “the number of persons directly touched by reproductive technology” increases exponentially when “contraception, abortion and prenatal screening are factored in” (1994, 5). It is for this reason, among others, that Robertson so adamantly defends what he calls “procreative

In theory, PGD can be used to screen for any condition for which a genetic test exists.¹⁸ As the cost of full-genome scans decreases, the range of conditions for which PGD is available will be even more extensive.¹⁹ To date, the scope of PGD has been expanded to include more than a thousand potential genetic tests (Baruch et al. 2008).²⁰ Initially developed to screen for debilitating diseases like Tay-Sachs, the Johns Hopkins study shows that PGD is also utilized to test for genetic mutations associated with late-onset disorders like Huntington's and Alzheimer's disease, as well as for genes that signify a heightened risk for breast and colon cancer (Baruch et al. 2008, Boseley 2009).²¹ PGD can also be used to conceive "savior siblings," whereby parents choose

liberty"—in other words, the ability to make one's own reproductive decisions (Robertson 1994).

¹⁸ See Robertson (2003) for an overview of the various medical and non-medical uses to which PGD can be put. As Robertson notes, only a few of the non-medical uses that often concern bioethicists are currently feasible.

¹⁹ The decreasing cost of genome sequencing has, for the first time, made full-genome scans available to the general public and given rise to what has come to be known as personal genomics. For \$399 (a steal, considering just three months ago the same scan cost almost a thousand dollars), companies like 23andme offer individuals the chance to have their genome analyzed for common genetic mutations; the results are displayed via website that allows users to effectively "google" their genes (Pollack 2008; Harmon 2008). For \$350,000, companies like Knome (pronounced "know me") offer complete genome sequencing, decoding the entire sequence of base pairs that make up an individual's genome (Harmon 2008). The increasing availability (and affordability) of genomic scans has the potential to drastically change the way in which genetic information is made available. Genetic counselors, in particular, are worried that direct-to-consumer testing will lead to gross misunderstandings because genetic information will be provided without the kind of interpretive assistance necessary to comprehend it (Harmon 2008).

²⁰ PGD is most helpful for sex-linked disorders, single-gene defects and chromosomal mutations. Preimplantation genetic screening (PGS), a related technique, screens embryos for aneuploidy (an abnormal number of chromosomes), sometimes associated with increased miscarriage rates (Grubb 2007).

²¹ Note that genetic tests have been most successful with in identifying single-gene conditions, which are relatively rare. Most common diseases are multi-factorial and depend on a complex set of interactions between genes and the environment. The test for Huntington's is a singular—albeit important—example because Huntington's exhibits a high degree of penetrance; in other words, everyone who tests positive for the mutation associated with Huntington's will eventually show symptoms. Moreover, it is also possible to predict the age of onset with regard to Huntington's based on how many repeats (extra CAG sequences on the

embryos that could become potential donors (of cord blood, bone marrow, etc.) for existing children (Franklin and Roberts 2006, 35). Employed for non-medical purposes, PGD can also provide a way to select the sex of an embryo or to ensure that a resulting child *will* carry genes for conditions like deafness and achondroplasia, a certain form of dwarfism (Baruch et al. 2008; Sanghavi 2006). Because PGD allows parents to pick and choose among different embryos, it is sometimes associated with the creation of “designer babies”²²

In their ethnographic study of women undergoing PGD in the United Kingdom, Sarah Franklin and Celia Roberts take up the question of designer babies and why women choose to undergo PGD. Ultimately, they argue against the idea that women who use PGD want to design a perfect baby. Instead, they suggest that PGD, like most rerogenetic technologies, should be understood within the context of women’s painful struggles with infertility and, most likely, personal experiences with debilitating genetic conditions. Like any use of IVF, PGD is a procedure that places significant demands on a woman’s body (and pocketbook). Thus despite the myriad uses to which PGD *could* be put, it is currently utilized primarily in cases where there is a known genetic risk parents are trying to avoid or else infertility treatments have been unsuccessful. As Roberts and Franklin’s study indicates:

huntingtin gene) are present; the more CAG repeats, the earlier the disease is expected to manifest itself. However, most genetic tests, like those for Alzheimer’s, breast and colon cancer indicate only a heightened predisposition to disease. In none of these cases, however, can a genetic test completely predict the severity of disease once it manifests. See Harmon (2006) for an account of two families’ experiences using PGD to eliminate a predisposition toward colon cancer and Bosely (2009) for a similar discussion regarding the use of PGD to screen for breast cancer genes.

²² See Franklin and Roberts for a discussion of what it means to connect PGD to the idea of a designed child (2006, 32-39). See also Rothschild (2005) and Wolf, et al (2003).

PGD patients frequently come to the technique with a significant history of reproductive loss and trauma behind them. They have often followed a lengthy and complicated path to its door, and have opted for its demanding regime out of a sense of obligation to avoid imposing harm on their potential offspring, or upon themselves, or both (Franklin and Roberts 2006, 220).

Building upon work by Rayna Rapp (2000) and Barbara Katz Rothman (1993), Franklin and Roberts situate PGD within a long history of reproductive technologies by which human beings have attempted to gain some measure of control over the process of human procreation. As such, they contribute to a larger literature, often by feminist thinkers who look at how assisted reproductive technologies, like PGD, IVF, amniocentesis and sonograms are fundamentally altering the experience of pregnancy in the modern world.²³

However, PGD, like all reprogenetic technologies, has a dual history; it was borne not only out of assisted reproductive medicine, but also out of developments in genetics. As such, it can also be situated in terms of the resurgence of Mendelian genetics in the early part of the twentieth century and the development of molecular genetics following the discovery of DNA's helical structure in 1953. Since James Watson and Francis Crick's discovery, the stature of molecular biology has grown immensely, and scientists have become increasingly adept at DNA manipulation and sequencing. More than five years have passed since the publication of the final draft of the map of the human genome, and full genome scans are already available to the public (Harmon 2007b). More importantly for reprogenetic technologies, more and more genetic sequences have been tied to a wide variety of diseases, and even complex traits and behaviors are

²³ Rapp's (2000) work, in particular, is extremely sensitive in its delineation of the various cultural, religious and economic forces at work in an individual woman's choice to make use of these technologies.

increasingly understood to have a genetic basis (Harmon 2007a). As faster and cheaper sequencing technologies have shifted attention from genetics to genomics—i.e. the study of the genome as a whole rather than individual sequences—pharmacogenomics—i.e. the development of drugs tailored to an individual’s genetic makeup—has emerged as a promising field of research (Henig 2004). While there is still a serious gap between our knowledge of genetic sequences and how they translate into observable differences between human beings (phenotypic differences), the study of genetics, genomics, and pharmacogenomics are billion dollar industries that promise even more spectacular achievements in the years to come.

III. REPROGENETICS AS EUGENICS?

Although these technologies all raise significant ethical, legal and political questions, those posed by rerogenetics are particularly troubling—and complex given the dual history of rerogenetics. Perhaps most significant is the concern that rerogenetic technologies allow for what is essentially a new (albeit more subtle) form of eugenics. Indeed, even those who ultimately argue against conflating rerogenetics and eugenics—as most geneticists and many bioethicists do—admit that “human genetics as a program of research originated with the eugenic idea that the physical, mental, and behavioral qualities of the human race could be improved by suitable management and manipulation of its hereditary essence” (Kevles 1995, vii).²⁴

²⁴ Although it is tempting to equate rerogenetics with eugenics—given that it too, as Watson suggests, is aimed at redirecting the courses of human evolution—many analyses recognize key differences between the two—primarily with regard to the role of the state (or lack thereof) in promoting a specific eugenic agenda and rerogenetic technologies’ embeddedness within a

Coined in 1883 by Francis Galton, a cousin of Charles Darwin, the term eugenics refers most broadly to the idea of human improvement (primarily through selective breeding); Galton originally conceived of eugenics as the “science which deals with all influences that improve the inborn qualities of a race; also with those that develop them to the utmost advantage” (Galton 1904). In the early 20th century, the social program of eugenics combined with the burgeoning science of genetics to provide justification for a host of attempts to direct the future of human evolution. The brutality of these measures, which ranged from immigration restrictions to mandatory sterilization to outright extermination, have endowed eugenics with its current reputation—as a pseudoscientific field of inquiry that cloaks deeply held racial prejudices within the language of science.²⁵

While the term has become irrevocably linked to National Socialism and the death camps of the Holocaust, early proponents of eugenics were equally likely to be politically progressive—social radicals who saw in eugenics a way to tear down traditional sexual mores and improve the plight of the downtrodden.²⁶ Moreover, it was in the United States and the United Kingdom where the science of eugenics found many of its most fervent (and illustrious) advocates—advocates like Margaret Sanger and

market economy (Paul 2007; Kevles 1995; Thom and Jennings 1996; Buchanan et al. 2000). I will discuss this comparison in more detail in the pages to come.

²⁵ See Kevles (1995) and Paul (1995) for a detailed history of eugenics, particularly in the Anglo-American context. Both Paul (1995, 2007) and Kevles (1995) emphasize the fact that earlier eugenic practices cannot be subsumed within a single narrative and they criticize simplistic appropriations of the history of eugenics in the critical discussion of reproductives.

²⁶ In Kevles words, “the fact of the matter was that eugenic enthusiasm was highest among social radicals” including feminists and other progressives (1995, 21). Allen (2001) argues that eugenics “fit perfectly with Progressive ideology. Eugenacists were scientifically trained experts who sought to apply rational principles to solving the problems of antisocial and problematic behavior by seeking out the cause, in this case poor heredity.”

Theodore Roosevelt, among numerous others. Although the so-called racial hygiene policies of the Nazis, employed to justify the systematic murder of millions, represent the vilest outgrowth of eugenics, the United States has its own cruel history. In the early part of the 20th century, over 24 U.S. states passed compulsory sterilization laws, which allowed the government to mandate the sterilization of thousands of citizens deemed “unfit” to reproduce (Kevles 1995, 111).²⁷

Since the end of World War II, the idea of eugenics has been overwhelmingly discredited, precisely because of its association with National Socialism. And yet, some critics argue that reprogenetic technologies, like prenatal testing and PGD, have given rise to a new form of eugenics—one that proceeds not via the methods of a totalitarian state or according to an overarching plan for the species, but through the “backdoor” (Duster 2003).²⁸ For critics, renewed interest in the genetics of race and homosexuality, as well as the current fascination with the genetic bases for complex behaviors — everything from criminality to intelligence to political orientation—evidence an attempt to “legitimize social differences” and “reduce the social to the natural” (Duster 2003,

²⁷ In the United States, compulsory sterilization programs were upheld by the Supreme Court in the case of *Buck v. Bell*; in Justice Oliver Wendell Holmes’s oft-quoted phrase, the court found that “Three generations of imbeciles are enough.” (qtd in Kevles 1995, 111).

²⁸ Originally published in 1990, Duster’s revised work (2003) remains convinced that genetic screening programs and registries—and more recently DNA banks created by law enforcement—are deeply problematic. A longstanding scholar of the relationship between race and science, he argues that “when eugenics reincarnates this time, it will not come through the front door, as with Hitler’s *Lebensborn* project. Instead it will come through the backdoor of screens, treatments, and therapies” (2003, xiv). Duster is obviously but one of many who have explicitly connected reprogenetic technologies to eugenics. According to Rothschild (2006), the connection was of most concern to early commentators on reprogenetics. As these technologies have become normalized, Rothschild suggests, bioethicists have lost this kind of broad societal perspective and reprogenetics has been framed primarily in terms of the discourse of rights and obligations. See also Taussig, Heath and Rapp (2003).

vii).²⁹ The concern is that this move to reduce complex human traits and behaviors to their biological bases could result in other attempts to eliminate certain kinds of traits and behaviors from the human genome. For this reason, critics argue, reprognetics should be understood as intrinsically connected to the same kinds of fears that motivated earlier eugenic practices—fears that are again cloaked in (albeit more advanced) scientific terms (Duster 2003). What is troubling, via this interpretation of reprognetics, is that “the backdoor of eugenics will always be a far more attractive entry point for dealing with age-old fears about human decline, illness, crime and violence” than the overtly hateful policies of the Nazis (Duster 2003, x).

While many commentators strive to differentiate reprognetic technologies from earlier eugenic practices, some, like Nicholas Agar (2004) have attempted to reclaim the language of eugenics. In his work, Agar questions not the idea of human improvement, which he argues is in keeping with the ameliorative aims of liberalism, but the coercive aspect of earlier eugenic practices. While he roundly condemns “*authoritarian eugenics*, the idea that the state should have sole responsibility for determining what counts as a good human life,” Agar argues in favor of a liberal variety which leaves such choices up to individuals (Agar 2004, 15). Drawing on Robertson’s (1994) work defending procreative liberty—the freedom of parents to “exercise control over their

²⁹ Sternberg, Grigorenko, and Kidd (2005) provide a useful overview of the attempts to link race and intelligence using genetics. Given James Watson’s own disturbing commentary on this linkage (see Harmon 2008), such discussions are crucial. Amy Harmon’s (2007a) work in the *New York Times* special series, entitled “The DNA Age,” gives a user-friendly overview of new worries about prejudice in the context of the search for the biological—and specifically genetic—bases for human behavior. Part of the same series, Wade’s article (2007) discusses of genetics and sexuality lays out the arguments indicating a genetic basis for homosexuality. As I discuss below, I cite these influential popular news sources in order to emphasize how this research is taken up in the public realm, a crucial component of phenomenology.

reproductive capacities” and choose to have children or not to have them—Agar argues that choices about how to improve one’s offspring should, for the most part, be left up to individual parents (2004, 5).³⁰

IV. THE LEGAL STATUS OF REPROGENETICS

In the United States at least, decisions surrounding the use of rerogenetic technologies *have* been left largely to individual parents, who, with the advice and assistance of medical professionals, have determined which technologies to use and in what manner. In the case of PGD, in particular, there is only patchy federal regulation of its use;³¹ while more state laws more explicitly address the procedure, they, too, have failed to develop the kind of comprehensive regulatory environment that characterizes other countries’ encounters with rerogenetics (Jasanoff 2005).³² In general, US

³⁰ This is not to say that Agar sets no limits on the uses to which parents might put rerogenetic technologies. The potential use of these technologies to eliminate genes for homosexuality or choose genes that might make a child’s skin lighter are troubling to him, and he goes to great lengths to differentiate these kinds of uses of rerogenetic technologies from other, permissible attempts at human enhancement (Agar 2004, 155-159). The primary difference, Agar argues is that the latter, permissible, attempts at enhancement do not “prevent us from recognizing and acting against the wrongness of the circumstances that necessitate them. This is not the case when we deflect bigotry by genetically modifying skin color or sexual orientation” (Agar 2004, 157). However, Agar, like many others who defend individual choice as the mantra for dealing with rerogenetic technologies, gives only minimal attention to the ways in which these choices can themselves be constrained by the complex dynamics of the modern technoscientific marketplace.

³¹ For instance, the Fertility Clinic Success Rate and Certification Act of 1992 requires that clinics performing IVF report yearly to the Center for Disease Control regarding their success rates (Baruch et al. 2005)

³² See Bonnicksen (2007) and Palmer (2007) for an overview of regulation of rerogenetic technologies in the United States. Both emphasize that genetic research and assisted reproductive technologies are regulated separately under federal law; thus, technologies like PGD, which combine the two, have been difficult to conceptualize under existing regulatory frameworks—although they are peripherally subject to guidelines set by the National Institutes of Health, the Food and Drug Administration and the Center for Disease Control regarding medical care and human subjects research. The primary rerogenetic technologies that have

regulation of rerogenetics “has been decentralized, incremental, pluralistic, and shared by private and public decision makers”—in keeping with the United States’ general approach to public policy (Bonnicksen 2007, 79).³³

Given the relative dearth of statutory law in the United States with regard to rerogenetics, many authors are bringing an international perspective to questions regarding regulation and highlighting the various mechanisms developed by other nations to deal with rerogenetics and technology assessment more generally (Jasanoff 2005; Knowles 2007; Grubb 2007; Baird 2007). In questioning the regulatory frameworks that encompass PGD, scholars have questioned the kind of oversight these technologies require and how we should understand rerogenetics in relation to existing frameworks of legal inquiry (Palmer 2007; Bonnicksen 2007; Andrews 2001).

The regulatory environment of the United States (or lack thereof) stands in stark contrast to the regulation of rerogenetics in the United Kingdom and much of the rest of Europe, which has a more robust history of public engagement with (and government regulation of) reproductive medicine. In 1982, the UK parliament created a committee charged with investigating the broad societal implications of emerging assisted

occasioned federal oversight are gene therapy protocols and embryonic stem cell research (Bonnicksen 2007; Palmer 2007). See also Andrews (2001). Jasanoff’s (2005) work, too, provides a discussion of the scientific regulatory environment of the United States.

³³ Because PGD, like all rerogenetic technologies, combines the fields of reproductive medicine with molecular genetics, it is also beset by many of the same difficulties that attend attempts to regulate other forms of genetic research (Palmer 2007). For instance, how should we understand the genetic information on which PGD is based; is it more sensitive than other health data (Laurie 2002; Rothstein 1997)? Does it require regulation under laws specific to genetics, or can existing privacy and disability rubrics deal with the challenges genetic information poses (Rothstein 1997; Andrews 2001; Bonnicksen 2007)? With the recent passage of the Genetic Nondiscrimination Act of 2008, the debate over the discriminatory potential of rerogenetic technologies (Geller et al. 1996; Geller 2002) has been renewed and genetic privacy continues to be a major concern in the context of the American health insurance system.

reproductive technologies. Headed by philosopher Mary Warnock, the committee was also given the task of developing a legal and ethical framework whereby these issues might be dealt with in the future.³⁴ The report drafted by this commission, known as the Warnock report, was instrumental in conceptualizing the regulatory framework established by the *Human Fertilization and Embryology Act of 1990*.³⁵ This act set up centralized oversight of embryo research by the Human Fertilization and Embryology Authority (HEFA) and statutory licensing procedures for assisted reproductive technologies. The Warnock report also helped establish the principle (subsequently put into law) that research on human embryos should only be allowed on embryos less than 14 days old, which the report characterized as “pre-embryos.”³⁶

In 2002, HEFA published its licensing procedures for PGD. Unlike the United States, which leaves decisions about which types of conditions warrant PGD up to the consciences of individual parents and fertility clinicians, the UK allows PGD only in cases where there is a “significant risk” of a “serious genetic condition” (Grubb 2007,

³⁴ See Jasanoff (2005), Grubb (2007), Franklin and Roberts (2006), among others, for a more detailed discussion of the Warnock report and its policy implications.

³⁵ See the report by the Committee of Inquiry into Human Fertilisation and Embryology (1984). The Warnock report was followed by a white paper, entitled *Human Fertilization and Embryology: A Framework for Legislation*, which largely followed Warnock Committee’s recommendations and was also crucial to the passage of the 1990; see Grubb (2007) for an overview of the regulation of reprobogenetics in the United Kingdom.

³⁶ The reasoning behind the 14 day cutoff mark is that embryonic cells begin to differentiate after approximately 14 days—no longer simply replicating, but becoming different types of cells. This distinction is obviously controversial, both among scientists and those who believe life begins at conception. The pre-embryo was nonetheless represented by Warnock and the Committee “as being both morally *and* biologically discontinuous with full-blown individuality [and as such] the pre-embryo was categorized as a non-person—as mere matter” (Jasanoff 2005, 154). See Jasanoff (2005) for an extended discussion of pre-embryos.

156). PGD is thus subject to many of the same restrictions HEFA places on selective abortion.³⁷

In comparison to the United Kingdom, Germany has been even more cautious with regard to the use of rerogenetic technologies. Perhaps because of its history with National Socialism, it has chosen to prohibit PGD altogether. In general, its regulation of assisted reproductive technologies and embryo research, as evidenced by its Embryo Protection Law, might be characterized as “remarkable for its intolerance of ambiguity and of biosocial experimentation. The law not only severely restricted research but also criminalized most technologically assisted deviations from the idea of the biologically related nuclear family” (Jasanoff 2005).

V. ETHICAL ISSUES RAISED BY REPROGENETICS

Although there is a decided lack of regulatory attention to rerogenetics in the United States, there is no dearth of commentary on the complex ethical issues rerogenetic technologies raise. Precisely because of the aforementioned concerns about the eugenic potential of rerogenetics, bioethicists have consistently questioned how to ensure that these technologies are used in a manner that respects the dignity of human life.³⁸ At the same time, bioethicists have struggled with how best to recognize the importance of maintaining parental control over reproductive decision-making.³⁹

³⁷ See Scott (2006) for a discussion of the linkage the licensing requirements make between PGD and selective abortion—essentially applying to PGD the same criteria as those used to judge whether a selective abortion is permissible. See also Harris (1998).

³⁸ Of course, as I discuss below, the difficulty with rerogenetics is figuring out what counts as human life and whose is most deserving of respect.

³⁹ According to Robertson (1994) procreative liberty is “a deeply held’ moral and legal value that deserves a strong measure of respect in all reproductive activities” (Robertson 1994, 4).

The term bioethics can be used in two ways: to refer to “the study of all intersections between advances in biological science and technology and the moral dimensions of human life,” as well as to denote the more specific academic discipline (Kass 2002). As an academic discipline, bioethics can be said to have its origins in both “traditional medical ethics” and moral philosophy (Harris 2001).⁴⁰ For Harris, bioethics “must, among other things, be able to help with decisions to be made about managing the care of ‘Mrs. Jones in Ward 5 at 4.10 in the afternoon’” (Harris 2001, 14). However, bioethics is also increasingly involved in the formation of public policy. Thus despite its origins in and heavy reliance on a philosophical mode of analysis, bioethics today is an interdisciplinary, albeit increasingly professionalized field that brings the tools of analytic philosophy, public policy, jurisprudence, theology, and a multitude of other disciplines to bear on the ethical dilemmas raised by clinical medicine and research. Driven largely by a concern for individual rights and choice, bioethics has attempted to develop moral and ethical principles that will serve to guide clinical practices and public policy surrounding rerogenetics (Knowles 2007; Jennings 2000).⁴¹

The issues attending rerogenetics are many. At the most basic level, rerogenetic technologies like PGD are utilized *by parents on behalf of children who have yet to be born*. In this sense rerogenetics is deeply enmeshed in questions about the expectations parents have of their children and the kinds of lives parents envision

⁴⁰ According to Harris’s definition, bioethics “investigates ethical issues arising in the life sciences (medicine, health care, genetics, biology, research, etc.) by applying the principles and methods of moral philosophy to these problems” (Harris 2001, 4). However, as noted above, this is but one version of the definition. See Gaines and Juengst (2008) for a discussion of the various “origin myths” of bioethics.

⁴¹ The liberal individualism upon which bioethics has traditionally been based is at the heart of feminist critiques of and interventions into bioethics (Wolf 1996).

their children leading. Indeed, one worry is that these technologies might significantly alter the parent-child relationship (Sandel 2007; Elshtain 1998; Rothschild 2005).⁴²

Because they involve major life choices made on behalf of others, reprogenetic technologies call into question the ideals of consent and autonomy that lie at the heart of medical ethics. As such, some critics have argued that they represent an irreversible intrusion into the autonomy of another human being (e.g. Habermas 2003, 87).

Characterized in this way, reprogenetic technologies like PGD give rise to a fundamental conflict between the autonomy of parents and children.⁴³ Given that we generally frown upon such intrusions, the challenge with regard to reprobogenetics has been to determine when parents are justified in making such a choice: in other words, “how should our actions be constrained by fairness to people not yet born?” (Glover 2001, 439).⁴⁴

It is difficult to argue with the idea that parents want for their children the best possible lives. Indeed, a maxim of modern parenthood is that parents seek to improve the quality of their children’s lives and should, therefore, be accorded great leeway in terms how to do so.⁴⁵ For this reason, thinkers, like Agar (2004) and Robertson (1994) argue that there is little justification for interfering with the private procreative choices of parents. Instead, Robertson suggests that procreative liberty, which he defines as “the freedom to decide whether or not to have offspring,” should be given “presumptive primacy in all conflicts, with the burden on opponents of any particular technique to

⁴² These expectations are especially important in considering the use of PGD in sex selection (Davis 1997; Bayles 2005; Mahowald 2000; Kumar 1987).

⁴³ See Davis (1997) on the problems with this characterization of the ethical issues at stake in reprobogenetics. More on Davis’s approach below.

⁴⁴ See also Davis (1997, 2001); Buchanan et al. (2000); Murray (2005); Glover (2006).

⁴⁵ See also Robertson (2003), Agar (2004), Glover (2006).

show that harmful effects from its use justify limiting procreative choice” (Robertson 1994, 16).⁴⁶ In other words, Robertson places the onus on those who would limit procreative choice to defend their position—not because he is accepting of any and all reprogenetic technologies, but because he is loathe to interfere in the reproductive decision making of others.⁴⁷

Moreover, as Buchanan, Brock, Daniels and Winkler (2000) argue, one of the primary reasons to make use of reprogenetic technologies is to *prevent* harm to a future child. Perhaps the most basic obligation on the part of a parent, the prevention of harm is the basis of Buchanan and his fellow authors’ defense of reprogenetics.⁴⁸ In their work, Buchanan et al. argue that “the most straightforward and compelling case for developing and using genetic interventions is to fulfill one of the most basic moral obligations human beings have: the obligation to prevent harm” (Buchanan et al. 2000, 18). Although they recognize that there are challenges inherent in the use of these technologies—particularly with regard to the treatment of disability— they are certain that “in general, genetic interventions will be an important means of achieving equal opportunity, at least through its use to cure or prevent disease” (Buchanan et al. 2000, 16). Their work is thus devoted to developing an ethical framework (drawn from

⁴⁶ This does not mean that Robertson (1994) is in favor of any and all uses of reprogenetic technologies, but merely that this liberty should be given primacy

⁴⁷ This insistence that reproductive decisions must be left up to individuals is key to the way that most of the authors discussed in this section see that we can distinguish reprogenetics from eugenics.

⁴⁸ Buchanan et al. are primarily concerned with what they term “direct” genetic interventions, like gene therapy and gene surgery (2000, 6). They do, however, recognize that reprogenetic technologies, which they characterize in terms of “reproductive genetic interventions” raise many similar issues (Buchanan et al. 2000, 7).

Rawls) that takes seriously the obligation to prevent harm and is driven by what they call a “morality of inclusion” (Buchanan et al. 2000).

Both Robertson and the aforementioned authors of *From Chance to Choice: Genetics and Justice* are relatively unperturbed by the objection that reprogenetics might constitute a harm to the unborn child, especially given that technologies like PGD deal with extrauterine embryos that could only become viable after transfer into woman’s uterus (Robertson 1994, 156). We already allow women to abort fetuses, Robertson says; should it matter if that abortion (or selection) is based on a genetic test?⁴⁹ While he admits that some forms of genetic enhancement might not be defensible in terms of procreative liberty (because limiting them would not interfere with a woman’s basic right to have or not to have a child), he generally comes down on the side of the individual in choosing whether to utilize or, importantly, *not* to utilize reprogenetic technologies (Robertson 1994, 156).⁵⁰

Others, however, are less sanguine about the moral status of the embryo. For the most conservative right-to-lifers, who believe that life begins at conception, all reprogenetic technologies that might lead to abortion (prenatal genetic diagnosis) and/or destruction of an embryo (PGD) are problematic. But even those who adamantly defend a woman’s right to an abortion are sometimes troubled by the use of reprogenetic technologies to have a *particular kind of* child. Some disability rights

⁴⁹ Robertson makes a similar argument with regard to the use of reprogenetic technologies like PGD for non-medical (or even enhancement) purposes; he argues that “tutors and camps, training programs, even the administration of growth hormone to add a few inches to height are within parental rearing discretion, why should genetic interventions to enhance normal offspring traits be any less legitimate?” (Robertson 1994, 167).

⁵⁰ He is quick to note that respect for procreative liberty also entails making sure that women are not be pressured into using reprogenetic technologies (Robertson 1994).

advocates argue that there is a difference between aborting *any* child, because one does not want to be pregnant, and aborting *this* child, because of its presumed disability (Asch 2000). Thinkers like Asch remind us that women who make use of PGD deeply desire children (see Franklin and Roberts 2006); they are thus exercising their control over *which* children they will have. As I will discuss in chapter five, the questions posed to reprobogenetics by the disability community are most challenging and have yet to be fully appreciated, let alone answered.⁵¹

While PGD does not involve abortion, it nevertheless gives rise to another ethical dilemma—what Derek Parfit (1984) refers to as the *Non-Identity Problem*. Based on the fact that “each of us grew from a particular pair of cells: an ovum and the spermatozoon by which, out of millions, it was fertilized,” Parfit argues that changing the circumstances of conception results in the birth of a fundamentally different person than might otherwise have been born (1998, 351). Whereas we can talk about whether it would be better for a child to be born with or without a particular disease, it becomes more difficult to conceptualize our obligations to future generations when it is a choice of whether a child should be born at all. In the former case, where it is a matter of improving the life of a singular child, perhaps via the use of gene therapy, it is rational to assume that the child is better off healthy than not. In the latter case, however, it is difficult to argue that non-existence is better than even a highly impaired existence

⁵¹ Disability scholars have been particularly active in voicing concerns about the ways in which the genetic counseling profession constructs disability—often in medical terms as a tragedy to be avoided (Patterson and Saxton 2002; Asch 2000; Biesecker and Hamby 2000). These concerns, however, can only be understood in the context of broader cultural questions about the meaning and significance of disability (Wendell 1996; Silvers 1995) and the discourses—about health, perfectibility, and normality—that undergird parental expectations (Rothschild 2005; Silvers, Wasserman, Mahowald 1998). More on this topic in chapter five.

(McMahan 2001, 446). PGD raises the latter question, because it does not “treat” embryos that test positive for debilitating genetic conditions; instead, it allows parents to move on and pick *another* embryo to transfer. For this reason, Parfit (1984) argues, we cannot conceptualize harm to future generations without taking into account that we are comparing fundamentally different groups of people. While it seems, therefore, that it is impossible to base claims about what we owe future generations on what we owe specific children (Glover 2000, 46), thinkers like Glover nonetheless argue that we can still think in terms of “transpersonal harms”— “that is, where one course of action brings about a world where those who exist are worse off than would have been the different people who would have existed on the alternative course” (Glover 2006, 75). In his work, Glover argues that parents owe their children (even if they are not the same children as might have been born without the use of rerogenetic technologies) “a decent chance at a decent life” (2006, 50), and he insists that there are many different ways of conceptualizing what that might mean.

As I mentioned at the beginning of this section, one way to think about dilemmas posed by rerogenetics is in terms of a conflict between parental autonomy and the autonomy of an ensuing child. In her work, however, Dena Davis (1997, 2001) argues that this particular framework misrepresents the conflict at the heart of rerogenetics. According to Davis, PGD can instead be understood in terms of a conflict between parental autonomy and what Joel Feinberg calls a “child’s right to an open future” (Davis 1997; Buchanan et al. 2000, 170-178). Guided by her ethical commitment to this right, Davis articulates limits on the use PGD; for instance, she

argues against a parent's right to choose *for* a disability because it would narrow the potential futures available to a child (1997; 2001).

Much has been made of the highly-publicized decision in 2002 of a deaf lesbian couple to attempt to ensure the birth of a deaf child by selecting a deaf sperm donor (see Savulescu 2002; Springs 2002).⁵² As more information regarding the genetic bases of deafness has become available, other couples have utilized PGD to increase their chances of having a deaf child. Similar uses of PGD have been recorded by those who have achondroplasia, a form of dwarfism, and have used PGD to ensure that their children will also be little people (Baruch et al. 2008). While it would seem that such a choice is in within the rights of the parents to make, Davis argues that these choices might unduly narrow the field of options open to a child and thus violate its “right to an open future.”⁵³

This choice to have a child with a disability—what Robertson refers to as “intentional diminishment” (1994, 170)⁵⁴ and others have framed in terms of “designer disabilities” (Savulescu 2002)—has proved a “tough case” for bioethicists, especially those who argue that such decisions should be left up to the parents in question. And it is in cases like these many argue that the potential harm to the resulting child must take primacy over the rights of the parents (e.g. Davis 2001).

⁵² I will take up this case in more detail in chapter five.

⁵³ Davis does, however, recognize a key difference between the two cases—primarily based on her assessment of the limitations of deafness and achondroplasia. According to Davis's analysis, deafness constitutes a more significant limitation of a child's future than does small stature, and there could, she suggests, be an argument made in favor of the decision to use PGD to select for achondroplasia (Davis 2001, 66).

⁵⁴ Robertson's example of intentional diminishment, which he refers to as the “Bladerunner scenario” is slightly different from the use of PGD to choose a child with a disability, but he nonetheless connects them.

Another tough case that arises when considering reprogenetics in terms of the prevention of harm is raised by Agar (2004). In his work, Agar presents the following scenario: it can be argued (statistically at least) that a child with lighter skin or, for that matter, a heterosexual child, can be expected to lead an easier life—at least a life less affected by the kinds of racial and homophobic prejudices that might face either a child with darker skin or a gay child (see Agar 2004, 155-159). Is it thus conceivable that parents might make use of reprogenetic technologies in order to avoid having a child with darker skin or one that might grow up to be gay—all in the name of ensuring their child's future well-being. Indeed, even the most liberal parents, not racist or homophobic themselves, might still see such a choice as in the best interests of their child. While it is currently impossible to use PGD for this purpose, and some scientists doubt that we will ever be able to find a purely genetic basis for complex traits like race or homosexuality, this kind of scenario only exacerbates concerns about the eugenic potential of reprogenetics.

It is to prevent against such troubling uses of reprogenetic technologies that bioethicists have concerned themselves with drawing lines between those technologies (and uses thereof) that should be allowed and those that should give us caution. Indeed, this desire to distinguish between permissible and non-permissible (or, put differently ethical and unethical) uses of reprogenetics is at the heart of many interventions into the reprogenetics debate. While Davis differentiates between those that protect a child's right to an open future and those that do not, still others look to the distinction between medical and nonmedical uses of reprogenetic technologies to provide ethical guidance, with this latter distinction closely tied to that between therapeutic and enhancement

technologies (e.g. Habermas 2003). While the feasibility and theoretical coherence of such distinctions are debatable,⁵⁵ the desire is understandable: to find some way of differentiating technologies that should be allowed from those that are ethically and morally problematic.

VI. BEYOND RIGHTS AND OBLIGATIONS

To this endeavor (of distinguishing ethical uses of reprogenetics from those that are not), my work offers minimal assistance. I do not provide an ethical treatise on PGD or prescribe which technologies we should or should not use. To be clear, the discipline of bioethics raises crucial questions with regard to reprogenetics; its insistence on reproductive rights and parental autonomy in making these decisions and its recognition of the potential harms such technologies might pose to the not yet born are necessary correctives to the coercive practices that characterized the eugenics of the early 20th century. However, what I argue in the rest of this chapter, and indeed the rest of this dissertation, is that framing these issues primarily in terms of the individual choices and dilemmas faced by parents—and thereby in the liberal individualist terms of rights and obligations—fails to appreciate the complex background against which such decisions

⁵⁵ Of course, one of the primary difficulties with these distinctions are that they rest on the assumption that we can easily distinguish what counts as a medical disorder from what does not. This distinction also loosely maps onto the difference between positive and negative eugenics—with the term positive denoting attempts to “‘improve’ people who suffer from no medical disorder” (Glover 2001, 436). See Glover (2006) on the difficulties of distinguishing between therapeutic and enhancement technologies and the problems with the medical/nonmedical distinction. Glover’s own approach seeks to put forth values that we should take into account when making such decisions. It should be noted that with reference to earlier forms of eugenics, the positive/negative distinction worked somewhat differently: attempts to encourage the reproduction of those deemed fit to reproduce were considered positive eugenic practices, whereas attempts to prevent certain people or categories of people from reproducing were negative.

are made. These background conditions, I argue, have been fundamentally shaped by the phenomenon of modern technoscience, and situating the practices of rerogenetics within the context of this broader phenomenon is key to recognizing the political significance of these technologies.

One aim of this dissertation, therefore, is to begin to articulate the political significance of rerogenetics. I do so by drawing on Hannah Arendt and Martin Heidegger's conceptualizations of modernity and thereby theorizing rerogenetic technologies as an illuminative manifestation of modern technoscience. Again, I move away from questioning the individual choices rerogenetic technologies offer parents not because they are easy or irrelevant—far from it—but because they take place in a context that we have yet to fully explore.⁵⁶ It is this context, within which rerogenetic practices are situated, or, put differently, the deep background against which such decisions are made, that my dissertation attempts to articulate.

In her work, Joan Rothschild (2005), too, argues that insufficient attention has been given to the context in which the privatized and individualized decisions of parents and medical professionals are situated; she frames this context in terms of the discourse of the “perfect child.” Turning to Foucault, she argues the following: “wedded to science, medicine and the Idea of Progress, this Enlightenment dream of human perfectibility, egalitarian on its surface, had an underside in the grotesque, in the irrational madness to be contained within Foucault's asylum” (Rothschild 2005, 5). Although she recognizes the appeal of the image of the perfect baby, Rothschild

⁵⁶ As the brief discussion in the previous section shows, these technologies confront parents, medical professionals and policy makers with questions that challenge many of our traditional assumptions about autonomy, choice and parenthood.

nonetheless sees medicine and biology as “disciplining technologies” that have transformed parents’ understandable desires for a normal or healthy baby into an almost pathological need for a perfect child.⁵⁷

Rothschild’s turn to Foucault in order to delineate the power exerted by the discourse of the perfect baby makes intuitive sense.⁵⁸ Not only do his works provide a way of thinking about the material power of discourse, but Foucault is also intensely aware of the unique challenges posed by the collusion between the state and the technologies of the body. Indeed, Foucault is credited with both the neologisms “biopower” and “biopolitics.” Both these terms recognize that states took on a new, more pervasive interest in the bodies of their subjects in the 18th century; not only did authorities get to determine who was to live or die, they became increasingly involved in administering and managing life itself (Foucault 1990). As Nicholas Rose argues in his work, “from this moment on, politics would have to address the vital processes of human existence: the size and equality of the population; reproduction and human sexuality; conjugal, parental and familial relations; health and disease; birth and death” (Rose 2007, 53).⁵⁹

⁵⁷ The technologies of medicine and biology are also, Rothschild suggests, masculinist constructs that serve to undermine women’s role in the realm of reproduction (Rothschild 2005, 9). Much of Rothschild’s critique of bioethics in her eighth chapter is premised on its masculinist character and its support of status quo. Because bioethicists tend to view rerogenetics primarily in terms of individual decisions—to be made in private, in a medical setting, Rothschild argues that they ignore the potential “aggregate effect” of these decisions and the way in which they are constrained and coerced by the discourse of human perfectibility (Rothschild 2005, 187).

⁵⁸ Moreover, her insistence that talk of the perfect baby has a necessary underside in that it is premised on a fear of the non-perfect, defective and disabled child, is an important contribution to the discussion of rerogenetics. I will take up this point, albeit in rather different terms in chapter five.

⁵⁹ Rose’s work (2007) also looks to Foucault in order to theorize new developments in biomedicine, but he casts a much wider net than does Rothschild; rerogenetics are but one of

However, Foucault is not the only political theorist to recognize that modernity is intimately connected to the attempt to administer life. Arendt's *Origins of Totalitarianism*, published in 1951, details the complete administration of life within the concentration camps of the Nazis. Although *The Human Condition*, published seven years later, seems far removed from these horrors, it, too, chronicles modernity's unwavering fascination with biological processes and modernity's various attempts to control and manipulate them (HC 282). Although her work lacks the terminology of biopower and biopolitics—and she certainly never reflected directly on reprogenetics—Arendt is nonetheless acutely aware of the ways in which modern technoscience, biology, and human reproduction are deeply entangled. What I argue in the next chapter is that Arendt's works offer her own analysis and critique of modern technoscience, as well as a complex understanding of the ways in which an obsession with the biological is intricately woven into this phenomenon.

Admittedly, Arendt's writings on science and technology receive far less attention than do those of other political theorists. She is primarily known as a theorist of political action—not technoscience.⁶⁰ Like her teacher, Martin Heidegger, however, Arendt was quite attentive to the phenomenon of modern technoscience.⁶¹ While it is easy to dismiss both thinkers' discussions of modern technology as evidence of their

the phenomena to which he devotes his attention, in addition to genomic medicine and neuropharmacology.

⁶⁰ When her writings on technoscience are recognized, they are characterized, perhaps correctly, as “eccentric” (Tijmes 1995).

⁶¹ Heidegger's discussion of modern technology, on the other hand, has generated a great deal of critical interest—both by those who are favorably inclined to his ideas (e.g. Dreyfus 1995; Rojcewicz 2006; Young 2002) and, those who take a far more negative view of his writings on technology—connecting them to Heidegger's involvement with National Socialism because of their evident nostalgia and anti-modernism (e.g. Zimmerman 1990, Rockmore 1995)

anti-modernism, a topic I take up in the next chapter, I complicate this understanding with regard to both thinkers. In opposition to this view that Arendt and Heidegger would, if they had the choice, significantly curtail the advancement of science and technology, I show that theirs are admittedly flawed, but nonetheless nuanced, understandings of the significance of modern technoscience. Arendt's work, in particular, draws her readers' attention to the specifically political dimensions of this phenomenon.

Nonetheless, Arendt's writings require interpretive work in order to tease out this understanding of modern technoscience and are a somewhat problematic resource upon which to draw. Other theoretical traditions, in particular that of critical theory, have a far more robust history of engagement with the tools of modern science and technology. Indeed, Marcuse (1991), not to mention Adorno and Horkheimer (2002), has provided a nuanced description of the complex matrices of power within which modern technoscience operates. Like Arendt, Marcuse was another of Heidegger's students who was also deeply shaken by the systemic nature of Nazi brutality. His work is singularly adept at connecting the kind of instrumental rationality that enabled the Nazi's total administration of human life to industrial capitalism and technological development. Driven in part by the question of how to conceptualize social change in the context of an increasingly conformist mass society, critical theorists like Marcuse have been instrumental in "analyzing how consumerism, advertising, mass culture, and ideology integrate individuals into and stabilize the capitalist system" (Kellner 1991).⁶²

⁶² Although Arendt makes far fewer references to the capitalist character of technological development (and indeed emphatically rejects Marx's emphasis on labor), I will show that she, too, shares these concerns about conformity and its relationship to modern technoscience.

More recently, Andrew Feenberg's work has taken up the debates between Marcuse and Habermas in an attempt to merge the insights of critical theory with the social constructivist turn in science studies. In opposition to what he calls the "romantic" and "essentialist" theory of technology offered by Heidegger, Feenberg argues that we need to "democratize" technology—releasing it from the capitalist system of domination and bringing it under democratic control (Feenberg 1999).⁶³ His work is impressive in scope and sensitive to the "social dimensions of technological systems" (Feenberg 1999, 17). But, unlike the approach I develop here, Feenberg fails to anticipate the complex intertwining of technology and the biological sciences—an intersection that is central to reprobogenetics; instead, his works focus primarily on computers and information technology.

While Feenberg raises few questions about biotechnology, Habermas's later works do recognize the import of this convergence between biology and modern technoscience, and he has become one of the most prominent critics of PGD—even drawing loosely on Arendt's conceptions of natality and plurality to make his case. In his essay, entitled *The Future of Human Nature*, Habermas argues that reprobogenetic technologies like PGD have the potential to "restrict choice of an individual's way of life" and "undermine the essentially symmetrical relations between free and equal human beings" (Habermas 2003, 23). For this reason, he believes that the state needs to

⁶³It is easy to understand how Heidegger comes by his reputation as an essentialist. As we have seen, he makes frequent references to the "essence of man" (AWP 131). Arendt's own supposed "phenomenological essentialism" is often attributed to her Heideggerian roots (Benhabib 2000, 123). And yet, as I will show in the coming chapters, there are different ways of reading both Heidegger and Arendt on these points. In bringing together their writings on thinking and placing them into conversation with Arendt's "creative transformation" of Heidegger's concepts, a different interpretation emerges.

set specific limits on the use of PGD and regain control over rerogenetic technologies. Moving away from the concerns that motivated his earlier engagements with science and technology, regarding capitalist development and its role in the rise of technical rationality, Habermas's later essay deals primarily with the concern that PGD might discourage humans from seeing themselves as autonomous beings capable of political action and ethical decision-making.

Unlike the concerns of many bioethicists, Habermas's worries are explicitly political, and his work represents an important first step in thinking about how rerogenetic technologies might affect our experiences and conceptions of political inter/action. For this reason, I am deeply indebted to his work and draw upon it frequently in the pages to come. However, Habermas's concerns are exacerbated by a deterministic understanding of genetics and skewed by his assumption that a conception of human nature is critical to ethical thinking.

I will devote more attention to Habermas's ideas in the pages to come. For now, it is enough to note that I share his concern that rerogenetic technologies are challenging our conceptions of political capacity. Along with Feenberg (1999) and Habermas (2003), I am also deeply committed to the project of "democratizing" science and technology. But part of what it means to democratize modern technoscience is to open this phenomenon up to questioning borne out of different methodological concerns. Instead of focusing exclusively on questions of autonomy, I seek to add my own concerns—driven by my appropriation of Arendt and Heidegger's works—to the debate surrounding rerogenetics.

VII. THE PHENOMENOLOGICAL TURN

My foray into reprobogenetics is driven by my engagement with the works of two thinkers, Hannah Arendt and Martin Heidegger, both of whom are situated in a fundamentally different political theoretical tradition than the authors I have referenced thus far. Students and theorists of phenomenology, Arendt and Heidegger are driven by Edmund Husserl's admonition to return "To the things themselves!"⁶⁴ Although Heidegger distances himself from what he sees as the "ahistorical perspective" of phenomenology's founder, he, like Arendt, is deeply influenced by Husserl's critique of modern philosophy (Carman 2006, 98). Put simply, Husserl argues that:

"philosophy had for too long failed to take seriously the form and content of appearance or opinion (*doxa*) themselves as phenomena worthy of description in their own right, rather than as so much surface or illusion to be explained away by a fully objective metaphysics or theory of knowledge" (Carman 2006, 99).

Phenomenology, then, is the study of these appearances and opinions—these phenomena—as they reveal themselves to the human senses. In opposition to metaphysics—Heidegger's term for the philosophical tradition—phenomenology not only takes seriously these phenomena, but also refuses to separate the world into appearances and the reality that stands behind them.⁶⁵

⁶⁴ See Carman (2006) and Boedecker (2005) for a discussion of the relationship between Heidegger's thought and that of Husserl. Hinchman and Hinchman (1984) deal most explicitly with the relationship between Arendt and Heidegger's phenomenological methods—arguing, as I will below, that Arendt carves out her own distinctive approach to phenomenology driven by her respect and appreciation for the public realm. They also highlight the importance of Karl Jaspers' *existenz* philosophy on Arendt's thought. Parekh (1981) makes a similar argument in her discussion of Arendt's "new political philosophy," although she gives far less attention to the Heideggerian roots of Arendt's approach.

⁶⁵ Moreover, these convictions have important epistemological consequences, as Hinchman and Hinchman (1984) show: "since [appearances] no longer stand in contrast to any putative

This idea that phenomena open themselves up to human experience and perception is central to a phenomenological understanding of the world, and my own approach is deeply influenced by both Arendt and Heidegger's critique of philosophy. While I admit that a phenomenological approach might not provide the kind of detailed analysis of political power that Foucault so deftly develops, or the trenchant critique of modern capitalism found in Marcuse's writings, or the kind of clear ethical guidance that Habermas seeks to provide, I argue that it has other attributes. Put simply, the focus on phenomena as they reveal themselves to human beings—each of whom looks upon the world from a different perspective—can draw our attention to the political dimensions of reprobation. My argument throughout this dissertation is that Arendt's approach in particular—inspired by her own experiences with totalitarianism and driven by her overwhelming appreciation for human plurality and the freedom of political action—provides a critical lens through which to view debates surrounding reprobation. I will return to this point in the chapters that follow, but for now, a brief overview of my reasoning.

In contrast to the approaches I have engaged thus far, phenomenology is primarily a descriptive and interpretive endeavor—not a prescriptive one. The phenomenologist shies away from offering rules by which to judge a phenomenon—not because she is unconcerned with normative questions, but out of a deeply held conviction that concepts and categories must emerge from phenomena themselves and

'noumenal world,' whatever knowledge we can obtain about them counts as objective in the fullest sense" (1984, 187). I deal explicitly with Arendt's refutation of the appearances/reality distinction in chapter two of this dissertation.

not be imposed on them.⁶⁶ Hinchman and Hinchman describe the activity of phenomenology in the following manner: “the phenomenologist instead must open himself up to the rich totality of experience, describing it without imposing on it a preconceived network of categories . . . [according to the phenomenologist] we simply ‘find ourselves in the mist of the world’ (1984, 189). This emphasis on clearing away what Heidegger terms the “shackles” of preconceptions and habits (OWA 157) is central to phenomenology and, as I will show, political thinking. Indeed, many of Arendt and Heidegger’s works can be read as attempts to deconstruct such concepts so that the phenomenon of modern technoscience can reveal itself to their readers more fully. It is for this reason that I spend so much time in the coming pages calling into question previous ways of thinking and speaking about reproductivity.

Because of phenomenology’s emphasis on “the things themselves,” its refusal to separate reality and appearances, and its conviction that concepts must emerge from phenomena rather than being superimposed upon them, the approach I develop here takes language as central to the activity of interpretation—not incidental to it. One of Heidegger’s key contributions to political theory has been this recognition that we “cannot separate the way we understand things to be—our way of interpreting them—from the language in which we speak about them” (Hinchman and Hinchman 1984, 193). While Arendt’s understanding of language is less radical than Heidegger’s,⁶⁷ she, too, recognizes the ways that language can constrain our thinking—blinding us to certain interpretations and reinforcing others. I take on this question of language with

⁶⁶ I deal with this question more fully in chapters 3 and 4 of this dissertation.

⁶⁷ See chapter two, where I argue that Arendt is too concerned with language as a means of communication to play with language as freely as Heidegger.

regard to rerogenetics more explicitly in the third chapter of my dissertation and argue that the language of genetics is indeed one of the primary hindrances to political theoretical engagements with rerogenetics. I return to the question of language again in my final chapter as I explore the words through which rerogenetics engages questions of disability.

Admittedly, the approach I develop here is not particularly helpful in enabling us to choose between this procedure or that one. In this sense, the analysis put forth here surely fails Harris's test of telling us what to do with "Mrs. Jones in Ward 5 at 4.10 in the afternoon."⁶⁸ And yet, what I argue is that phenomenology's recognition that the world appears differently to each and every human being—a fact that gives rise to what Arendt terms human plurality—nonetheless provides phenomenology with its normative content. Taking my cue from Arendt's discussion of representative thinking, which I will develop more fully in chapter two, I suggest that the philosophical approach adopted by many (although not all) bioethicists fails to fully appreciate this seemingly benign fact: namely that rerogenetic technologies have fundamentally different meanings for different people. So, for instance, one family friend whose child suffers from a rare enzymatic disorder that has left him unable to move since he was eighteen months old (he is now twenty-two) might see great promise in the kinds of rerogenetic technologies that would enable her to have another child—secure in the knowledge that she would not share this disorder. My cousin, on the other hand, who is congenitally deaf, might be skeptical of rerogenetic technologies that could allow a parent to avoid having a deaf child—seeing them as insulting to the life that he has built

⁶⁸ See above (Harris 2001)

not simply in spite of, but sometimes even *because* of his “disability.” While my work here does not address the specifics of these different perspectives and remains at a relatively abstract level, it is driven by these kind of concerns, and I argue that the phenomenological method is a crucial ally in developing a conception of political thinking that takes seriously this kind of “imaginative visiting” (Disch 1994, 158).

It is Arendt’s insistence that political thinking must both respect and engage these other perspectives that differentiates her approach from that of Heidegger. Despite the many similarities between their methods,⁶⁹ Arendt’s work stakes out a phenomenology all her own (see Hinchman and Hinchman 1984 and Parekh 1981), and it is her thinking to which I turn most frequently in the coming pages. As I will show in chapter two, it is Arendt’s unfailing recognition and, more importantly, celebration of *doxa*, or opinion, that sets her apart from her teacher.⁷⁰

Precisely this appreciation for *doxa*—what she refers to as an individual’s “it seems to me” (PP 80)— makes Arendt’s work a vital resource for understanding political questions and dilemmas, because politics itself is born out of the discussion, debate and conflict that emerges from these different opinions. Moreover, Arendt not only appreciates the messiness of political life, she celebrates politics as an activity that: “involves the exercise of some of man’s highest capacities and passions and offers such diverse forms of experience as joy in appearing before one’s peers, happiness in being able to carry through a proposal, pride in being able to leave behind pleasant memories,

⁶⁹ see Hinchman and Hinchman (1984)

⁷⁰ This is not to say that Arendt does not have a deep appreciation for truth—factual truth in particular, which provides, she argues, “the ground on which we stand and the sky that stretches above us” (TP 264). More on this question in chapter two.

a sense of freedom at being able to change things, and anguish at having to choose between painful alternatives” (Parekh 1981, 18).⁷¹

Arendt’s approach thus stands in stark opposition to what Parekh terms “traditional political philosophy” (1981), with its emphasis on Truth and its skepticism toward opinion. All too often, Arendt argues, we have looked at politics from the perspective of the philosopher, whose experience with matters universal and eternal, makes the political world appear messy and inchoate— a realm of “darkness and ignorance” (PP 96). The distinctiveness of Arendt’s approach is her unfailing commitment to theorize politics not from the perspective of a philosopher, but from the vantage point of someone who appreciates political life as worthy of admiration and respect.

Whereas philosophical approaches sometimes tolerate politics, they ultimately see this messiness as a problem—something to be avoided or overcome. We can see this orientation in some of the discussions of rerogenetics by bioethicists. Whether the terms are procreative liberty or a child’s right to an open future, bioethics is fundamentally engaged in trying to develop (albeit highly nuanced) principles that will apply to almost any use of rerogenetics. My argument is not that such principles cannot be useful, but that we have to be prepared to judge in their absence. Moreover, starting from this assumption—that a single ethical framework could ever truly guide us as we confront new and different technologies—obscures the political dimension of debates surrounding rerogenetics. As we saw earlier, it is true that political interference in science is something against which we must always guard, but what

⁷¹ Parekh draws her list from Arendt’s own, both in *Truth and Politics* (TP 263) and elsewhere.

Arendt's works offer is a way to think about the difference between scientific truths, factual truths, and political opinions—without relinquishing the importance of any one of them. What Arendt insists is that the latter are no less deserving of our attention—and indeed no less valid—than their counterparts; they just operate in different realms (TP 263).

However, as I will show in the next chapter, the question of how “we wish to use our new scientific and technical knowledge” (HC 3) belongs squarely in the realm of politics. It cannot be decided by scientific means, but rather “challenges the layman and the humanist to judge what the scientist is doing because it concerns all men” (CS 267). While Arendt recognizes that “this debate must of course be joined by the scientists themselves insofar as they are fellow citizens” (CS 267), her works compel her readers—scientists and non-scientists alike—to “think what we are doing” (HC 5).

And it is to the task of articulating what it might mean to think what we are doing that I now turn, because, ultimately, this is a dissertation on political thinking. While I discuss reproductives and modern technoscience in the pages to come, my contention is not so much that we need to change our science, but that we need to relate to it differently. In opposition to those who read Heidegger and Arendt as technophobic and nostalgic—desirous of a return to the Greek polis—I reinterpret their works to say that we need to forge a different relationship to the tools of modern technoscience. Rather than attempting to rule out certain technologies or activities, an endeavor that appears futile and reeks of conservative interference with the practice of scientific inquiry, I argue that we need to reconceptualize our relationship to our tools and rethink the language through which we engage reproductives.

Thus, above all, my dissertation attempts to articulate the demands of political thinking. In the first chapter, I provide a brief overview of Arendt and Heidegger's conceptions of modern technoscience—in essence setting the stage for a discussion of rerogenetics and showing why it is that modern technoscience “calls out” for thinking. Central to these critiques is their shared conviction that a “will to mastery” lies at the heart of modern science and technology. Turning specifically to Arendt's more political critique, I argue that her works, with their emphasis on human plurality, language, and political inter/action, offer promising resources for those interested in thinking rerogenetics.

To get a better sense of what I envision thinking to entail, I turn in chapter two to the first volume of Arendt's *The Life of the Mind*—highlighting the similarities between her account of thinking and Heidegger's performance of this mental activity in his essay, “Conversations on a Country Path about Thinking.” In this, the most abstract part of this project, I theorize an account of specifically *political* thinking that emphasizes the reality of perpetual motion and change in human life. In keeping with Arendt and Heidegger's critiques of the “will to mastery,” I suggest that the challenge is to think and act with others in the context of this unpredictability—not to control it.

In chapter three, I argue that political thinking can only begin once we release ourselves from the “shackles” of preconceptions and habits that attend discussions of rerogenetics (OWA 157). Chief among these shackles, I argue, is the language of genetics itself. Leaving Arendt aside for the moment, I turn to Heidegger's works on thinking in order to disrupt the sense of genetic determinism that permeates political theoretical debates surrounding rerogenetics. Building on the work of Evelyn Fox

Keller, I ask what might happen if we theorize genetics as the study of *how* we come to *be* rather than the science of *what* we *are*.

In chapter four, I take up yet another preconception that haunts political theoretical debates surrounding rerogenetics: this time it is the peculiar fascination with the distinction between nature and artifice. More specifically, I suggest that concerns about rerogenetic technologies as “unnatural” skew our thinking, pushing us toward philosophical-conceptual questions that encourage a defensive attitude on the part of political theorists. In order to allow the phenomenon of rerogenetics to reveal itself in all its multidimensionality, I advocate for a world orientation that I call “resolved inquisitiveness.” Resolved inquisitiveness is marked by a measure of curiosity concerning what technologies might disclose about ourselves and the world in which we dwell. Instead of focusing on whether rerogenetic technologies blur the line between ‘natural’ and ‘unnatural,’ I argue that we need to question how these technologies might affect our appreciation for human difference—what Arendt celebrates in her discussion of human plurality.

It is to Arendt’s understanding of plurality that I turn in the fifth and final chapter. In it, I develop her account of plurality in order to highlight the specifically political dimensions of rerogenetics. What I propose is that the language of PGD, enmeshed as it is within conceptions of normality and disease should give us pause; regardless of whether a parent actually makes use of PGD, the encounter with genetic testing is deeply implicated in a problematic linguistic context. As such, we need to be more attentive to how we speak about rerogenetics and disability—understanding differences in terms of variation rather than mutation, deformity and defect. Only in

this way, I argue, can we maintain the kind of respect for plurality that is so crucial to political thinking.

The stakes of maintaining this appreciation for human plurality are incredibly high, as Arendt knew quite well from her personal experience with the Nazis. As she vividly illustrates in *The Origins of Totalitarianism*, the inability to conceive of human beings as unique individuals and the refusal to check our own perceptions of reality against those of others gave rise to one of the most brutal policies of extermination in human history. Indeed, it is Arendt's attentiveness to the phenomenon of totalitarianism that makes her such a crucial ally in thinking reproductives. We cannot escape the legacy of eugenics; guarding against the eugenic usages of reproductive technologies must therefore always be foremost in the thoughts of those who theorize them. Yet, Arendt also recognizes that we as human beings are often all too ready to subsume new phenomena under old names: speaking of totalitarianism, she writes "the identification of the new and specific phenomenon with something familiar and rather general . . . indicates unwillingness to admit that anything out of the ordinary has happened" (UP 312). It is in an attempt to recognize what is inherently new in the phenomenon of totalitarianism that she advocates thinking "without a banister" (HA 336)—in other words, confronting new phenomena on their own terms, absent the prejudicial interference of conceptual categories drawn from drastically different historical circumstances. Indeed, the challenge she says of totalitarianism, is that "the very event, the phenomenon, which we try—and must try—to understand has deprived us of our traditional tools of understanding" (UP 310).

What I will show is that the phenomenon of rerogenetics presents us with a similar challenge in that it, too, calls into question many of the moral and ethical guidelines in relation to which we are accustomed to taking our bearings. For this reason, we must be equally hesitant to subsume it under old names and equally willing to confront rerogenetics on its own terms. What I contend is that thinking rerogenetics does not require stable ethical guidelines against which to judge this phenomenon. Arendt repeatedly insists that we are able to think and judge in the absence of our usual “standards of judgment” (UP 316). Despite her acute awareness of the worst that humans can do to each other, she maintains a curious faith in the human faculty of thinking; indeed, the imaginative activities inherent in understanding new phenomena act, she says, as an “inner compass” (UP 323) that can guide us through the most disorienting and confusing times. If only for her recognition that human beings remain capable of keeping our ethical bearings during times when the world seems to call them repeatedly into question, Arendt’s work is a valuable asset in thinking rerogenetics.

Chapter 1: From telescope to PGD: rethinking Arendt and Heidegger on modern technoscience

I. THINKING WHAT WE ARE DOING

In the opening pages of this project, I suggested that Arendt's work in *The Human Condition* is driven by the question of how "we wish to use our new scientific and technical knowledge" (HC 3). To this question, which is "a political question of the highest order," Arendt's work offers little in the way of concrete answers (HC 3). She makes no pretense about her inability (and disinclination) to provide a "solution" to such "preoccupations and perplexities" (HC 5). To her, the very idea of a solution is a chimera—an imaginary and impractical fantasy or hope.⁷² The essence of politics as a collective endeavor demands that the answers to political questions be both tentative and plural—"subject to the agreement of many" (HC 5). In keeping with Arendt's conviction that phenomena appear differently depending on the perspective from which they are engaged,⁷³ she firmly maintains that "[such answers] can never lie in theoretical considerations or the opinion of one person, as though we dealt here with problems for which only one solution is possible" (HC 5). Instead, Arendt suggests, a single person can only ever ask the question.

But ask we must. The refusal to question the stature of scientific and technical knowledge—the refusal to think—is, Arendt argues, one of the defining, and most troubling, features of our time (HC 5; E 49; OT 476; LM 4). In the words of her teacher, Martin Heidegger, Arendt is convinced that what is "*most thought provoking is that we*

⁷² The kind of answers such political questions demand are chimeras in the biological sense as well—strange hybrids created out of the combination and mutation of ideas from many sources.

⁷³ See chapter two.

are still not thinking—not even yet, although the state of the world is becoming constantly more thought-provoking” (WCT 4).⁷⁴ Like Heidegger, she is deeply concerned about the prominence of scientific thinking in modernity and insists on the urgent need to “question” technology (QT 3). What Arendt proposes to do in *The Human Condition*, therefore, is, as she puts it, “very simple: it is nothing more than to think what we are doing” (HC 5).

To think what we are doing. It is a daunting task. And yet, what I show in the coming pages is that it is precisely the task we need to undertake if we are to truly understand the contemporary meaning and significance of reprogenetic technologies. Before we can undertake such an endeavor, however, I argue that we need a better understanding of what political thinking might look like and what its relationship to ethical judgment might be. Taking Arendt and Heidegger’s texts as my starting points, I question the possibility of political thinking and ethical judgment in modernity. My central argument is that even though modern science and technology are fundamentally changing the ways in which we see ourselves as beings capable of political thought and action, we are nonetheless capable taking our bearings within the complex and ever-changing phenomenon that is reprogenetics.

If it is true, as Heidegger said, that “[w]e come to know what it means to think when we ourselves try to think” (WCT 3), the only way to tackle the question of political thinking is to engage in it. My dissertation is both a reflection on what it

⁷⁴In saying that we are not thinking, I do not mean to imply that no one is asking these questions. Certainly, as the plethora of works in science and technology studies and bioethics shows, the status of scientific and technological knowledge is of great interest to academics. As I will show, however, Arendt and Heidegger employ a very particular understanding of thinking that I believe differentiates a critique inspired by their works from many current discussions.

means to think and an (albeit preliminary) exercise in this crucial activity. In other words, I take up the question of what thinking is at the same time I start to think what *we* are doing.⁷⁵

Although Arendt is my primary interlocutor, Heidegger haunts the pages of this project—hovering in the background and making periodic appearances throughout the text.⁷⁶ While he wrote extensively on *The Question Concerning Technology*, I set aside his substantive critique of technology in favor of Arendt’s more explicitly political concerns—concerns that are far more attentive (and responsive) to the particular challenges posed by the confluence of biology and modern technoscience than are Heidegger’s. I do, however, draw extensively on Heidegger’s lesser-known writings on thinking in order to develop my argument. In this limited but crucial role, his texts offer prime examples of both the promise and the limits of thinking.

As a political theorist, I work in a world of texts and textual interpretation; but in turning to the writings of Arendt and Heidegger, my intent is not to show what either might have thought or said about reproductives. Rather than simply applying their ideas

⁷⁵ This is necessarily only a first step, however. To truly engage in the kind of representative thinking Arendt so highly praises would require far more time and space—and a rather different sort of analysis—than is provided here. I provide more details about what representative thinking with regard to reproductives might look like in the conclusion.

⁷⁶ A quick note on the relationship I see between Heidegger and Arendt’s works: Arendt’s indebtedness to Heidegger’s thinking has long been recognized by her interpreters (see Benhabib 2000, Villa 1996, Wolin 2001). Although there is disagreement about the extent to which Arendt draws upon his understanding of “being-in-the-world” in order to develop her own conceptualizations of earth, world, and plurality, I leave aside these questions in the pages to come. I will not specifically address the relationship between Arendt and Heidegger’s concepts not because there is none, or because I read their critiques of modernity as synonymous—they are not. Rather, I gloss over this question because the texts with which I am concerned, Heidegger’s later works, were written, for the most part, after Arendt’s most serious engagement with Heidegger’s thought. Taking my cue from Arendt’s discussion of Heidegger in her address written for his 80th birthday, I read Heidegger as a thinker from whom we can learn how to think, and I engage his method of thinking more often than his substantive critique of modernity.

and concepts, I refashion aspects of their thought to help us think about our own political present. Insofar as I interrogate their concepts and categories, I do so to bring into focus different facets of the phenomenon that is modern technoscience. Instead of adopting Heidegger and Arendt's ideas to criticize inventions about which they could only have dreamt, I seek to use their texts—and their idiosyncratic ways of working through them—to help us think our own political challenges anew.⁷⁷

In an essay reviewing recent books about Arendt's work, Mark Reinhardt writes that Arendt “took as her primary text the most significant and challenging political events of the modern world and her own time” (2003, 248). The struggle for those who write on her is to do the same, to “emulate” rather than “cite” her commitment to thinking (Reinhardt 2003, 248). In what follows, I seek to respond to Reinhardt's challenge by focusing on reprogenetics as a contemporary phenomenon deserving of political attention and by turning thinking itself into that which calls for questioning. As I stated in the introduction, my focus is not on what *should be* done with regard to reprogenetics but on what we *are already doing*. In the same way that Arendt uses inventions like Sputnik as a means of reflecting on larger phenomena, so too, do I invoke PGD as but one manifestation of desires central to modernity.

II. AT THE THRESHOLD OF THE MODERN AGE

⁷⁷ I recognize that this locution sounds odd—accustomed as we are to thinking *about* an object or issue. I borrow the expression “to think x” from Heidegger, who insists that thinking *about* an object sets up a mode of reflection that is flawed from the start because it assumes a fully separate object that is capable of being grasped in its entirety (WCT 21). I will return to Heidegger's understanding of thinking in chapters two and three.

For Arendt, it is Galileo's invention of the telescope—and the subsequent discovery that the earth revolves around the sun—that stands at the threshold of the modern age. In this next section, I will sketch out Arendt's understanding of the telescope and its integral role in shaping what we know as modernity. Key to Arendt's conceptualization is her conviction that modern man is “possessed by a rebellion against human existence as it has been given, a free gift from nowhere (secularly speaking), which he wishes to exchange, as it were, for something he has made himself” (HC 3). Echoing Heidegger, she traces this exchange to Descartes' conception of doubt (Villa 1996, 176; HC 273). Whereas Heidegger understands philosophy or metaphysics as the ultimate grounding of an age (AWP 116), Arendt sees Cartesian doubt as a “philosophic reaction” to a more worldly event (HC 260):

It was not reason but a man-made instrument, the telescope, which actually changed the physical world view; it was not contemplation, observation and speculation which led to the new knowledge, but the active stepping in of *homo faber* (HC 274).

In Arendt's thinking, Galileo's invention embodies two interrelated claims: it signifies the fallibility of our senses and the capability of man-made instruments. Its ultimate consequence is the destruction of our faith in our own ability to assess the world around us. As one of the characters in Bertoldt Brecht's play, *Galileo*, states, “Let me tell you this, you've destroyed my faith in a lot of things, Mr. Galilei” (1970, 130).

In the first place, the telescope offers direct confirmation of Copernicus's hypothesis that the earth revolves around the sun (HC 260). In this sense, the telescope signifies the fallibility of our senses by showing that what was observed with the naked eye (i.e. the revolution of the sun around the earth) was false (HC 275). Thus the

telescope calls into question the trustworthiness of unmediated sensory data. It is this destruction of our faith in sensory perception that Arendt sees as the telescope's most direct consequence.⁷⁸

According to Arendt, humans experience this fallibility of our senses as a “betrayal” (HC 275) and an attitude of distrust seeps into our interactions with other types of data. In this way, the telescope destroys not only our faith in the “eyes of the body,” but also our faith in the “eyes of the mind” (HC 275). Via Arendt's interpretation, Galileo's invention destroys our certainty in pure reason, in addition to our faith in sensory perception, because the very concept of the “eyes of the mind” is “based, albeit implicitly and even when it was used in opposition to the senses, on an ultimate trust in bodily vision” (HC 275).⁷⁹ Indeed, Arendt says that without faith in the relationship between the senses and reality, “none of the traditional metaphors for supersensual truth . . . can any longer carry its meaning” (CH 54).

Eventually this sense of betrayal and distrust permeates the entirety of human experience. In Arendt's terms, humans become “haunted” (CH 55) by a “universal” doubt: “nothing, no thought and no experience, can escape it” (HC 275). Deeper than critical skepticism, universal doubt drives humans to find the one thing that he/she can know for certain—namely him/herself (HC 278). Thus, Arendt reformulates Descartes'

⁷⁸ I should note that this consequence (like that of all actions) is in no way related to Galileo's intention in using the telescope (CS 272). Indeed, like most scientists, Galileo saw himself as heightening man's sensory abilities (HC 260). He saw the telescope as delivering the “secrets of the universe with the *certainty* of sense-perception” (HC 260 italics added). For more on the question of the relationship between the motives for an action and its eventual consequences (and the extent to which actors can be held responsible for these consequences) see (HC 206).

⁷⁹ The concept of the “eyes of the mind” is inherited from Plato and Augustine in their discussions of how we “see” Forms. Especially apparent in Augustine, this concept is more than metaphor: in Augustine, man is endowed by God with an alternate set of sensory organs that enable him to perceive eternal and immutable things (Augustine 238).

maxim to read: “if everything has become doubtful, then doubting at least is certain or real” (HC 279). This extreme sense of doubt culminates in a turn inwards—toward the sole thing of which we can be sure: that which we have created. This turn inwards is not simply one of consciousness, however; it also involves the relocation of certainty to that which man has *physically* produced. Thus, the telescope not only prompts doubt but also offers a solution to this problem in the form of a man-made instrument (HC 282). This instrument provides us with data in which we can once again have confidence.

In this way, the telescope is an essential component of the overarching “reversal” chronicled in *The Human Condition*—that by which action replaces contemplation as the more honored mode of human activity (HC 289).⁸⁰ The telescope, because it, like all other scientific instruments, afforded the opportunity to “*make sure*”(HC 290), thus ushers in a “new age”—one which not only elevates doing, but which “eliminates” contemplation “altogether from the range of meaningful human activities” (HC 305).

⁸⁰ Arendt uses the terminology of action in two distinct—though ultimately related—ways. When discussed in relation to contemplation, action is a broad category that encompasses the entirety of the *vita activa*. When discussed in relation to the two additional modes of human activity that comprise the *vita activa* (i.e. labor and work), action—particularly political action—becomes a subset of the active life. In Arendt’s conceptual framework, labor, in which human beings comport themselves as *animal laborans*, is the activity of self-sustenance. Always cyclical, in that it involves constant birth (construction) and death (destruction), labor has no tangible product other than ongoing biological existence (HC 96). Work, on the other hand, is that activity whereby man creates physical things and is the purview of *homo faber*. In Arendt’s triad, work serves the function of building the world into which each new generation is born; this creation provides (at least relative) stability to the realm of human affairs (HC 95). This stability is necessary because action is inherently ephemeral and “unproductive,” leaving no trace of itself behind (HC 95). Consisting of the words and deeds whereby each individual human being inserts him/herself into the public sphere and reveals his/her uniqueness, action is “heroic” and “unpredictable” (HC 186; HC 176). This type of courageous action is the essence of politics for Arendt (HC 193).

III. NOT FITTED FOR THE UNIVERSE: THE DISTINCTION BETWEEN REALITY AND EXPERIENCE

The significance of this loss of faith is that it sets up a dichotomy between a world wherein appearances deceive and a “true reality” that is accessible only through scientific instruments (CS 272). Ironically, Arendt suggests, it was the scientists’ “search for ‘true reality’ that led them to lose confidence in appearances, in the phenomena as they reveal themselves of their own accord to human sense and reason” (CS 272). In “The Concept of History,” Arendt comments that Galileo’s telescope taught human beings that “their senses were not fitted for the universe” (CH 55). In other words, Arendt suggests, modern technoscience is premised on (and daily encourages) a distinction between reality and our ability to experience it.

For Arendt, a thinker for whom the public realm as the “space of appearances” is crucial to political interaction, this distinction is highly problematic.⁸¹ It is nonetheless easily visible in discussions surrounding PGD and reprogenetics more generally. Take, for example, DNA, the “stuff” of reprogenetics. As I will show in chapter three, the very language of DNA as the “code of life” constructs DNA as privileged information; the genetic code holds “secret” that needs transcription and translation (Watson 2003). The invisibility of DNA, even with the most powerful microscope, contributes to this sense that we need ever-more complex instruments with

⁸¹ I address the political effects of this distinction between appearances and reality in chapter two. In *The Life of the Mind* Arendt suggests that technoscience does not invent this distinction but instead “gives force” to an old distinction that she traces to Platonic philosophy (LM 25).

which to access its “truth.” Whereas Galileo’s instrument did little more than magnify something that, in a different position, our eyes would have been capable of seeing, no discernible difference can be seen between a test tube that holds a fragment of DNA from a single blastomere and one that has amplified a billionfold in preparation for testing.⁸² It is precisely for this reason that analysis of DNA is most often accomplished only indirectly, by breaking it up into fragments and then comparing these fragments to known samples (Snustad and Simmons 2003, 550).

Modern technoscience’s distinction between reality and experience is even more apparent when genetic testing takes place in the context of an existing pregnancy. In describing the experiences of women undergoing (or refusing to undergo) amniocentesis, Rapp stresses the conflict that can arise between a woman’s experience of her pregnancy and what a genetic counselor can tell her about her child. Even if a

⁸² The confusion that results from the inability to even conceive of how scientists might study DNA if it is in no way “visible” is readily apparent in early attempts to introduce DNA evidence into court—a space in which the credibility of direct, sensory evidence plays a crucial role. In one attempt to explain to a befuddled judge why he can see no difference between DNA before and after amplification, the expert witness continually protests, “you can’t see molecules. [you can only] test for their consequence” (qtd. in Jasanoff 1998, 721). This exchange eerily recalls Arendt’s suggestion that the data of modern science “are not phenomena, appearances, strictly speaking, for. . . we know of their presence only because they affect our measuring instruments in certain ways” (CS 266). If nothing else, the judge’s confusion vividly illustrates the inadequacy of visual metaphors to grasp the material reality with which PGD is concerned. The inadequacy of observation to judge even the activity of genetic testing itself comes up again in, of all places, OJ Simpson’s 1995 trial for murder. In this case, the defense asked Judge Ito to allow the samples of DNA evidence collected at the scene to be divided up and subjected to testing by both the prosecution and the defense. The prosecutor, on the other hand, objected, saying that to do so would be to compromise the integrity of the samples (Jasanoff 1998, 724-275). Instead, the prosecutor offered the defense’s experts the opportunity to “observe” the prosecutor’s scientific team at Cellmark do PCR. In this case, the defense rejected the offer to allow their expert witness to observe the prosecution’s scientists perform their tests (to ensure the integrity of the DNA testing). In so doing, “the defense denied the power of mere observation to validate the integrity of somebody else’s professional practice (simply watching, [Shapiro] said, ‘will be of no probative value whatsoever’). Seeing, he implied, must be indissolubly linked to doing . . . in order to guarantee . . . credibility” (Jasanoff 1998, 725).

pregnancy “appears” fine, even if a sonogram can provide a picture of a “healthy” baby, rerogenetic testing can contradict this sensory experience by unearthing a genetic mutation that *might* someday lead to disease. This contradiction implies a chasm between “true reality” (a mutated gene) and sensory experience (the apparent health of the baby) that is both reconstituted and bridged by the diagnostic usages of genetic testing.⁸³ In this way, the data genetic testing offers often operates “like a mysterious messenger from the real world” (CS 66). In the words of one of the mothers Rapp interviews, “it’s like a message direct from inside” (Rapp 2000, 118). Arendt’s point is that we only have faith in this “message” because we have developed the instruments capable of transmitting it. For Arendt, the ultimate consequence of Galileo’s invention is that it could leave “us a universe of whose qualities we know no more than the way they affect our measuring instruments” (HC 261).

IV. THE WORLD AS PICTURE

Although Heidegger does not trace Cartesian doubt back to the telescope, he, like Arendt, recognizes a similar turn inwards as characteristic of the modern age. For him, “to fulfill his essence . . . man must gather (*legein*) and save (*sozein*), catch up and preserve, what opens itself in its openness, and he must remain exposed (*aletheuein*) to all its sundering confusions” (AWP 131). The urge to master this confusion—to insulate ourselves from the uncertainty that accompanies mortal being—is at the heart of his conception of modern technoscience. This attempt at insulation via a

⁸³ See Haraway (1997b) for a discussion of the impact of “technologies of visualization” on the experience of pregnancy.

reformulation of man's "interpretation of what is"⁸⁴ constitutes a new age (AWP 115) of which modern technology and science are central phenomena (AWP 117).⁸⁵

Heidegger's most famous works on technology, *The Question Concerning Technology* and *The Age of the World Picture*, culminate in a critique of this inward turn, whereby man becomes the measure of all things. In the latter work, he suggests that man has become *subiectum*, his term for man's assumed position as "the relational center of that which is" (AWP 128). In other words, man, in his illusory position as "lord of the earth" (QT 27), takes "what is" and sets it before him, understanding it only to the extent of his own involvement in and control over it. Heidegger refers to this activity as "representation" [*vorstellen*] (AWP 132): "to set out before oneself and to set forth in relation to oneself" (AWP 132).⁸⁶ The "world picture" referenced in the title of the essay is that which man represents to himself and into which he inserts himself. More than a painting or copy (AWP 129), the world as picture signifies a system (AWP 129):

The word 'picture' now means the structured image [*Gebild*] that is the creature of man's producing which represents and sets before. In such a producing man contends for the position in which he can be that

⁸⁴ Heidegger makes many references to "what is" throughout his works. A complex phenomenon that goes by many names, "what is" will be explained in more detail in the second chapter.

⁸⁵ The five phenomena that characterize the modern age for Heidegger include: modern science; machine technology; the "loss of the gods"; the transformation of art work into the "object of mere subjective experience"; and "the fact that human activity is conceived and consummated as culture" (AWP 116).

⁸⁶ Like *Gestell*, *vorstellen* shares the root of *stellen*, which can be thought of as "to set" or "place." In German, the word *vorstellen* conjures up not only the idea of representation, but also of imagination. The word refers to the activity of imagining, as well as to the activity of introducing oneself to others. Each of these ideas—representation, imagination, and introduction—is involved in conceiving of the world as picture. To understand the world as picture is to set before oneself a particular imagining of the world, and in doing so, to relate it to oneself.

particular being who gives measure and draws up the guidelines for everything that is (AWP 134). For Heidegger, the idea of the world as picture invokes a sense of boundedness and fixedness. Whatever cannot be interpreted in terms of its relationship to man becomes unknowable; it “cannot enter into a picture” (AWP 130).

It is on these grounds that Heidegger criticizes modern science. Not simply an extension or improvement of ancient practices, modern science constitutes for Heidegger a qualitatively different orientation both to truth and to “what is.” In *The Age of the World Picture*, he argues that modern science, as represented by molecular physics, is inherently mathematical (AWP 118). This designation refers not to its use of numbers and equations, but to the very practice of the research experiment itself as an activity of ordering reality. “*Ta mathematica* means for the Greeks that which man knows in advance in his observations of whatever is and in his intercourse with things” (AWP 118). Modern physics is mathematical because it superimposes a pre-existing order onto that which it seeks to unveil.

Just as Arendt understands the modern scientific instrument as a means of “making sure” (HC 290), Heidegger reads the research experiment as aimed at “bringing each particular being before it in such a way that man who calculates can be sure, and that means be certain, of that being” (AWP 127). For each of them, modern science and technology afford a means of making certain a world that is decidedly not. In Heidegger’s words, “the will to mastery becomes all the more urgent the more technology threatens to slip from human control” (QT 5). It is this ‘will to mastery’—

this stance toward the world and perspective through which we engage it—that characterizes the modern age.⁸⁷

Importantly, Heidegger levels this criticism not only at the natural sciences, but at the humanistic disciplines as well. In keeping with his earlier *Letter on Humanism*, he suggests that contemporary philosophy (or metaphysics) is also premised on a “methodology [that] aims at representing what is fixed and stable and at making history an object” (AWP 123). It, too, structures reality in such a way that it is incapable of conceiving anything that lies outside our ‘world picture.’ This is why Heidegger praises reflection, or thinking, as “the courage to make the truth of our own presuppositions and the realm of our own goals into the things that most deserve to be called into question” (AWP 116). Only once we recognize the limitations of understanding the world as picture do we become capable of thinking.

V. THE TWO-FOLD FLIGHT

Whereas Heidegger draws our attention to the boundedness of this perspective—its restrictiveness and our inability to conceive of that which lies outside of our ‘world picture’—Arendt delineates a perspective that is boundless; for her, humanity no longer even recognizes the earth itself as a limiting condition for human activities (HC 11).

Her opening references to Sputnik in *The Human Condition* show that the satellite offered human beings hope of being able to look back upon the earth in its entirety (HC

⁸⁷ Although made possible by the development of technologies like the telescope, technological development *per se* is not the object of their critique. Their focus is always on the relationship between human beings and their tools. More on this below.

1). This new perspective—what she will call the “Archimedean point”⁸⁸—is borne of a desire to escape the “imprisonment to the earth” (i.e. the contingency of the natural world) and has, for Arendt, deeply political implications (HC 2-3).⁸⁹ Even if only in spirit, this standpoint “frees” man “from the shackles of earth-bound experience” and “place[s] nature under the conditions of his own mind” (HC 265). The import of this relocation is that, even if we never actually leave the earth and its boundaries, we are able to *act* upon the earth “as though we dispose of it from outside” (HC 262). Rather than understanding ourselves as earth-bound creatures, for whom the earth forms a set of boundaries within which we comport ourselves, Arendt sees modern human beings as having altered these parameters themselves. According to Arendt, the Archimedean standpoint enables a “truly universal” science (HC 268). More than simple mastery over nature, a “universal” science “imports cosmic processes into nature even at the obvious risk of destroying her and, with her, man’s mastership over her” (HC 268).⁹⁰ If scientists were ever to be fully successful in their endeavors to view the world from a universal standpoint, Arendt worries that “the stature of man would not simply be lowered by all standards we know of, but have been destroyed” (CS 280).

⁸⁸ Archimedes was a Greek mathematician born in Sicily around 287 BC. Fascinated by the concept of leverage, he once said “give me a place to stand and I will move the earth”—referring to the idea that, if he could find a place far enough outside of the earth from which to exert pressure on a lever, he could lift the world. The Archimedean point refers to this distant standpoint.

⁸⁹ Although far from clear at this point in *The Human Condition*, Arendt will go on to say that the reason scientific developments are political is because they have “relevance for speech”; and “wherever the relevance of speech is at stake, matters become political by definition, for speech is what makes man a political being” (HC 3). I take up these issues in chapter five.

⁹⁰ Arendt’s gendered language, which assigns the feminine pronouns to the natural, whereas humans are described in masculine terms, should not go unnoticed here. A more detailed discussion of Arendt and Heidegger on gender is necessary, although outside of the scope of this project. See Honig’s (1995) edited volume for a discussion of the complex relationship between Arendt and feminism.

Despite its extraterrestrial connotations, the move toward a universal science is intimately related to the turn inwards. Arendt suggests that the difficulty of applying the universal laws of nature learned via the Archimedean perspective to the “topsy-turvy world” (UP 314) in which we live, prompted Descartes to:

. . . move the Archimedean point into man himself, to choose as ultimate point of reference the pattern of the human mind itself, which assures itself of reality and certainty within a framework of mathematical formulas which are its own products. (HC 284)

Driven by the fear of uncertainty, humans turn toward that which we have created and can know for certain. In this way, modernity is characterized for Arendt by a “twofold flight from the earth into the universe and from the world into the self” (HC 6). At the center of modernity, then, is a desire for control over the uncertainty that characterizes human existence. For both Heidegger and Arendt, modern technoscience can only be understood within the context of this unrelenting quest for stability that is the hallmark of the modern age.

From this perspective, the attempt to create life in a test tube manifests a curious combination of urges. On the one hand, technologies like PGD are designed to control risk, “to make less random the sometimes most unfair courses of human evolution” (Watson 1999, 91).⁹¹ In this sense, they do, as Arendt hints, represent a desire to escape from the laws of nature—to “escape the imprisonment of the earth” (HC 2). On the other hand, however, the desire to control a child’s genetic makeup can also be understood as an integral component of the second part of Arendt’s two-fold flight—

⁹¹ As thinkers like Rothman show, however, reproductive technologies can also intensify the experience of risk by creating more opportunities for intervention and fostering an awareness of the myriad problems that might arise. In Rothman’s work, she describes this aspect of reproductive technology as giving rise to the “tentative pregnancy” (Rothman 1993).

that from the world into the self.⁹² In addition to Sputnik's launch, *The Human Condition* is also framed by a second, "no less threatening" event—what she calls "the advent of automation" (HC 4).⁹³ While both events seem to realize a similar desire to overcome necessity, Arendt argues that automation, along with its "machines" and "gadgets" (HC 3), has actually "transformed" human society into one bound ever more closely to the cycles of organic life. At the same time human beings attempt an escape from the earth, we are drawn ever further into our biological selves. Insofar as the use of PGD rests on an unarticulated belief in the biological bases of human behavior, rerogenetic technologies can also be understood as a component of automation—a further extension of this transformation of human beings into *animal laborans*.⁹⁴ Channeling both the desire to be free from the confines of biology and yet tethered to a belief in the biological bases of behavior, I read rerogenetics as a manifestation of both aspects of Arendt's two-fold flight.⁹⁵

⁹² Arendt only hints at a relationship between the biological sciences and *animal laborans*, perhaps because biology had yet to make its resurgence (Keller 2001).

⁹³ See Dietz (2002) on the "victory of *animal laborans*." Dietz suggests that both Arendt and Simone Weil share "an account of advanced society as a domain of endlessly repetitive, artificially natural cyclicalities" (2002, 165).

⁹⁴ According to Arendt's theorization, in ancient times, the necessities of life were the exclusive domain of the private household. Only the fulfillment of these necessities (by slaves, wives, other household members) allowed man the leisure time to partake in the public sphere and the freedom to participate in political life (HC 37). The inclusion in the public realm of matters pertaining to the bare necessities of life is the hallmark of the rise of the social. See Pitkin (1998) for a detailed discussion of Arendt's conception of the social.

⁹⁵ In reading rerogenetics in this way, I follow, up to a point, Maren Klawiter's (1990) discussion of Heidegger, Arendt and reproductive technologies. The first to recognize the potential insights offered by these thinkers with regard to rerogenetics, she interprets genetic technologies in the following manner: they reveal that "laboring society seeks not only to control and regulate gestation and birth itself, but to disengage conception from the body and transfer it to the test-tube so that all variables can be controlled and all uncertainty eliminated" (Klawiter 1990, 82). Insofar as Klawiter, too, reads rerogenetic technologies as borne of desire for control and mastery, our interpretations align closely and I am indebted to her reading. However, there are two problems with Klawiter's interpretation that keep me from engaging it

VI. GALILEO'S INVENTION OF THE TELESCOPE: COMPLICATING ARENDT'S UNDERSTANDING OF TECHNOSCIENCE

There are important differences between Arendt and Heidegger's understandings of the modern age—differences that go beyond the question of how to understand the origins of Cartesian doubt. Unlike Heidegger's concern for man's "essence," Arendt's discussion of modernity focuses on the "conditions of human existence—life itself, natality and mortality, worldliness, plurality and the earth" (HC 11). This focus leads her to articulate the specifically political threat that world alienation—her term for this two-fold flight—poses. As I will show in the coming chapters, it is the threat that world alienation poses to our capacity to think and act "with others" that is of primary concern to her (HC 3). And it is precisely for this reason that I take up Arendt's writings on modern technoscience in this project, out of a concern for the specifically political questions reprobogenetic technologies raise.

Although numerous thinkers have commented on Heidegger's discussion of technology, Arendt's orientation toward technoscience has been the subject of relatively

more closely. First, she adopts Heidegger's substantive critique of technology wholeheartedly and subsumes Arendt's understanding of technology under his—a move I am unwilling to make. As I will show in the coming chapters, there are tensions implicit in both thinkers' works—particularly when read in conjunction with their writings on thinking—that complicate the essentialism and pessimism Klawiter's reading encourages. I will deal more closely with this point in chapter three. Second, Klawiter's attempts to make Arendt relevant for feminist theorizing push her to a problematic discussion of natality and the importance of motherhood in Arendt's thought. Her quite interesting reading of reprobogenetic technologies is therefore peppered with references to an Arendtian feminism of which I am deeply skeptical—in terms of both its Arendtian and feminist credentials.

little critical engagement.⁹⁶ One exception to this rule is Dana Villa's *Arendt and Heidegger: The Fate of the Political*, which takes up explicitly Arendt's own "question concerning technology"—both in terms of its relation to Heidegger and to her broader concerns about politics and political action (Villa 1996, 193-201). In this work, Villa lays out, far better than I, the moves that take Arendt from Galileo to Sputnik and their philosophical consequences.⁹⁷ Yet Villa is primarily concerned with *what* Heidegger and Arendt think about technoscience—not with *how* they think this complex phenomenon. In the remaining chapters, my focus will be on the *how* of their thinking rather than with its "results." My argument is that both Heidegger and Arendt's substantive critiques of science and technology exist in an uneasy tension with their modes of thinking. Although their descriptions of modernity are, at times, disturbingly bleak, the ways in which they approach the phenomenon of modern technoscience disrupt their narratives of modernity and are deserving of further attention.⁹⁸

⁹⁶ Those interpreters who do address Arendt's writings on technoscience do so primarily in the context of discussing her views on the rise of the social and her overarching critique of modernity (e.g. Kateb 1984, 152)

⁹⁷ Given this lack of theoretical engagement with Arendt's thinking on technoscience, it is of little surprise that few thinkers have made the move to use Arendt to think through more contemporary technoscientific innovations. In addition to Klawiter's (1990) essay, Kimberly Curtis's (1995) article on Assisted Reproductive Technologies offers another brief glimpse at how Arendt's concepts might be applied to current technoscientific questions. As I noted above, I will engage Klawiter's critique of rerogenetic technologies in my third chapter, in the context of Heidegger's substantive critique of modern technology. Curtis's essay, which provides an appropriation of Arendt's thinking closer to my own, I take up in chapter four.

⁹⁸ In her essay, "Toward an Agonistic Feminism: Hannah Arendt and the Politics of Identity," Bonnie Honig says that "Arendt herself would undoubtedly have been hostile to this [Honig's] radicalization of her work but I believe that . . . it is very much in keeping with her politics" (Honig 1995, 137). I have attempted to craft this dissertation along similar lines. I should be clear then, that this is not an argument about Arendt's intentions, or her own conception of modern technoscience. Instead, it is an argument in favor of a way of *interpreting* her work—using it as the material out of which we might craft something new.

To get a sense of what I mean, consider again Arendt's discussion of the telescope. As we have seen, the invention of the telescope is one of the three "great events" to which Arendt ascribes the birth of modernity; it "stand[s] at the threshold of the modern age and determine[s] its character" (HC 248).⁹⁹ In this sense, a technoscientific invention appears as the instigator of the escapist dream. On the other hand, Arendt is quite clear that the desire to be free from necessity is not occasioned *by* developments in science and technology; the desire to escape does not stem from the ability to do so. Arendt steadfastly insists that human beings are "by no means slow to catch up and adjust to scientific discoveries and technical developments . . . on the contrary, they have outsped them by decades" (HC 1). Sputnik did not introduce the dream of escape to the human heart. Instead, Arendt argues, Sputnik's launch inspired a sense of collective "relief," because science finally "realized and affirmed what men anticipated in dreams that were neither wild nor idle" (HC 2). In this latter sense, technological innovations are manifestations of deeper desires.

Regardless of whether we believe that the telescope served to fundamentally reorient the relationship between human beings and their world, the way in which Arendt describes the telescope is nonetheless significant and suggests (albeit peripherally) a more complicated orientation toward technoscience than is often ascribed her. Instead of reading her references to the telescope and other specific inventions as mere symbols, literary devices designed to highlight Arendt's thematic

⁹⁹ The other two "great events" are the discovery of America and the Reformation (HC 248). Although she acknowledges that the discovery of America was probably more "spectacular," and the Reformation likely more "disturbing" to its contemporaries, it is Galileo's telescope to which she ascribes the greatest import (HC 249).

concerns, I propose that paying attention to her use of these examples allows us to see the complexity inherent in her orientation toward modernity.¹⁰⁰

The first thing we notice about Arendt's discussion of the telescope is that it is the "invention" of the telescope—not the tool itself—to which she repeatedly directs our attention (HC 248). Although the telescope will be used long after its initial introduction into the human artifice and its effects will take centuries to be fully realized, it is this initial moment of "invention," with all the newness and creativity this word connotes, that fascinates Arendt. This is hardly surprising given her general fascination with natality and new beginnings (HC 9), and yet, the connection of these terms to something technological is far from expected.

The terminology of "invention" also suggests an "inventor" or maker—someone who has made this new tool. In Arendt's terms, this "someone" is, in the most generic sense, *homo faber*, and she alternates between attributing the telescope to *homo faber* (e.g. HC 274) and to the actual historical individual who created the instrument (e.g. HC 249).¹⁰¹ But more often than not, it is "*Galileo's* invention of the telescope" that preoccupies her (HC 248).

¹⁰⁰ In *The Reluctant Modernism of Hannah Arendt*, Seyla Benhabib characterizes the "standard" interpretation of Arendt in the following way: "Arendt, the student of Martin Heidegger, is the antimodernist Grecophile theorist of the *polis* and of its lost glory" (Benhabib 2000, xxxix). Against this interpretation, Benhabib highlights "Hannah Arendt, the stateless and persecuted Jew, [who] is the philosophical and political modernist," (Benhabib 2000, xxxviii). Turning to Arendt's works on totalitarianism, Benhabib suggests Arendt is more of a "reluctant modernist" than the antimodern technophobe she is often assumed to be (Benhabib 2000, 138). I agree with Benhabib to the extent that she reminds her readers that modernity "was not a seamless historical development but a process rich in contradictions" and emphasizes how Arendt's own experiences were crucial to the development of her thought (Benhabib 2000, xl). But instead of locating these contradictions outside of *The Human Condition*, I suggest that we can see them within this complex work.

¹⁰¹ In the case of the telescope, as with many inventions, the naming of an "inventor" is somewhat tricky. It is now generally agreed that the telescope was actually first built by the

This insistence on connecting the invented instrument to a name highlights the “authorship” of the invention; it suggests the significance of the invention lies in what was done with it—rather than in the mere addition of a “new implement to man’s already large arsenal of tools (HC 249). Indeed, Arendt says that the tool itself is “useless except to look at the stars” (HC 249). In other words, the telescope needs someone to look through it in order to become meaningful. Galileo is remembered as the telescope’s inventor because he was the first one to put this invention to scientific use.

And yet, it is not simply Galileo’s status as the telescope’s most famous user that has earned him the honor of being written and performed and sung about. Galileo’s name will forever be attached to this remarkable invention, because it was Galileo who used this instrument to make real the theoretical ideas of Copernicus and Kepler (HC 258) and to *communicate* his findings. In this sense, Galileo is neither maker nor user—he has become doer. In offering his observations to others, he is acting, inserting himself into that unpredictable and frightening realm that is the public.¹⁰² All of a sudden, the invention of the telescope is not just the activity of *homo faber*; it has become infused with the attributes of action.

This focus on the invention and use of the instrument, its attribution to a particular historical individual, and the recognition of its hybrid character are crucial to Arendt’s understanding of technoscientific inventions. Whereas many theorists critical

Dutchman Hans Lipperhey in 1608; Galileo’s telescope was simply a replication and modification of this earlier model. Arendt herself recognizes that Galileo was deeply indebted to those who came before: his discovery bears a “close relationship to antecedents and predecessors” (HC 258).

¹⁰² Indeed, given the way Galileo was treated in this realm, it is unsurprising that Arendt suggests that a certain amount of “courage” is required to enter it (HC 186).

of technoscience speak in terms of a disembodied “apparatus” or “system”—and Arendt herself sometimes acquiesces to the terminology of automatism and instrumentalization (HC 154; Villa 1997, 200)—she simultaneously holds on tenaciously to specific inventions and maker/user/doers.¹⁰³ Never mere things, the technoscientific inventions she discusses take on the character of “events”— set into motion by human actors and acting into the world (HC 248).¹⁰⁴ In this way, I read her as subtly contesting the assumption that modern technoscience is an autonomous, self-sustaining dynamic.

VII. THINKING TECHNOSCIENCE AS EVENT

To ask what it might mean to think technoscience as “event,” I turn from *The Human Condition* to Arendt’s earlier essays on “The Concept of History” and “Understanding and Politics.” Like *The Human Condition*, “The Concept of History” contains a sustained discussion of Galileo’s invention, with many of the same accusations against the telescope repeated almost *verbatim*. Again, she refers to its role in the creation of the modern age and to the “mistrust of human capacities” it inculcated (CH 54). And yet here, technoscience becomes quickly linked to our conception of

¹⁰³ For instance, Arendt would never talk in terms of the “technical apparatus of production” Marcuse describes in *One Dimensional Man* (1964, xlvii)¹⁰³ —not because she does not recognize that technology is implicated in a capitalist system— but because the terminology of “system” is conspicuously absent from her depictions. Interrelatedness, dependency and complexity are all characteristic of modern technoscience, but nowhere does “system” enter into the picture.” This is not to say that technology is without a social component for Marcuse. Indeed, his writings suggest the very opposite. Rather, I suggest that the terms each theorist uses to describe similar phenomena are significantly different.

¹⁰⁴ For another (albeit brief) example of Arendt’s theorization of a particular invention as an event look at her brief discussion of the watch (HC 289).

history. Technology is described as “the ground on which the two realms of history and nature have met and interpenetrated each other in our time” (CH 61). Arendt attributes this “connection” to the notion of “process” that is shared by both (CH 61).

In both “The Concept of History” and “Understanding and Politics,” Arendt betrays her antipathy toward processes¹⁰⁵—both in their technoscientific and historical contexts. In keeping with her overarching theoretical comportment—which Villa aptly terms one of “radical remembrance” (Villa 1996, 10)¹⁰⁶—Arendt highlights the gross discrepancy between the ancient understanding of the event and our own conception of history as process. She argues that “to our modern way of thinking nothing is meaningful in and by itself . . . invisible processes have engulfed every tangible thing . . . degrading them into functions of an over-all process” (CH 63). In other words, instead of describing the singular, and ultimately contingent, events that comprise ancient historical accounts,¹⁰⁷ modern history writes in terms of overarching themes and processes to which individual events belong (or challenge). What this obsession with process “implies” is that we have become unconcerned “with single entities or individual occurrences and their special separate causes” (CH 61).

¹⁰⁵ I should say Arendt betrays her antipathy toward the intrusion of processes (which are intrinsic to nature and an important part of biological life) into realms in which they do not belong. Processes *per se*, as a part of biological existence, are simply an existential fact toward which a normative position is meaningless, as I will show in chapter four.

¹⁰⁶ Villa employs these terms to discuss both Arendt and Heidegger’s comportment toward the past. Via his interpretation, both “[aim] to *intensify* our sense of the ‘gap between past and future’” (Villa 1996, 10). In other words, it is precisely the *inappropriateness* of Greek concepts in the modern world that Arendt and Heidegger seek to underscore. In speaking this anachronistic *ethos* to the modern world, they draw our attention to the intense disjuncture we feel between the ancient world and our own.

¹⁰⁷ Thucydides’ description of the various battles, speeches and decisions that comprise *The Peloponnesian War* provides perhaps the most dramatic example of history as event (CH 51).

For Arendt, processes are plural and serial in nature—individual elements within them always belong to the greater whole and are moving in a particular direction (CH 64).¹⁰⁸ Once begun, they can be “forced” into another direction (CH 60), but never undone (HC 232). The “event,” on the other hand—“in its majestic irrevocability, originality, and abundance of meaning” (UP 236)—can only ever be singular. There can exist “chains of events” or “chains of happenings” (UP 326), but even in their linked form, events themselves retain their singularity in that they can be plucked from this chain without losing their integrity. Moreover, this “chain” is “interrupted every minute by the birth of a new human being bringing a new beginning into the world” (UP 236). In “What is Freedom?” Arendt transforms the “chain of events” into a “chain of miracles”—further underscoring the extraordinary and unexpected nature of events and their relations (WF 169). While events, too, can never be “undone” (HC 232), the links between them can be broken, their connections reconstituted and their meanings rearticulated.

Compared to processes, events punctuate the progression of time and imply a moment of contingency: what happens after an event is uncertain. “[B]y definition, [events] are occurrences that interrupt routine processes and routine procedures” (*On Violence* 109). The concept of the event thus confers momentousness and possibility. Thinking in terms of “events” differentiates the concrete circumstances of the event from what has come before and separates it from what will come afterward (CH 64).

¹⁰⁸ In this sense, processes and progress are closely related. According to Arendt, “Progress not only explains the past without breaking up the time continuum but it can serve as a guide for acting into the future” (OV 129).

To do so is not to deny causality, but to recognize that the “meaning . . . of each event, deed, or occurrence is revealed in and by itself” (CH 64).

In the case of history, Arendt is well known for her attempt to contest theories of causation through her own distinctive mode of historiography.¹⁰⁹ Her method has been described as thinking in terms of “crystallization”—as opposed to causation—and it seeks to restore to history its “event” character (UP 325).¹¹⁰ Arendt sees the terminology of causation as imbuing anything named as a cause with a determinism that makes “the future . . . nothing but a consequence of the past”—in so doing, this mode of thinking “implicitly denies the future as an authentic tense” (LM—Willing 15).¹¹¹ Thinking history in terms of events not only enables us to “reconcile ourselves to reality” and to what has happened (UP 308), it also restores to the future its rightful sense of possibility.

To think *technoscientific inventions* in terms of events then is not simply to add color to a dry account of the modern age. It is to reclaim a way of thinking that itself resists the inexorable pull of process. Just as Arendt’s method of writing history contests notions of historical process in order to disclose the significance of each event,

¹⁰⁹ Her “reconstructive historiography” is most vividly deployed in *The Origins of Totalitarianism*, with its complex of interrelated sections on anti-Semitism, imperialism, and totalitarianism (Disch 1994, 147).

¹¹⁰ See Disch (1994, 147) and Benhabib (2000) for a discussion of Arendt’s historiographical method. I should, however, mention that thinking technoscience as “event” is not the equivalent of “storytelling”—Disch’s characterization of Arendt’s methodology. The narration of an experience seems a crucial component of storytelling via Disch’s interpretation (Disch 1994, 111). In the case of the telescope, however, we are offered no insight into Galileo’s life or his (quite fascinating) story. The focus is on the effects of this event, rather than on the actual experience of inventing. While it shares many of the same impulses, Arendt’s mode of thinking technoscience cannot properly be described as storytelling.

¹¹¹ In the case of totalitarianism, Arendt blames this obsession with process for the blindness of those both inside and outside of totalitarian regimes to the full significance of this phenomenon (UP 321).

so, too, does her way of thinking technoscientific inventions enable us to find meaning in what might otherwise appear as mere parts of an autonomous process. With her focus on invention, individuals, and the hybrid character of technoscientific inventions, Arendt can be read as restoring to these technoscientific inventions their “event” character and re-attributing them to human actors. Instead of interpreting Arendt as “blaming” the telescope for modernity’s difficulties—thereby understanding technoscientific inventions as causes—we can read her as re-endowing technoscience with a sense of contingency that is often lacking in critiques of modernity, thereby offering it up as a phenomenon in need of (and open to) “understanding” (UP 320). My own engagement with modern technoscience is inspired by this aspect of Arendt’s writings and centers on the relationship between human beings and technoscientific instruments—on the way we talk and use and speak about them—not on what we can or cannot do.

In the next chapter, I turn to Arendt and Heidegger’s writings on thinking in order to articulate a mode of political thinking that challenges certain humanist worldviews rooted in the desire for (or fantasy of) complete domination over the things of the world. In bringing Heidegger’s writings on thinking into conversation with Arendt’s own reflections on modern science and technology, I seek to clear the way for reconsidering our views of both thinkers. In my own critical appropriation (and transformation) of their works, I suggest that there is a way of reading Heidegger and Arendt that offers a critical political edge for thinking reprogenetics.

Chapter 2: Calibrating our “inner compasses:” Arendt on political disorientation

I. THINKING: ‘EXAMINING WHATEVER HAPPENS TOO COME TO PASS’

In the previous chapter, I argued that an urge to master uncertainty lies at the heart of modern technoscience. Reproductive technologies, in their attempts to “make less random” the vagaries of human procreation can certainly be understood from this perspective. And yet, as Arendt shows in her discussion of world alienation, there is a flip side to this attempt at mastery—namely, the increasing prominence of a biological understanding of human behavior that actually downplays human innovation and action. Both aspects of world alienation involve an attempt to escape the ever-changing world of human interaction and plurality that is the condition of politics, and it is this background against which I argue that we need to “think what we are doing” (HC 3).

To get a better sense of what thinking entails and to understand why its exercise is so crucial to politics, I turn in this chapter to Arendt’s *The Life of the Mind*.¹¹² In the introduction to the volume on thinking, Arendt describes it as “the habit of examining whatever happens to come to pass or to attract attention, regardless of results and specific content” (LM 5). Despite this somewhat lackadaisical description, however, Arendt repeatedly stresses the urgency of thinking and connects it to the more explicitly

¹¹² Mimicking the tripartite structure of *The Human Condition*, *The Life of the Mind* is divided into three parts, corresponding to three different modes of mental activity: thinking, willing and judging. Although Arendt died before finishing the final section on judging, it is this activity—which is most directly concerned with politics—that has long captured the attention of her interpreters (Beiner 1982; 1983; Zerilli 2005, Thiele 2005, Bernstein 2000; d’Entreves 2000).

political activity of judging. In this chapter, I theorize the activity of thinking in relation to a world of perpetual change and motion. What I propose is that thinking is intimately related to how we “take our bearings” (TP 257) in a world that never stands still. Given that one of the frequent criticisms of reprogenetic technologies is that they move along at a pace that outstrips attempts to understand and criticize them (e.g. Holland 2007, 94), this ability to orient ourselves in the midst of confusing and disorienting circumstances is crucial to thinking reprogenetics.

II. THE DANGERS OF DISORIENTATION

In *The Origins of Totalitarianism*, Arendt posits that the primary experience of totalitarianism is “perpetual motion”—or a “trembling wobbling motion of everything we rely on for our sense of direction and reality” (OT 306, TP 258). This inability to locate oneself in relation to the world—or what I term disorientation—is the focus of the first two sections of this chapter. In them, I suggest that Arendt is closely attuned to the phenomenon of disorientation, and probing this metaphor further might enable us to begin thinking about how we “take our bearings” (TP 257). In other words, I come at the question of how we orient ourselves by considering what it is that we lose sight of when we become *disoriented*.

In Arendt’s works, disorientation is implicated in the masses’ susceptibility to totalitarian propaganda (OT 381) and blamed for the refusal of the outside world to comprehend the seriousness of the situation (OT 436). The metaphor reappears in

Arendt's attempts to understand Heidegger's turn to National Socialism (B 216).¹¹³ Yet this experience of being surrounded by a world that refuses to stand still long enough for us to make sense of it, is not, for Arendt, specific to totalitarianism. In *The Human Condition*, she suggests that political disorientation—albeit in perhaps less severe form—is an historical consequence of modernity (HC 209). Elsewhere, disorientation seems simply an existential fact of the human condition: as political actors we are continually acting into (and thus located within) a swiftly changing world that makes it difficult to find our sense of direction.

Perhaps this is why Arendt so frequently praises the ability to “take our bearings” and closely connects it to the political faculty of judgment (TP 257, LM 109).¹¹⁴ In her discussions of both thinking and acting, there are continual references to the “stabilizing forces” that allow us to “orient” ourselves in the realm of human affairs (HC 198, see also HC 137, 167, 173, 182, 191, LM 170, 178, 201, *passim*).¹¹⁵ Without eschewing change, dynamism, or unpredictability, Arendt seems intent on pointing to the various ways by which we take our bearings in a world of perpetual change and motion.

¹¹³ Heidegger's own political activities and their potential motives have been subject to a great deal of controversy and debate. My intent is not to suggest that Heidegger's thought is intrinsically tied to National Socialism (see Zimmerman 1990) but to highlight one way of understanding his disorientation in the public sphere. For a more thorough discussion of Heidegger's National Socialism topics, see e.g. Sluga (1993), Lyotard (1990), Safranski (1998), Wolin (2001)

¹¹⁴ While it is tempting to conflate stabilization, orientation and judging, I purposefully keep the concept of judging at bay. Instead, I attempt to keep the activities of stabilization conceptually distinct and argue that these activities are a necessary precondition to judging. Whereas Arendt's conception of judging is incomplete and often characterized as inconsistent, the language of stabilization and orientation is evoked more frequently and highlights the continuity between her earlier and later treatments of judging.

¹¹⁵ All page references to *The Life of the Mind* refer to Volume 1 (Thinking) unless otherwise noted.

As a specific instance of disorientation, totalitarianism represents a monstrous failure on the part of both the masses and professional thinkers, like Heidegger, to engage in this vital human activity. Whereas the public is accused of “thoughtlessness” (LM 4) and advised to think (HC 5), Arendt suggests that it is Heidegger’s adeptness at thinking that makes his disorientation in the political realm so severe. Thus, thinking occupies a curious position in Arendt’s works as both an agent of and a defense against the loss of bearings.¹¹⁶

In the coming pages, I explore the concept of disorientation via a consideration of thinking. I take on the question of what it is about Heidegger’s thinking that makes it so destabilizing and yet still recommends thinking to us as a stabilizing activity. In so doing, I engage a specific example of thinking, as both discussed and performed by Heidegger’s trio of conversationalists in “Conversation on a Country Path about Thinking.” While we might suspect that there is something about Heidegger’s performance that sets it apart from Arendt’s description of thinking in *The Life of the Mind*—and thus contributes to Heidegger’s disorientation—I argue that Heidegger’s depiction closely resembles Arendt’s own account of this mysterious activity. In reading Heidegger’s work, I make no causal argument about his own political activities; instead, I take him (as Arendt often does) as an exemplar of the thinking *activity*. My

¹¹⁶ Richard Bernstein recognizes the dual role Arendt ascribes thinking in his essay on the relationship between thinking and evil (2000, 290). In this essay, he suggests that the task for political theorists is to find a way of “discriminating the thinking that may prevent catastrophes from the thinking that does not” (Bernstein 2000, 290). This is precisely the task that I take on here. I should note, however, that Bernstein’s dichotomy places Socrates squarely on the side of “thinking that may prevent catastrophes” (Bernstein 2000, 289). I do not spend a great deal of time on Arendt’s discussion of Socrates; however, I would argue that the relationship between Socrates’ mode of thought and political thinking is more complicated than the picture Bernstein paints.

intent is to illustrate how certain elements of the world, crucial to maintaining our bearings, fade from view while one is thinking. As the chapter proceeds, I identify representative thinking as an explicitly political mode of thought that escapes some of the difficulties inherent in pure thinking. As such, I conclude this chapter with a discussion of how representative thinking shores up those elements of the world that enable us to “take our bearings” (LM 192).

III. TAKING OUR BEARINGS: ARENDT ON STABILIZING

Technically, the term “bearing” refers to the comprehension of one’s position, environment or situation. The taking of one’s bearings involves the determination of a situation with respect to other fixed points. However, in Arendt’s conception of the human condition, we humans encounter no points which are inherently fixed and will forever remain so; there are only points which are *relatively* more stable and *relatively* more fixed than others. These “guideposts of reliability” (HC 244) include reality (LM 50) and promises (HC 244)—the closest things to “fixed points” we humans are granted. Whereas promises aid stabilization by making an uncertain future more predictable, reality functions in the present, conferring that invaluable “sensation of realness” which allows us to differentiate between fact and fiction (LM 49). In earlier times, tradition, too, would have served as such a fixed point—something upon which to rely and in relation to which we take our bearings (WA 94). But “tradition can be trusted to prevent the worst only for a limited time” (UP 315). With the advent of

totalitarianism, the limitations of tradition as a stabilizing force become painfully obvious. This event not only “explodes” our standards of judgment, but also exposes the impotence of such (unthinkingly-adopted) ethical maxims (UP 310). As such, tradition’s ability to function as a guidepost by which to take our bearings is severely limited, and we are left only with reality and promises as the primary stabilizing forces in the realm of human affairs. They offer “islands of predictability” in an “ocean of uncertainty” (HC 244).

In some sense, to speak of Arendt as a proponent of stabilizing is an almost laughable proposition. How can one view the preeminent theorist of action (as her critics and celebrators are apt to refer to her) as an advocate for anything that would place limits on this activity? More often, Arendt is criticized precisely for her *refusal* to theorize about normative guidelines and her critics decry her as an irrational decisionist (Villa 1996, 156; e.g. Kateb 2000, 122; Wolin 2001, 69).

The simple answer to the above puzzle is that it is precisely because action has an “inherent tendency to force open all limitations and cut across all boundaries” (HC 190) that Arendt is compelled to point to the ways by which we orient ourselves in such an environment. Were the realm of human affairs a less contingent and unstable place, such orientation would be easy; and if the effects of our actions were less extensive, *disorientation* would be of less concern. But this is not the case; for Arendt, the realm of human affairs is inherently “frail,” and orienting ourselves within it can be an arduous and confusing task (HC 188).

But this orientation is not accomplished via a turn to transcendent norms or rules which offer templates to be used in judging particular events (LM-Judging 272, TP

243). This sort of judging, from the universal to the particular, which Arendt terms “determinant” judgments (“Imagination” 83; LM 69), is not the activity with which she is most concerned. Despite attempts to transform Arendt into a deliberative democrat by “discovering” within her work a sort of discourse ethics (e.g. Benhabib 2000; 2001), Arendt’s focus is not on universal rules or standards by which we might judge totalitarianism wrong. Instead, Arendt focuses on what she terms “reflective judgment,” whereby we “‘derive’ the rule from the particular” (“Imagination” 83). More importantly, Arendt grounds the bearings necessary for this activity entirely within the world (HC 182).¹¹⁷ Relying on a variety of “fixed” points, Arendt’s actors and thinkers orient themselves in relation to the web of both physical things and other human beings in which they are, existentially, situated (HC 184). However, this web is not (and ultimately can never be) entirely fixed or rigid. Each of these “guideposts of reliability” (HC 244) is subject to change on an individual basis, and indeed the web itself is never assured of its ability to “withstand the onslaught with which each new generation must insert itself” (HC 191). Yet because this web outlasts the life-spans of individual human beings, it offers the permanence and stability necessary for the activity of stabilization. While she refuses to let her readers fall back upon transcendent rules, Arendt will not leave them a-sea.

Before I can make the theoretical move to connect Arendt to an activity of stabilization, however, the concept of stability itself must be released from its association with limiting and restricting change. While one dimension of the definition

¹¹⁷ This terminology of deduction is confusing given Arendt’s attempt to distinguish judgments from “logical operations.” In *The Life of the Mind*, she states that “judgments are not arrived at by either deduction or induction; in short, they have nothing in common with logical operations” (LM 215).

of “stability” refers to “fixedness,” “not changing,” and “unvarying,” this is only one meaning of the word. “Stabilizing” can also be defined as the ability to “hold steady.” To discuss Arendt and stability in the first sense—as if stability inhibits change—would clearly be misleading. Throughout *The Human Condition*, she stands “in wonder” (B 215) of the fact that “one deed, and sometimes one word, suffices to change every constellation” (HC 190). Because we are “beings whose essence is beginning” (UP 321), change seems to be a fact of human existence, incapable of being in any way stopped or directed (HC 191). In the second sense of the word, however, stabilizing can be seen not as a mechanism of stopping change, but as an activity of maintaining ourselves within it. Think of stabilizing as the ability to right an airplane in conditions of turbulence. This instance is instructive because it underscores the close relationship (and yet vital distinction) between stabilizing and navigation, another metaphor often found in Arendt’s works (HC 244, LM 201, 211): even as the airplane rights itself, it is always moving in a certain direction, toward a particular destination. The activity of stabilizing by itself cannot redirect the plane, sending it to New York when it was headed to Los Angeles. But it can fine-tune the plane’s trajectory; without it, navigation is utterly impossible. Thus, stabilizing is a necessary prerequisite and makes possible the activity of navigation. It is only in the context of (albeit relative) stability that the business of navigation can even begin. If we take Arendt’s navigational metaphors to refer to the activity of judging (TP 257, LM 109), stabilizing then becomes the necessary precondition for this most vital political activity.

In order to properly conceive of stabilizing in this manner, it is critical to remember that the activity of stabilizing is itself necessitated by a phenomenon of

instability; there is no need to navigate if one is not moving. In the following section, I deal with the disorientation and destabilization inherent in thinking, showing how this activity undermines the elements of the world by which we might take our bearings.

IV. HEIDEGGER'S PLUNGE: THINKING AND THE SENSORY WORLD

“Leaving his ‘place of stillness,’ Heidegger plunges or falls into the world, becoming victim to the blindness and disorientation that accompany the philosopher’s return to the cave” (Villa 1996, 231).

In most allusions to the cave, it is the *initial* moment of blindness that is the primary concern — when one steps out of the cave and into the light, “pained and dazzled and unable to see the things whose shadows he’d seen before” (*The Republic* 515c). Yet, as Villa reminds us, “the eyes may be confused in two ways” — both in that initial encounter with the light of Truth and again when one must return to the cave.¹¹⁸ Villa employs this analogy in his depiction of Arendt’s interpretation of Heidegger’s involvement with National Socialism. In her essay written “For Martin Heidegger’s Eightieth Birthday,” Arendt firmly locates Heidegger’s abode in the realm

¹¹⁸ Technically, as Arendt herself points out in “Philosophy and Politics,” there are *three* “turnings about” in Plato’s allegory. Even before exiting the cave, the philosopher must turn her head around, freeing herself from the fetters which keep her focused on the shadow play in front of her (*The Republic* 515a, PP 94). In each of these instances, turning-about is accompanied by disorientation, or a loss of “common sense” (PP 95). Yet it is that final turning-about, the “loss of orientation which befalls those whose eyes once were adjusted to the bright light under the sky of ideas and who must now find their way in the darkness of the cave” that Arendt describes as “worst of all” (PP 95).

of thinking, withdrawn from (yet still within) the world of appearances (B 215).¹¹⁹ She refers to Heidegger's intervention into politics in the form of the 1933 "Rectorate Address" as "[giving] in to the temptation to change his 'abode' and to involve himself in the world of human affairs" (B 216). This infamous action she interprets as a result of the blindness Heidegger experiences in his plunge into the world; it is as if his disorientation deprives him of the very means by which to judge National Socialism and his own actions to be wrong (B 216, Villa 1996, 231).

I believe the disorientation Heidegger experiences in his trek between thinking and acting is inherent in the move between these two activities. Yet Heidegger's disorientation must be seen as two-fold in that even before he takes his plunge into the world, while he is still thinking, he is already located within a phenomenon of perpetual motion and energy which swirls about him, encompassing and acting upon him. As Arendt puts it, Heidegger is "the thinking 'I' that is 'standing within' the raging storm" (B 212). Heidegger himself describes the "essence of man" as "to be beheld by what is, to be included and maintained within its openness and in that way to be borne along by it, to be driven about by its oppositions and marked by its discord" (AWP 131).¹²⁰

¹¹⁹ Though she refers in this essay to Heidegger's "abode" as distinct and withdrawn from the world of appearances (B 216), Arendt vehemently refutes a "two-world" distinction between the realm of thinking and the world of appearances (LM 110); though withdrawn, "I flee appearance only into appearance" (LM 23). Thus it is not that Heidegger has somehow escaped from the world of appearances into another, more authentic, realm but that, in thinking, he is less concerned with "*present* appearances" (LM 24).

¹²⁰ While this quote refers specifically to the "essence of man in the age of the Greeks, it functions as an apt description of the workings of "what is" in any age—what changes is not the essential nature of "what is" but our own awareness of its actions (AWP 131).

Though Heidegger makes use of many names¹²¹ in his attempt to speak the essentially unspeakable phenomenon of “what is,” “Conversations on a Country Path About Thinking” contains his most sustained treatment. Written later in his life, long past the time when Arendt was most closely involved with his work, the “Conversation” essay nonetheless fits closely with her description of thinking in *The Life of the Mind*, offering a prime example of what this activity might look like. The withdrawal, circularity, and destructive tendencies of thinking that Arendt details (LM 52, 43, 124, 85) are each apparent in Heidegger’s portrayal of this “conversation.”

From the very start, Heidegger’s essay demonstrates the necessary withdrawal from the familiar world that thinking entails. This “withdrawal . . . from the world’s being *present* to the senses” (LM 75) is the primary reason thinking is a destabilizing activity. In order to engage in the activity of thinking, the imagination takes hold of things and transforms them from objects capable of being seen, touched, heard, smelled and felt, into “thought-things,” which have no such material reality (LM 76-77). This “de-sensing” enables the mind to retain them in their absence (LM 77). In “Conversation on a Country Path,” this withdrawal from the realm of human affairs is symbolized by the isolation of the three characters in relationship to humanity; Heidegger explicitly locates this conversation “far from human habitation” and ends it with their return (Anderson 22, CCP 60)

¹²¹ Heidegger’s name for “what is” seems to change with each essay; in “Conversations on a Country Path,” he speaks of it as “that-which-regions” (CCP 66); in “Building Dwelling Thinking,” “what is” is discussed in terms of the “fourfold” and “primal oneness” (BDT 360, 351). This perpetual shift in terminology is necessitated by Heidegger’s understanding of what he is doing in speaking “what is.” For Heidegger, to “say” “what is” is to point toward a phenomenon that cannot be either said or seen in its entirety. In speaking it, he becomes almost a conduit for language and “what is” seems almost to speak through him (WL 411).

In this essay, the primary thought-object with which Heidegger's interlocutors are concerned is "what is," spoken here as "that-which-regions"(CCP 64-65). Simultaneously a space (a region), an activity (regioning) and a force (that-which-regions) attempt to capture the "multidimensionality" (LH 219) of this phenomenon. While thinking must always involve language (LM 98), Heidegger's shifting terminology demonstrates the challenge inherent in describing what is essentially an invisible phenomenon. Precisely because "what is" is what Arendt would term a "thought-object" (and one which has no direct equivalent in the world of appearances), language itself must employ metaphors and analogies in order to represent it in the mind (LM 77). There is no actual, physical region of which Heidegger's thinkers are speaking; what they are attempting to describe is only ever "something *like* a region" (CCP 65—italics added).

In their discussion of this thought-object, the three characters in Heidegger's little drama—the Scholar, the Teacher and the Scientist—each approach "that-which-regions" by making a suggestion as to its appearance. These suggestions are then taken up by the other two actors who modify and correct them. Advancing, and then retreating again, they continually attempt to summarize and build upon what has already been said; at the same time, they question and deconstruct their previous statements. This circularity occurs at the same time the three move along their path, transforming the suggested "region" (CCP 65) into "regioning" (CCP 66) and finally into "that-which-regions" (CCP 66). This sort of spiraling activity—which both gains upon and loses sight of the phenomenon all the while it advances—is necessary because it acknowledges that "that-which-regions" could never be described in its entirety, as if it

were something which could be set before man and “represented” (CCP 67). To attempt this would be to “freeze” (CCP 76) what is essentially a realm of “sheer activity” (LM 72) and, in doing so, void it of its “enchantment” (CCP 65).¹²²

Perhaps a more useful way to think about the activity of Heidegger’s scholar, teacher and scientist is to see them as engaging in a curious sort of stop-motion photography. Each takes snapshots of that-which-regions. By viewing them in succession, this phenomenon comes into focus; but that-which-regions itself is never actually recreated or replicated. “The very act of description . . . would reify it” (CCP 67). Even more confusing, these initial pictures seem to fade away as the conversation progresses; just as a suggestion begins to make sense, it is altered or discarded. For Arendt, such “slipperiness” is inherent in the activity of thinking; every attempt to “*see* and *grasp*” ends in a “slipping away” (LM 122). Elsewhere she compares thinking to “Penelope’s web; it undoes every morning what it has finished the night before” (LM 88). Unlike cognition, which aims toward knowledge and proceeds in a cumulative and rectilinear manner, thinking “circles back into itself” (LM 124) and produces no direct results (LM 171; UP 322). At the end of the “Conversation,” Heidegger’s interlocutors have transformed their original object of thought so many times that the reader is almost more confused than at the beginning. Any insights the “Conversation” seemed to offer vanish as soon as the reader steps out of the discussion and attempts to say what has

¹²² Arendt, too, makes reference to thoughts “frozen” by language (LM 174). For her, however, such “frozen thoughts” are simply necessary facts of the language by which we communicate, “short-cuts” which make communication possible. For Heidegger, on the other hand, such frigidity is closely related to the concept of *Gestell* or enframing (QT 23), against which thinking must always be on guard. I return to the idea of enframing in chapter three.

been learned. This befuddlement and lack of concrete results are why Arendt refers to thinking as an essentially “unproductive” activity (LM 171).

Regardless of what Heidegger’s “Conversation” tells us about the nature of “that-which-regions,” his suggested interaction between the three thinkers is instructive for understanding the activity of thinking itself; the triologue he depicts can be extrapolated to represent the dialogue that takes place within our heads when we attempt to think that-which-regions in its “multidimensionality.” Precisely because each of us is a conscious being, our consciousness manifests or “actualizes” itself in an inner dialogue between me and myself (LM 187); just as in a Shakespearean soliloquy, “I am both the one who asks and the one who answers” (LM 189,185).¹²³ While Heidegger portrays this interaction as occurring among three persons instead of the “two-in-one”¹²⁴ Arendt proposes (LM 187), there seems to be no stated limit on how many characters may be involved in such internal discussions.¹²⁵ Indeed, each of Heidegger’s characters can be thought of as their own “two-in-ones.” For Arendt, what is important is that there are never *fewer* than two participants in this inner dialogue. Moreover, to ensure that one never contradicts oneself, these participants should always be friends, because “the partner who comes to life when you are alert and alone is the only one from which you can never get away” (LM 188).

¹²³ This inner self is not, however, directly equivalent to the conscience, though the conscience is a “moral side effect” of this inner dialogue (LM 192).

¹²⁴ This two-in-one terminology refers to Arendt’s proposition that the duality inherent in the thinking ego is continually transformed into a single entity as soon as the thinking ego enters the world and appears as One subject to others (LM 187).

¹²⁵ Indeed, in her depiction of representative thinking—a slightly different enterprise to be dealt with later, the ability to include the standpoints of more people is a hallmark of good political thinking (PP 84).

In this discussion, Heidegger's interlocutors start off by describing the spatial dimensions of "that-which-regions." Because we often think in visual terms, this attempt at description seems often to come first (LM 87). In its spatial sense, "that-which-regions" can be thought in terms of "an openness which surrounds us"(CCP 75). With our restricted field of vision, we only ever see one side of this openness—the side that is before us, our horizon (CCP 64). Yet we often mistake this horizon for the full extent of reality, just as Plato's cave-dwellers take the play of shadows before them as real. But we are always within a space that is greater than what we can envision, more complex than any single dimension allows us to perceive.

The openness of this space exists, regardless of whether or not we look upon it. More significantly, its primary activity, what Heidegger refers to as "regioning," takes place without humans "doing" anything (CCP 71). The activity of "regioning" Heidegger describes primarily in terms of "revealing" and "concealing"(CCP 73).¹²⁶ In the act of regioning, "that-which-regions" continually cloaks itself, withdrawing from us (CCP 66) at the same time that it "reveals itself to us as the horizon" (CCP 73). This interplay between revealing and concealing is typical of Heidegger's thought in that "that-which-regions" is not restricted to merely one dimension of action.

While the specific nature of "that-which-regions" is difficult to ascertain, what is significant for my purposes is that Heidegger's thinking, like all thinking, is an essentially destabilizing act. Thinking "inverts all ordinary relationships and . . . annihilates temporal as well as spatial distances" (LM 85). Precisely because

¹²⁶ Like "what is," concealment takes on different names (and gradations) in his many essays (CCP 61). He speaks of "disguising" (AWP 135) or the "hidden nature" [of things] (CCP 83). In each case, however, Heidegger suggests that it is part of the very nature of "what is" is that it conceals (LH 222, 263).

Heidegger calls into question our understandings of man's relationship to the world, he wreaks havoc with many of the ways by which we are accustomed to taking our bearings. "I hardly know anymore who and where I am," the scientist remarks early in the conversation (CCP 62). In the world of appearances, we locate ourselves within space, conceived as something static, able to be measured in terms of one's physical relationship to an object. Using these measurements, it is possible to triangulate our position. In Heidegger's thought, however, nearness and distance depend on our awareness of an object rather than on its physical location, thus becoming functions of mental rather than physical proximity (BDT 358-359). In this reconceptualization, Heidegger calls into question what normally functions as a simple tool of measurement. Nothing, at least while we are thinking, is beyond the reach of the "wind of thought" (LM 174). Even the earth, where we make our home, is reconceived as itself a part of the forceful phenomenon of "what is" and capable of destructive acts (OWA 170), thus calling into question the firmness of what Arendt calls the very "ground on which we stand" (TP 264).

Heidegger is not oblivious to the implications of such destabilization. It is precisely because "what is" contains such destabilizing potentialities that he, too, theorizes "holding steady" (or should I say stabilizing oneself) within the concealing and revealing activities of "that-which-regions" (CCP 81). For Heidegger, this activity of "holding steadfast" is closely connected to what it means to think (CCP 81); only by thinking do we allow ourselves to become aware of these revealing and concealing activities. By conceiving of thinking as "holding steady," Heidegger transforms what is often seen as a deliberate seeking into a restrained "waiting" (CCP 62).

Yet, in Heidegger's conception of thinking, we cannot know what it is that we are waiting *for*. The actual experience of "that-which regions" is always granted to us by something else (CCP 61). Thus, thinking, according to Heidegger, is a sort of "releasement" (CCP 61), by which we relinquish our capacity to will and "let in" (or open ourselves to) "that-which-regions" (CCP 61). In "Conversation," the Scientist refers to that "inconspicuous guide who takes us by the hand—or better said, by the word—in this conversation" (CCP 60). In allowing themselves to be led in this sense, Heidegger's characters engage in what he calls "meditative thinking" (CCP 60). I will return to Heidegger's discussion of meditative thinking in chapter three. For now, what is important is that Heidegger suggests that thinking requires that we create (or protect) for ourselves a dwelling—a place that recognizes the mystery of "what is" and attempts to "preserve," "save," and "guard" it (BDT 360). In performing these protective activities, Heidegger purports that we "respond" to the "summons" of this phenomenon (BDT 361) and allow a space to open in which "what is" can make itself known.

This description of dwelling is as close as Heidegger comes to recognizing our need to orient ourselves within "what is." Because dwelling creates a home, both for us and for "what is," it attempts to "shelter" thinking (BDT 360). It is only Heidegger's own "success" in his creation of this abode for himself ("Heidegger the Fox" 361) that allows Arendt to characterize Heidegger as moving from a place of relative "stillness" into the more chaotic world of human affairs (B 214).¹²⁷ For those unaccustomed to dwelling, the encounter with "what is" can be a disorienting experience.

¹²⁷ Interestingly, Arendt describes Heidegger's creation of his abode in the realm of thinking as a path-building exercise, which actually has orienting capabilities *for other thinkers* (B 212). But Heidegger seems primarily instructive in how to think, and not in how to orient oneself.

Unlike Arendt's conception of bearings, however, this abode is unable to "travel": it cannot shelter Heidegger from the disorientation inherent in his return to the world of appearances. Whereas bearings allow us to orient ourselves regardless of our location,¹²⁸ an abode offers shelter only when one is within it. Because Heidegger is unable to recreate his abode outside of the realm of thinking, it offers him little assistance during his transition from thinking to acting, and it is in this transition that Heidegger's disorientation is most profound.

Whereas Heidegger wants to connect the activities of holding steady and sheltering to thinking itself, for Arendt, thinking can never offer the "guideposts of reliability" so vital for taking our bearings. Though it might be "among the conditions that make men abstain from evil" (LM 5), thinking is ultimately not the faculty which allows us to tell right from wrong. It may *result* in this ability, but it is not the ability itself (LM 192)—that she reserves for the faculty of judging.¹²⁹ In differentiating between the two, Arendt is trying to both protect the autonomy of thinking and the withdrawal from the world it requires, and yet also make clear that an activity more closely connected to the world is needed to deal with the political realm.¹³⁰ Because thinking is withdrawn from the world, it eliminates our primary bearing, reality—that mysterious entity upon which almost all stabilizing relies (LM 77). Only in the context

These paths thus provide an exemplar of the thinking activity itself, but are inadequate for the stabilizing activities which are so necessary to political judgment.

¹²⁸ In speaking of location, I am not referring to our mere physical location, but to a combination of physical, mental and temporal "locations." For a more detailed discussion of Arendt's concept of location, see Bickford (1996, 184).

¹²⁹ In the words of Ronald Beiner, "thinking releases the political potency of the faculty of judgment—the potency that inheres in its capacity to perceive things as they are, that is, as they phenomenally manifest" (1982, 112).

¹³⁰ Indeed, Arendt suggests that it is only in times of "political emergencies" that thinking has a political function at all (LM 192).

of the stabilizing force of reality can political determinations—those which concern men and not Man—be conceived.

V. REALITY: “THAT WHICH SIMPLY IS BECAUSE IT HAPPENS TO BE THUS”

Within Arendt’s works, there are at least five different (though often related) uses of the terminology of “reality,” each of which is dealt with in the coming section. Yet in each description, reality retains an element of “‘standing still and remaining’ the same” (LM 45) in comparison to other entities. It is this relative “fixedness” that makes reality so crucial for finding our bearings.

In *The Human Condition*, the concept of reality is discussed as the material world erected by *homo faber* and the immaterial web which lies between human beings (HC 183). Here, “the reality and reliability of the human world rest primarily on the fact that we are surrounded by things more permanent than the activity by which they are produced, and potentially even more permanent than the lives of their authors” (HC 95-96). Created by *homo faber*, these things have an “intermediary, stabilizing, and solidifying influence” on the realm of human affairs (HC 182). Artifacts of the world, things are “tangible” (HC 183), “durable” (HC 137) and “objective” (HC 137); they outlast mortal men and provide “permanence” and continuity between generations (HC 173). In their artistic form as paintings, books and sculptures, things immortalize and reify action by allowing the story of it—“the only product of [their] activity”—to

“survive” (HC 173).¹³¹ The faculty which allows us to perceive things and understand our relationship to them is known as “sense perception” (LM 50). It is at least partially because we can see, hear, feel, taste and smell things that we are able to situate ourselves within the world.

The world is itself created by things. Offering a way for people to “relate” and “bind[ing] them together, they constitute a physical, worldly in-between” (HC 182) that exists among human beings when they are dealing with tangible things. In addition to this “in-between,” “overgrown” on top of it, Arendt posits another “subjective” and (at least partially) “intangible” web that “consists of deeds and words” (HC 183), what she calls the “the ‘web’ of human relationships” (HC 183). It is into this web that Arendt’s actors insert themselves when they act; thus the web itself enables the activity of self-disclosure. Yet it is also here that our actions become subject to “innumerable, conflicting wills and intentions” (HC 184) and are transformed—hence the unpredictability of action.

While Arendt defines reality in *The Human Condition* as the intertwining of these two “in-betweens,” in *The Life of the Mind*, her focus is on the world of appearances and the “phenomenal nature of reality” (LM-22). Despite our tendency to conceive of appearances as the direct antithesis of reality—as if appearances were mere illusions—Arendt wants to show that appearances and reality “coincide” (LM 20); there

¹³¹ While action itself has a fleeting quality, the stories told about actions make them “immortal” (HC 168). Immortality, precisely because it allows for—always relative—stability, thus plays a crucial role in Arendt’s works.

is no more authentic realm out of which appearances arise.¹³² For her, realness is a quality inherent in how objects appear, which differentiates the “common world of our waking life . . . [from] the private, non-world of our dreams” (LM 48). While thinking is often unable to differentiate between reality and fiction, realness itself cannot be changed by thinking and “remains stubbornly beyond its reach” (LM 49). Again related to things and to our perception of them, reality is guaranteed by the fact that others perceive as we do and by the “working together” of the five senses (LM 50).¹³³ It is for this reason that Arendt is so concerned by the distinction between reality and sensory experience upon which technologies like PGD are premised.

Yet in addition to the reality of the world, there is also individualized reality—the way in which the world appears to each living being (PP 80; LM 21, 46). Something more than “subjective fantasy” but far from “absolute and valid for all” (PP 80), reality in this sense is inherently perspectival. It is for this reason that Arendt often prefaces statements with the phrase “from the perspective of” [the “immediacy of life,” the philosopher, common sense, fabrication] (LM 87, PP 96, UP 314, HC 157, *passim*); the standpoint from which a thought is proffered is vital information for her readers.

This conception of reality as the “it-seems-to-me” (LM 21) is intrinsically related to Arendt’s appreciation for opinion (or *doxa*), because *doxa* itself is “the formulation in speech of . . . what appears to me” (PP 80). This formulation is crucial to Arendt’s critique of the Platonic dichotomy between truth and opinion, because if

¹³² Indeed much of *The Life of the Mind* is focused on undermining precisely this traditional Platonic assumption, which Arendt sees as the basis for much of the history of philosophy (LM 6).

¹³³ This working-together of the five senses is also referred to by Arendt as “common sense” and is dealt with later in this chapter.

opinions themselves are representative of the different ways in which the world appears in different locations and to different individuals, one worldly truth cannot exist (PP 80). In her works on totalitarianism, however, reality is discussed in a different context; here, reality is intimately connected to history and events, referring to what has happened or is happening. Reality thus becomes factual, “beyond agreement and consent” (TP 241)—something to which we must “face up,” or “reconcile” ourselves, and at times even “resist” (OT viii; UP 308). In “Truth and Politics,” factual reality is described as the combination of facts, events, and the meaning that is ascribed to them (TP 261-262). There is a “stubbornness” to reality in these works; regardless of one’s individual perspective, there are events that did occur and cannot be altered (TP 243). Indeed, for Arendt, “there are no truths beyond and above factual truths” (LM 61). But while we cannot *change* facts by agreeing on certain ones and not others, we also cannot “witness” events, or make them comprehensible without the presence of others (TP 238). It is over the “testimony” of such witnesses that all disagreements about factual truths can be found.

The reason factual reality plays such a vital role for Arendt, especially in these works, is that totalitarianism attempted a vehement rejection of just this factuality-- a “complete rearrangement of the whole factual texture” (TP 253). Based on the assumption that “everything is possible” (OT 436), totalitarian movements essentially fabricated a replacement for reality, constructing new “guideposts” by which to take our bearings. For instance, in the Third Reich, evil itself was redefined so as not to include the murder of other human beings (EJ 150). What would previously have been considered beyond the moral pale became acceptable and even encouraged. When evil

loses “the quality by which most people recognize it—the quality of temptation” (EJ 150), it no longer serves any sort of orienting function. In “Truth and Politics,” Arendt describes these efforts as the telling of a “modern lie” (TP 253). As opposed to a traditional lie, which “tears . . . a hole in the fabric of factuality” (TP 253), modern political lies reweave the fabric entirely. These lies are not directed at specific persons or even groups of persons, but at everyone; even the perpetrators of the modern lie “fall victim to their own falsehoods” (TP 253).

Despite these efforts to reconfigure reality, Arendt wants to hold on to factual reality as ultimately irreplaceable and irrefutable. The continual revisions required in order to deal with new circumstances continually undermined the stability of totalitarianism’s creation, and, in doing so, called it repeatedly into question (TP 257). It is for this reason that Arendt describes the experience of living under totalitarianism as existing in a mode of “perpetual motion” (OT 306).¹³⁴ However, this constructed reality can “never compete in stability with that which simply is because it happens to be thus . . . This is the reason that consistent lying, metaphorically, pulls the ground from under our feet and provides no other ground on which to stand” (TP 258). The problem with totalitarian movements is that they eliminate not only their own constructed factual texture, but also any sense of reality at all.

I should note that these various discussions of reality are intricately linked for Arendt. For instance, it is precisely because totalitarian movements have a tendency to isolate individuals, cutting them off from meaningful interactions with their peers (OT 474), that fabricated reality can even *attempt* to compete with the reality guaranteed to

¹³⁴ It is also for this reason that the phenomenon of totalitarianism has such a disorienting and destabilizing effect on its citizenry.

us by our common sense. Given the importance that other human beings play in creating the world and witnessing factual events, isolation inhibits the ability to “check” our perceptions of reality with those of others: “[F]or together with [the loss of] these contacts, men lose the capacity of both experience and thought” (OT 474).

In order to differentiate this constructed reality from that which “simply is,” Arendt turns to the concept of “common sense”; it is this faculty which allows us to distinguish what is real from what is not. In each of her works, “common sense” is conceived as the “sixth sense that fits our five senses into a common world” (LM 81). In other words, common sense takes the individual experiences of seeing, hearing, feeling, touching, and smelling and puts them together, ensuring they are all perceiving the same object and that this object is perceptible to others.¹³⁵ This vital common sense, or *sensus communis*, which will later figure so strongly in Arendt’s appropriation of Kant’s conception of judgment, is not, however, a form of thinking (LM 51). Rather, Arendt characterizes the relationship between thinking and common sense as one of “intramural warfare” (LM 80). Because common sense is so intimately connected to the particularity of the world, the withdrawal inherent in thinking works against it at every turn, thus doing violence to the sense of reality guaranteed by our common sense. It is for this reason that thinking is an essentially destabilizing act. The stability provided by reality is fundamentally absent in thinking, not simply because thought is “swift,”

¹³⁵ In *The Life of the Mind*, Arendt details three factors which convey a “sensation of reality”: first, the same object must be perceived by each of the five senses; second, the context of this object must be the same for “all members of the same species”; third, “all other sense-endowed beings, though perceiving this object from utterly different perspectives, agree on its identity” (LM 50).

unconstrained by materiality and matter (LM 44), but because it “subjects everything it gets hold of to doubt” (LM 52).¹³⁶

VI. THINKING’S “SAFEGUARDS”

This does not mean that Arendt conceives of *no* “safeguards” in thinking which might prevent the disorientation Heidegger experiences. First, and primarily, thinking, for Arendt, is always only a temporary activity (LM 53). Because the thinker is continually encountering the “stumbling blocks” of reality, he or she is repeatedly jerked back toward the world and the stabilizing factors it contains (LM 52). Secondly, thinking always involves language; “thoughts cannot occur [for Arendt, at least] unless they are spoken” (LM 99). And it is the *language* of thought that “undoes” the withdrawal from the world that thinking necessitates (LM 103). Metaphors, analogies, and idioms, even the act of naming itself, in some sense “disorientate” the world (LM 100). Indeed, Arendt speaks specifically of the bearings provided by such linguistic structures; “they serve as models to give us our bearings lest we stagger blindly among experiences that our bodily senses with their relative certainty of doubt cannot guide us through” (LM 109). It is precisely because thought occurs in language and human beings have an “urge to speak” that the thinking ego is never fully absent from the world of appearances (LM 98).¹³⁷

¹³⁶ This discussion of doubt might seem odd given Arendt’s extended critique of Descartes outlined in chapter one. In *The Life of the Mind* Arendt suggests that Descartes’ error lies not in doubting, but in his “hope that he could overcome his doubt by insisting on withdrawing from the world altogether” (LM 52).

¹³⁷ “There are not two worlds because metaphor unites them” (LM 110).

Lastly, Arendt sees thinking's very destructiveness as protecting against negative consequences.¹³⁸ In some sense, its greatest weakness is also its saving grace, because thinking thus contains a "critical capacity" that Arendt sees as a "safeguard" (LM 56). This destructiveness is liberating (and protective) in the sense that it does away with prejudices and constrictive traditions. In "political emergencies," Arendt wants to suggest, it even disrupts the ability of the thinker to be "swept away" by "what everybody does and believes in" (LM 192). Thinking's very destructiveness thus enables the faculty of judging, though without telling us how to act (LM 192-193). The reason thinking cannot tell us how to act is that action for Arendt requires complete and utter spontaneity. While thinking might clear the way for judging and enable this *activity*, it has no connection (at least for Arendt) with either particular judgments or what we actually do. In the same sense, judging itself acclimates us to what is right or wrong, but does not end in a particular action or even decision about what to do. This projection into the future, Arendt reserves for the faculty of willing (LM 196).¹³⁹

But in Heidegger's case, his thinking seems to have had the opposite effect. If thinking's destructiveness should enable judging, why does Arendt point to this same activity as involved in Heidegger's *inability* to judge? In order to answer this question,

¹³⁸ The presence of another, even the purely imaginary friend who partakes in thinking's inner dialogue, may also guarantee something like stability to thinking, but because this friend would presumably share a similar perspective, his/her ability to provide anything like the web of human relations inherent in the world is quite doubtful. This may not be true, however, of *representative* thinking in which those present are *not* of the same viewpoint. More on this later.

¹³⁹ It is this distinction between thinking, judging and willing (as well as Arendt's appropriation of Kant's actor-spectator dynamic) that accounts for the tendency of theorists, following Beiner, to draw a distinction between Arendt's discussion of judging in the works that deal with the *vita activa*—like *Eichmann* and *Origins of Totalitarianism* and the more philosophical *Life of the Mind* (Beiner 1982, 94; d'Entreves 2000). This distinction seems to me misleading given the fact that the *Life of the Mind* is itself inspired and prefaced by the question of how these mental activities might protect against totalitarianism (LM 5).

it is necessary to point out that Heidegger's disorientation is not typical. For him, it is his intense familiarity with the realm of thinking that makes the world of appearances seem especially disorienting; it is as if he has lingered too long in this realm which is capable of sustaining only temporary habitation (LM 53). For the majority of people, this is not a problem. Indeed, in both her works on totalitarianism and *The Life of the Mind*, Arendt suggests that it is the *refusal* to engage in thinking that enables the rise of totalitarianism in the first place (EJ 49, OT 476, LM 4).¹⁴⁰

Yet it is not simply that Heidegger becomes so comfortable in "thinking's abode" (or his "trap")¹⁴¹ that the "stumbling blocks" of the world only rarely intrude. Whereas Arendt points to metaphors and analogies which function as the "threads by which the mind holds on to the world even when, absentmindedly, it has lost direct contact with it," (LM 109), Heidegger cannot count on even these tentative threads. Using unfamiliar sentence structures and terminology, in effect creating new words,¹⁴² rather than using metaphors and analogies, Heidegger undermines language's ability to serve as a point of reference.¹⁴³ Even in his discussion of "that-which-regions," Heidegger connects this phenomenon to language, suggesting at times that the "region"

¹⁴⁰ This is not to say that we are incapable of such activity; Arendt's work contains continual reminders of the fact that thinking is a human capacity-- not restricted to "professionals"(LM 191); indeed, according to her, most professional philosophers tend to get things quite wrong (e.g. LM 184).

¹⁴¹ What in Arendt's public address she terms an abode, in her more private *Denktagebücher*, she refers to as a "trap" (HF 361-362). Most likely, both such characterizations are apt.

¹⁴² This creation (or reconfiguration) of words can be seen in his references to "that-which-regions" (CCP 66), as well as more traditional Heideggerian concepts like "*Dasein*" and "existentiell" (BT 54).

¹⁴³ This should not be read as a criticism of Heidegger's grammatical moves. As I show in chapter three, they are quite effective in their attempt to draw the reader's attention to how our thinking is constrained by such constructs and "unfreeze" the meanings of words. All I am trying to show here is that the effect of such moves can be both liberating (in that they remind us of alternative ways of speaking and thinking language) *and* disorienting.

of which he speaks *is* the “region of the word” (CCP 71). To describe language in this sense, as something which works through humans, rather than the other way around, would seem to undermine its ability to act as a relatively fixed entity. Given the fact that the world of human affairs relies so heavily on sense-perceptions and speech, it is little wonder that Heidegger, having called the workings of language itself into question, becomes disoriented in his move from one abode to another.¹⁴⁴

Moreover, the destructiveness of thinking is not simply liberating. Because it has the same dismantling effect on prejudices and less offensive standards of judgment, it *can* leave “nothing in your grasp but perplexities” (LM 175). Thus in Heidegger’s case, it eliminated not only traditions that are probably better off dead, but also the very moral standards which might have suggested to him that National Socialism was wrong. While Arendt has faith in the capacity of human beings to judge without such inherited constructs (UP 321), she also recognizes that such constructs might have prevented totalitarianism in its particular form.

Most significantly, however, Heidegger seems unwilling to recognize the limitations of his thinking. Discontented with both the state of the world and thinking’s lack of results, his “Rectorate Address” might be interpreted as an attempt to take what he has learned in the activity of thinking and “apply” it to the world of appearances. In doing so, he senses in National Socialism a similar dissatisfaction with the world as given and thus looks to this movement as a potential vehicle for change. His “explanation” in *Der Spiegel* of his affiliation with the Nazis seems to support this

¹⁴⁴ It should be noted that Heidegger’s reconceptualization of language is not meant to destroy what remains both the “house of Being and the home of human beings” (LH 262); that language “remains” in this way for Heidegger does not, however, undermine the claim that his understanding of language’s movements has a potentially disorienting effect.

contention (“Nur noch ein Gott” 196). But since the realm of human affairs “from the viewpoint of the philosopher” appears as a realm of “darkness and ignorance” (PP 96), such interventions often denigrate the political realm at the expense of human plurality. The result of such interventions—which treat the objects of thought not as fleeting insights, but as objects of cognition—Arendt warns “can only be a clear demonstration that no man is wise” (LM 177). Accustomed to moving among universals—unconstrained by what is human or even possible—the philosopher is (at least temporarily) incapacitated upon his return to the world.

VII. POLITICAL THINKING: BRINGING THE WORLD BACK IN

It is because pure thinking tends to be unappreciative of plurality that Arendt describes *political* thinking—that which, by definition, *must* concern itself with the stuff of human affairs—as a rather different enterprise (TP 241). Though it retains some of the characteristics of pure thought as illustrated in Heidegger’s “Conversation,” Arendt builds into her concept of political thinking additional safeguards, designed to make its participants more able to deal with the particularity of the world. The intent is to make the “results” of political thinking (i.e. opinions) less susceptible to the dangers of disorientation (TP 241). To be honest, Arendt’s use of the moniker of “thinking” in this case seems misleading; political thought (or what Arendt calls “representative thinking”) seems to have more in common with judging than with the activity of thinking. It is in the context of judging that this concept is introduced (TP 241, CC 221,

LM-Appendix 258) and in the entire first volume of *The Life of the Mind* (a volume dedicated exclusively to the activity of thinking), this most intriguing concept is mentioned only in the last few pages—and again in connection to judging. In some sense then, political thinking functions as the connective tissue that ties together Arendt’s insistence on the urgency of thinking and her writings on political judgment.

Because it deals with particulars rather than universals, and includes the standpoints of numerous other potential interlocutors (CC 220), representative thinking’s withdrawal from the world (and its inherent plurality) is less severe, and perhaps less disorienting, than the “radical” withdrawal of pure thinking (LM 92). This location of the political thinker within the world is crucial because it allows representative thinking and common sense to work together, instead of warring against each other (CC 221). Like judging, representative thinking requires that we withdraw not from the world *per se* but from the partiality of “one’s own private interests”; “disinterestedness” is thus its chief requirement (TP 242). In this distancing of ourselves from our interests, we nonetheless “remain in this world of universal human interdependence” (TP 242). In contrast to the “absentmindedness” which characterizes the withdrawal of the thinking ego (LM 52), representative thinking (and the judging to which it is so intimately related) is “deliberate, active non-participation” (LM 93).

In Arendt’s description of representative thinking, its chief characteristic is that it involves the “making present to my mind the standpoints of those who are absent; that is, I represent them” (TP 241). According to Susan Bickford, this representation of others has at least two functions. Firstly, it “lets in others in order to be with them” (1996, 83). In this sense, representative thinking can be seen as a partial recreation of

the public realm in the imagination (Bickford 1996, 82), though it can never be as “surprising” as that realm itself (Bickford 1996, 87). As stated above, this recreation allows at least some of the stabilizing factors of the world, namely the reality guaranteed to us by other human beings, back into the activity of thinking.

A second interpretation conceives of representative thinking in terms of the imaginary dialogue it might enable (Bickford 1996, 83, Benhabib 2001, 194). At first glance, this description makes representative thinking seem like an extrapolation of the “soundless” dialogue which exists between me and myself while I am thinking (LM 187)—there just seem to be even more participants! Conceived in this way, Heidegger’s “Conversation” might again seem exemplary, given the interaction between the Scientist, Scholar, and Teacher that it portrays. Just as in representative thinking, these characters offer up the manner in which “that-which-regions” appears to each of them, circling the phenomenon and attempting to view it from different angles. However, there are a number of important distinctions between thinking as portrayed by Heidegger and representative thinking—each of which is related to political thinking’s additional safeguards against disorientation.

Foremost, as mentioned above, representative thinking deals with the particularities of the world. “That-which-regions,” on the other hand, is clearly a universal construct; “what is in question is *the* region” (CCP 65). More importantly, however, Arendt wants to distinguish between the friendly partner (or partners) with whom I speak while I am thinking and those “in whose places’ I must think” (CC 220). The former are inescapable and ever-present whenever I think; this is why Socrates recommends that one “be in good shape” with one’s inner partner (LM 187).

Heidegger's Scientist, Scholar, and Teacher are clearly such friends— finishing each others' thoughts (CCP 64, 90, *passim*) and “trying to find the truth” in each others' statements (PP 81). In the case of representative thinking, however, interaction with these potential interlocutors is a voluntary act. While not advisable, it is perfectly possible to “refuse” to take these standpoints into account (TP 242). Moreover, Socrates' “axiom of contradiction” (i.e. this necessity to “be in good shape”) does not apply in this case; these imaginary others are not necessarily friends, but “all those who happen to be present” (CC 221). While eventual agreement seems to be a potential goal of representative thinking (at least in some of Arendt's works), it is in no way a precondition for its exercise (CC 220). Indeed, it may be that we should represent to ourselves those with whom we would *least* want to spend time—those whose opinions (and thus their perspectives) are utterly foreign to us.¹⁴⁵

This element of potential conflict that is inherent in Arendt's discussions of representative thinking is absent from Heidegger's formulation (TP 242). While each character makes suggestions that contradict what someone else has previously said, these new propositions are taken up readily, almost without argument; none of the characters ever points out these contradictions.

Even more importantly, the Scholar, Teacher and Thinker are generic beings. Like Arendt's “thinking ego,” they are “ageless, sexless, without qualities, and without a life story” (LM 43). This is not to say that nothing differentiates the Scientist from the

¹⁴⁵ Arendt does not make this claim explicitly, but in her description of the “good statesman,” the inclusion of such a variety of different “it-seems-to-me's” and the ability to communicate between them is crucial to this quality (PP 84). Both Dana Villa and Lisa Disch will also consider the element of distance inherent in the encounter with a foreign perspective as one of the primary attributes of representative thinking (Disch 1994, 158; Villa 2001, 302)

Teacher or the Scholar from the Scientist. Each character in Heidegger's drama has a vocation, which is reflected in the types of questions they pose. The Scientist begins the discussion with confusion as to "how man's nature is ever to be found by looking away from man" (CCP 58). Always returning the conversationalists to the physical aspects of their inquiry, the Scientist continues in this vein, wanting "tests" of their propositions (CCP 71). The Scholar, on the other hand, refers their conversation back to previous thinkers, bringing in Kant, Meister Eckhart and even Heidegger's own *Being in Time* (CCP 58, 61, 81), translating concepts into ancient Greek and quoting poetry (CCP 88). His/her role appears to be to "fix" their insights into "scholarly terminology" (CCP 76). The Teacher mediates between the two, moving the conversation on, asking questions, and clarifying to each the other's position. S/he "paraphrases" and attempts to "make clearer" what each has said in order that they all might continue along their path (CCP 84). Yet, as their conversation progresses, the participants lose even the distinctiveness of their vocations and become almost one voice; the last page of their triologue consists entirely of lines ended with ellipses and continued by their partners (CCP 89-90). The assimilation of the three voices into one is a vivid depiction of Arendt's "two-in-one"; as soon as they must reenter the world, the interlocutors are collapsed into a single entity.

But this is not representative thinking. Heidegger's characterization of the Scholar, Teacher and Scientist describes "what" each character is—"the qualities he necessarily shares with others like him," but not their essential "who-ness" (HC 181). Precisely because each has a vocation, they are group members—delegates of their respective disciplines. The Scientist is distinguished from the Scholar, but the Scientist

himself stands in for all scientists, just as the Scholar is interchangeable with any other erudite. While those who appropriate the concept often gloss over this point, representative thinking cannot, given Arendt's concern for plurality, involve inviting group representatives into one's imagination. Instead, as Lisa Disch points out, "Arendt describes it in literary terms as populating one's imagination with a multiple cast of characters" (Disch 1994, 154). As both Disch and Elisabeth Young-Bruehl contend, Arendt's own work is populated with just such "representative figures" (Young-Bruehl 1998, 44). These are specific, historical, unique individuals (like Karl Jaspers, Walter Benjamin, Rahel Varnhagen), not group representatives like Heidegger's Scholar, Teacher and Scientist (Disch 1994, 154, Young-Bruehl 1998, 45).

In any case, representative thinking is *not* simply an extension of the internal dialogue of thought to other participants (CC 220). To even discuss representative thinking in terms of a dialogue (or even a triologue) seems somehow misleading. While other human beings do function as potential interlocutors, they also, perhaps more importantly, offer an infinite variety of standpoints from which to view an event. Regardless of whether they actually exist or are simply imagined,¹⁴⁶ these others provide a plethora of "it-seems-to-me's" for the thinker to imagine. In this sense, representative thinking becomes an activity of "running, as it were, from place to place, from one part of the world to another, through all kinds of conflicting views" (TP 241). It is this quality of motion that enables Disch to discuss how representative thinking

¹⁴⁶ Arendt vacillates between exactly whose standpoints should be included in representative thinking. Sometimes, it is "all those who happen to be present," or "others with whom I know I must finally come to some agreement," but in "Truth and Politics," she mentions the more generic "those who are absent" (CC 221, 220; TP 241).

“trains the imagination to go visiting” (LM 257).¹⁴⁷ In imagining ourselves in the standpoints of others, we “[imagine how the thinker] might feel and think as a character in each of the several stories to which any series of events can give rise” (Disch 1994, 159). In Heidegger’s case, then, the fact that the Scientist, Scholar and Teacher are without life stories makes our visits less interesting and their standpoints far less revealing.

Yet Arendt is quite clear that this sort of visiting does *not* simply allow the thinker to “look upon the world from a different perspective” (TP 241). While we may see the world from their standpoints, we can never fully understand what it would be like to *be* one of those representative figures. For Arendt, representative thinking always involves “being and thinking in my own identity where actually I am not” (TP 241). Thus there is a curious sort of interaction between the views which are offered from the standpoints of others and the thinker’s own “it-seems-to-me.” This interaction does not end in a jumble of different perspectival insights or even in their combination, but instead “ascends” towards some “impartial generality” (TP 242).¹⁴⁸ To be frank, Arendt is far from clear about how this “ascension” actually works. As Bickford points out, the actual activity of representative thinking probably varies considerably each time it is embarked upon (Bickford 1996, 86). What is important is that in the inclusion of these other standpoints, one’s mind is almost physically stretched and expanded—hence

¹⁴⁷ See Disch’s discussion of this highly instructive metaphor, which captures the ability of representative thinking to both resist an uncritical appropriation of another’s standpoint and, yet also, think from it (Disch 1994, 158-159).

¹⁴⁸ Whereas in “Truth and Politics” representative thinking results purely in (albeit more generalized and impartial) opinions, in “Crisis in Culture,” Arendt clearly refers to the eventual agreement with others that arises out of one’s ability to anticipate what they might object to (CC 220).

Arendt's continual usage of Kant's conception of an "enlarged mentality" (TP 241)—and one's opinion becomes somehow something *more* than a particular "it-seems-to-me" put into language. If done successfully, this recognition of the fact that the world appears differently to others, and the inclusion of these other standpoints in one's own thinking is the definition of impartiality according to Arendt ("The Concept of History" 51).

For deliberative democrats, this impartiality and the "intersubjective validity" of the opinions formed by representative thinking add another safeguard to political thinking (Benhabib 2001, 194). For Seyla Benhabib, the representation of these imaginary others is interpreted in a procedural sense—as if Arendt were saying that decision-making requires the (official or unofficial) taking into account of others' opinions in order to be legitimate (Benhabib 2001, 194).¹⁴⁹ Representative thinking thus becomes for Benhabib "a decision procedure that operated according to [the] principle of universalisability" (2001, 301). While Arendt would presumably agree with the presumption that decisions should involve others (TP 241), this misrepresents the aims of representative thinking. Decision-making is not necessarily the end result of representative thinking; according to Arendt, opinions are what is at stake in this activity (TP 241). Additionally, this formulation seems to suggest that opinions require additional support in order to be valid. As Villa hints in his brief discussion of Benhabib's work, this conceptualization seems premised on an underlying distrust of opinion, an attitude of which Arendt is highly critical (Villa 2001, 301).

¹⁴⁹ For a lengthier discussion of Arendt's appropriation by deliberative democrats, see also Villa 2001 and Villa 1996, 68.

Regardless of how the specifics of representative thinking are conceived, what is important for my purposes is that this type of thinking, which Arendt specifically ties to the political realm, contains a variety of stabilizing factors which are fundamentally absent in the pure thinking of the sort Heidegger engages in. The potential presence of individuated others, the involvement with the world, and the critical capacity of thinking from another's standpoint all serve to ensure that the opinions formed through representative thinking respect the plurality and particularity of the political.

VIII. CONCLUSION

There are numerous other stabilizing forces referenced in Arendt's works.¹⁵⁰ What I have argued in this chapter, however, is that political thinking, and in turn, political judgment, need not rely simply on overarching rules or frameworks in order to prevent disorientation; indeed, as we will see in the coming chapters, these frameworks sometimes get in the way of understanding phenomena like reprobation. Instead, the ability to take our bearings rests on our embeddedness within a dense constellation of other human beings and objects that help to keep us oriented in a world of perpetual change and motion. Rather than seeking to stop change and hold still the "topsy turvy

¹⁵⁰ Promises are chief among them. In Arendt's thought, promising corresponds to the dilemma of unpredictability. By making and keeping promises, humans become bound to each other (HC 244). The actual promises themselves reify the act of promising; formalized versions of promises (i.e. contracts, laws and institutions) allow for the construction of artificial boundaries which attempt to cordon off action and restrict it to certain activities (HC 191). Like "frozen thoughts," promises act as short-cuts, allowing us to orient ourselves quickly, as our activities in the world sometimes require (LM 174). And while they are never completely successful (laws can be broken, promises forgotten), they allow for the minimal stability necessary for the continuation of everyday life.

world” in which we live (UP 314), I have pointed to a different way of understanding how we maintain that curious “inner compass” in which Arendt had so much faith (UP 323).

Chapter 3: Encountering gene-talk: Heidegger on language and reprogenetics

I. WRITTEN IN THE GENES

In the previous chapter, I identified thinking’s destructiveness as both its promise and potential danger. This “critical capacity” of thinking (LM 56) not only calls into question traditional rules and frameworks by which we make political judgments, but allows us to apprehend new and unique phenomena without what Heidegger terms the “shackles” of preconceptions and habits (OWA 157). What I will show in this chapter is that one of the difficulties inherent in trying to think reprogenetics out of a concern for the plurality and particularity of the political realm is that the very language of genetics stymies us. Turning to Heidegger’s writings on language, I argue that we need to find a way of “unfreezing” the language of genetics. Although Heidegger himself may not have been as deeply respectful or appreciative of

plurality as we might wish, I propose that his writings on language and thinking offer a glimpse at how we might “rehabilitate” the language of genetics.¹⁵¹

In an article on the genetic basis of sexual desire, Nicholas Wade suggests that “Desire may seem the core of human sexual behavior, but it is just the central act in a long drama whose script is written quite substantially in the genes” (Wade 2007, F1). The phrase “written in the genes” is a revealing one. Like its somewhat dated counterpart, “written in the stars,” it gives the behavior associated with it an air of inevitability—removing it from the domain of human action and attributing it to a super-human power. This connection between genes and a sense of fatalism—often referred to as genetic determinism—haunts political theoretical debates over the implications of rerogenetic technologies.¹⁵²

Implicit in Wade’s phrase is a dense constellation of assumptions, convictions and concerns about molecular genetics. Genes do not simply determine behavior; in this locution they form written scripts that lay out the contours of a life. It seems that the more we know about our genes and hence our biology, the more we know about

¹⁵¹ Admittedly, the language of genetics is but one of the languages through which we engage rerogenetics. And yet, as Rapp reports in her ethnographic study of women undergoing amniocentesis, it is this highly scientific and medicalized language that genetic counselors must translate when they attempt to explain the results of genetic tests; and it is this language that sometimes proves so difficult for potential mothers to work their way through (see Rapp 2000, 56-62).

¹⁵² At its simplest, genetic determinism is the belief that genes determine physical traits and behavior. For an example of how this belief plays out in debates surrounding rerogenetic technologies (the most extreme of which are currently beyond our scientific capabilities) consider the following: proponents argue that genetic interventions would allow parents to ensure happier and healthier children—simply by substituting a few genes. Skeptics worry about the “dependence of the person programmed on her designer” (Habermas 2000, 64). In each case, the assumption is that a direct line can be drawn between genotypic and phenotypic variation. In this chapter I will deal only peripherally with rerogenetic technologies and speak more generally about the language of genetics upon which these technologies are based.

ourselves.¹⁵³ As President Clinton proclaimed when announcing the near completion of the Human Genome Project (HGP) in 2000, “we are learning the language in which God created life” (“Remarks” 2000). Both Clinton’s remarks and those of the New York Times science writers are emblematic of a widespread belief that the human genome functions as an “instruction book” that will someday—once we “learn how to speak the language of the genome fluently”—be easily read and understood (Collins, qtd. in “Remarks” 2000).¹⁵⁴

The comparison to a “Book of Life”—as the genome is sometimes called—constitutes genetic information as a linear code that translates more or less directly into human traits and behavior.¹⁵⁵ Via this metaphor, genes are written in a genetic alphabet and like all texts, they can be read, edited and re-written at will.¹⁵⁶ The instruction book metaphor not only treats genetic information as textual, but also codes genes as the agents of instruction.

¹⁵³ This view is often referred to as genetic essentialism; it “reduces the self to a molecular entity, equating human beings, in all their social, historical, and moral complexity, with their genes (Nelkin and Lindee 1995, 2).

¹⁵⁴ Although the survey of the human genome announced in 2000 was only a “first draft” of an eventual map (“Remarks” 2000), all of the speakers on that day referred to the eventual publication of a definitive map. In his remarks, President Clinton predicted that, “we will complete a virtually error-free final draft of the human genome before the 50th anniversary of the discovery of the double helix, less than three years from now” (“Remarks” 2000). This prediction was borne out and the HGP was pronounced completed in 2003.

¹⁵⁵ In his highly accessible account of the *Genome: the Autobiography of a Species in 23 Chapters*, Matt Ridley lays out the contours of this metaphor, asking his readers to: “Imagine that the genome is a book. There are twenty-three chapters, called chromosomes. Each chapter contains several thousand stories, called genes. Each story is made of up paragraphs, called exons, which are interrupted by advertisements, called introns. Each paragraph is made up of words, called codons. Each word is written in letters called bases” (Ridley 1999, 7).

¹⁵⁶ In her work on the metaphors employed in public discussions of molecular genetics, Dorothy Nelkin catalogs four different kinds of metaphors associated with genetics: genes as “the essence of personal identity”; “sacred entities”; “predictors of a future fate”; and commodities (Nelkin 2001, 557). In each case,

Although the scientific basis of this understanding of genetics is questionable, genes are nonetheless attributed great powers in public discourse. In their book *The DNA Mystique*, Dorothy Nelkin and Susan Lindee argue that the gene is often treated as “the secular equivalent of the Christian soul” (1995, 2). Through a broad survey of diverse sources, from soap operas to car advertisements, they show that DNA has become “a cultural icon”—“a deterministic agent, a blueprint, a basis for social relations, and a source of good and evil” (Lindee and Nelkin 1995, 195). Evelyn Fox Keller’s work traces how genes have come to be understood as “clear and distinct causal agents, constituting the basis of all aspects of organismic life” (Keller 2000, 325).¹⁵⁷

However, with the Human Genome Project completed and its participants already in the midst of numerous other projects, it has become increasingly clear that this understanding of genes does not fit the reality of genetic interactions. Already as the map of the Human Genome was being completed, it had become clear that despite its reputation as the “Master Molecule” (Keller 2000, 54), DNA is not quite as powerful (or self-sufficient) as we might think. For instance, DNA is not the only agent involved in protein synthesis. Its oft-celebrated self-replicating abilities—whereby the double helix unzips and is copied into two identical strands—require the presence of enzymes that both catalyze and assist in the process (Keller 2000, 26). Its “remarkable” fidelity during replication has been shown to rely on a dynamic system of “monitoring, proofreading, and repair” activities that are constantly fixing mistakes in the replication

¹⁵⁷ Keller is certainly not the only thinker to complicate our understandings of genetic causation and determinism. See e.g. Sober (2000), Alper (2002). I engage Keller’s works primarily because of her emphasis on the language through which we understand genetic causation.

process (Keller 2000, 27). Perhaps even more surprisingly, geneticists have demonstrated that these mechanisms sometimes “actively generate variations in nucleotide sequence”—in other words, making intentional “mistakes” (Keller 2000, 32).

The same scientists that promised a direct correlation between the HGP and improvements in medicine and health care, are also being forced to recognize that the relationship between DNA and physical traits is far more complicated than it first appeared (Alper 2002). Initially it was assumed that “DNA makes RNA, RNA makes proteins and proteins make us” (Crick qtd. in Keller 2000, 54). However, this “Central Dogma” of genetics has been repeatedly called into question by research that shows that the same sequence of DNA can be differently used to create a variety of proteins. Genes can be “split”—whereby relevant nucleotide sequences occur in fragments along a strand of DNA (Keller 2000, 59). They can “overlap one another or occur inside one another (in the same direction on the DNA molecule or in reverse)” (Griffiths and Stotz, forthcoming, 14). What seems like junk—introns, or non-coding DNA—can suddenly become important (Keller 2000, 63). A single protein can be synthesized by different genes and single genes can synthesize a variety of proteins. In turn, these proteins can perform many functions in the cell (Griffiths and Stotz, forthcoming, 14).

More importantly, decisions about which protein a gene should make and when (let alone what that protein should do) do not fall entirely under the jurisdiction of the gene:

Responsibility for this decision lies elsewhere, in the complex regulatory dynamics of the cell as a whole. It is from these regulatory dynamics, and not from the gene itself, that the signal (or signals) determining the specific pattern in which the final transcript is to be formed actually comes.” (Keller 2000, 63)

Non-genetic factors, like how DNA gets folded together—its tightly-wound chromatin structure—are increasingly seen as crucial to understanding gene expression (Keller 2000, 90). Although scientists have long cautioned that most traits cannot be attributed to single genes, the dynamic interaction between genes and between genes and their environment increasingly calls into question the assumed causal functions of the gene. By pointing to the numerous other entities involved in cellular development and heredity, some scientists now advocate for the recognition of “multiple systems of inheritance” (Keller 2000, 9).¹⁵⁸

However, despite widespread acceptance of these scientific facts, this complexity is rarely given more than a perfunctory nod in public discussions and has yet to permeate political theoretical discussions surrounding rerogenetics political theoretical discussions surrounding rerogenetics. Although the textual metaphor has been frequently criticized and somewhat replaced by a different metaphor of genetic mapping,¹⁵⁹ both proponents and skeptics of rerogenetic technologies still make

¹⁵⁸ While scientists involved in genetic research have known for quite a long time that the gene was not as all-powerful as once thought to be, it is only recently that this kind of ambiguity has been given even minimal recognition in the public realm. In one recent article in the *New York Times*, Natalie Angier reports, “I’m sorry, but the closer we look, the less instructive [genes] seem, less a ‘blueprint for life’ than one of those disappointing two-page Basic Setup booklets that comes with your computer, tells you where to plug it in and then directs you to a Web site for more information” (Angier 2008). While such recognition is crucially important to transforming public perceptions of genetics, it is debatable whether it has much real impact—especially when you consider that at least three other, longer articles were published on the same day that reinforced the idea that genes (or at least genetics) might account for complex traits like race and intelligence (e.g. Harmon 2008).

¹⁵⁹ Disability advocates, in particular, argue that a textual metaphors that treat genetic information as a code to be deciphered or a book to be read constitute scientists as the privileged readers of a “Book of Life” that can be both read and edited at will (Wilson 2002, 26). As we will see in chapter five, deviations from the “standard reference work” (Haraway 1991, 215) represented by the official human genome map are often referred to as “spelling mistakes” (Gura, qtd. in Wilson 2002, 26) and enable disease and disability to be cast as

extensive use of what Keller has come to call “gene talk” (Keller 2000, 10).¹⁶⁰ In the pages to come I argue that efforts to think what we are doing with regard to reprognetics require a *rethinking* of gene talk. Drawing on Heidegger’s mode of thinking technology, in which he “rehabilitates” words—asking his readers to encounter them anew—I ask what it might mean to “prepare a free relationship” (QT 3) to genetics.

II. THE USES AND ABUSES OF GENE TALK

Many commentators attribute the prevalence of gene talk to the need to make the principles of genetics comprehensible to non-scientists.¹⁶¹ Metaphors like the Book of Life organize information in such a way that those unfamiliar with molecular genetics can understand the relationships between the genome, chromosomes, genes, and DNA (Nelkin 2001, 556). Although it is widely recognized that such metaphors can shape public perceptions (Nelkin 2001, 556; Weigmann 2004, 118), Keller reminds her readers that metaphors are not simply means by which scientists convey their findings to an ignorant public. Instead, scientists themselves use metaphors to make

“textual irregularity” (Wilson 2002, 26). Scientists thus become “editors who attempt to amend, delete, and correct the defective texts of disabled bodies” (Wilson 2002, 26).

¹⁶⁰ For Keller, gene talk constitutes genes as material entities that play essential roles in both intergenerational inheritance and biological development. In her words, “one single entity was taken to be the guarantor of intergenerational stability, the factor responsible for individual traits, and, at the same time, the agent directing the organism’s development” (Keller 2000, 145)

¹⁶¹ This need is particularly pressing with regard to genetic sequencing, so much of which has been funded with public money. The assumed importance of genetic research—its ability to unlock the “secrets of life”—has further encouraged a remarkable effort on the part of the HGP to educate the public about genetics. My favorite such attempt is National DNA Day, which celebrates the HGP with an assortment of nationwide activities geared at schoolchildren.

sense of unknown phenomena. Because “scientific research is typically directed at the elucidation of entities and processes about which no clear understanding exists, scientists must find ways of talking about what they do not know—about that which they as yet have only glimpses, guesses, speculations” (Keller 2002, 118). Language, Keller argues, is therefore “provisional”—a “groping in the dark” (Keller 2002, 118). Scientists do not simply use metaphors; instead their “language is metaphoric through and through” (Keller 2002, 119).

For Keller, it is the flexibility of scientific language that gets lost in the public realm. Whereas some critics see the jumble of genetic metaphors as evidence of incoherency (Weigmann 2004, 118), Keller celebrates the “ambi-valence” of language (Keller 2002, 120). The flexibility of metaphors and their ability to defer fundamental questions in the name of a continuing research program have made gene talk a remarkably productive discourse. Her work shows how gene talk, by “drawing different experimental systems and different research programs into a coherent scientific agenda,” essentially enabled the science of genetics (Keller 2002, 120).

Take, for example, the word “gene.” As a fundamental unit of heredity, it should be easy to define. And yet, philosophers of science have long doubted the precision with which we can point to a gene as a singular, material entity. Kitcher’s suggestion that “a gene is anything a competent biologist chooses to call a gene” (Kitcher 1992, 131) is not meant to be flippant. Because sequences of DNA code not only for proteins, but also for RNA molecules and, in some cases, seem to have no function at all, it is difficult to devise a single rule for dividing DNA sequences into genes (Kitcher 1992, 130), let alone deciding whether certain RNA sequences deserve

the same moniker. For Kitcher, this problem is ultimately irrelevant, given that “much of biology can be done without any principle of segmentation at all. Where segmentation is needed, there are alternative principles of different utility in different situations” (Kitcher 1992, 131). While others would point to a coherent (albeit implicit) “molecular gene concept” as underlying biologists’ usage of the word, they, too recognize the term as highly “context sensitive” (Waters 1994, 178). Suggesting that molecular biologists use the term to refer to a “gene for a linear sequence in a product at some stage of genetic expression,” Waters sees the “investigative and explanatory context” of each “utterance” as that which determines what counts as a gene (Waters 1994, 178, 181). Thus for each author, it is the context of the usage of “gene” which makes clear the term’s exact referent.

Keller celebrates this ambiguity in many contexts. According to her, the early 20th century science of genetics needed just this kind of imprecision in order to succeed.

It needed:

a place, a thing, a word to which causal force could be attached and in the absence of any foreseeable route to a clarification of what that thing might be, it was functionally important to have a word that could contain or black-box its uncertainty.” (Keller 2002, 132)

Simultaneously something like an atom—in that the gene was seen as a fundamental unit of heredity—and an organism—in that the gene was endowed with the capacity to act—the word gene hides an “essential duality (or ambivalence)” and contains it so that geneticists can get on with their work (Keller 2002, 131).¹⁶² Although the word “gene”

¹⁶² Keller performs a similar deconstruction of the metaphors of gene action and the genetic program. In each case, the ambiguity of the gene allows it to take on a sense of agency in which it controls its own development.

may not seem like a metaphor, Keller argues that it contains in itself the comparison to both organism and atom. It was, she suggests, “a neologism that has the potential of even greater force for it builds on the work of two or more metaphors that are between or among them not only disjoint but in active tension, and conjoins these into a new and apparently seamless unity” (Keller 2000, 131).

This ambiguity was initially quite useful: it helped coalesce a research program, secure funding and market biotech products (Keller 2000, 143; Weigmann 2004; Nelkin 2001). However, it has also authorized the deterministic connotations of genetic research. The problem is that words do not stay still. Meanings attach themselves to words in ways of which we are only peripherally aware. What may have begun as a productive ambivalence can coalesce into what Arendt terms a “frozen thought”—or a shortcut—a dynamic and provisional thought that language has fixed into a singular meaning (LM 174).

Much of Heidegger’s work can be understood as an attempt to “unfreeze” thinking—to flesh out this multidimensionality. For him, flexibility is lost not simply in the traversal between the scientific and public realms (as Keller suggests) but in the trek between thinking and writing. Any attempt to fix language, especially into written form, loses the “multidimensionality of the realm particular to thinking” (LH 219). Whereas Keller is appreciative of the fact that scientists formulate their ideas in terms of pre-existing metaphors—thereby appropriating them to do explanatory work—Heidegger encourages his readers to resist language’s drift “into the more obvious meanings of words” (WCT 388). For him then, the challenge of thinking is to find a

way to retain the multidimensionality of phenomena and refuse the “wholesome pressure toward deliberate linguistic formation” written language “exerts” (LH 219).

In this chapter I argue that despite the ambivalence of gene talk in scientific venues, it continues to exert its remarkable rhetorical power in political theoretical discussions of rerogenetics. Although Keller was one of the first scientists to recognize and actively promote this idea, she is by no means its only proponent. As a recent article in the New York Times indicates, the concept of the gene is fast becoming *passé* in scientific circles. But, as Angier notes, it has yet to outlive its usefulness in the public eye (2008). Therefore, any attempt to unfreeze thinking about rerogenetics must not confine itself to a mere recounting of scientific facts. Although the research mentioned above goes a long way toward countering conceptions of genetic determinism, I suggest that we need to find additional ways to resist the pull of gene talk. In the coming sections I undertake a brief exegesis of Heidegger’s work on technology to argue that his mode of thinking this complex phenomenon offers one such possibility.¹⁶³

III. THE COMPANY WORDS KEEP: TECHNOLOGY AS A MODE OF REVEALING

¹⁶³ I should be clear that I do not think that a Heideggerian approach to thinking rerogenetics is sufficient. As I argued earlier, in my discussion of Heidegger’s disorientation in the public realm, I am not convinced that his mode of thinking can provide a sufficiently *political* critique of rerogenetics because it is unappreciative of the particularity and plurality that comprise the political world.

In *The Question Concerning Technology*, Heidegger remarks that “the will to mastery becomes all the more urgent the more technology threatens to slip from human control” (QT 5). This urgency seems self-explanatory: technology—the means by which humans appropriate nature and transform it to meet their objectives—threatens to slip from the grasp of its creators. The urge to master it becomes more pressing as our hold over it loosens. This sense that technology has somehow eclipsed humanity’s power to control it is central to critiques of modernity. But Heidegger’s meaning is somewhat more complicated. Technology threatens here not to rise up against humanity as some anthropomorphized Frankenstein out of science fiction, but merely to “slip” from our control. This suggestion that technology could be “slippery” challenges our image of technology as the sum of human inventions, the control over which can be passed easily from one set of hands to another. Instead, Heidegger invokes technology as amorphous and changeable, over which our “control” has only ever been tenuous. Moreover, his odd locution directs our attention not to the loss of jurisdiction, but instead to our own reaction to technology’s “threat.” It is our urge to master and order the world around us that is the target of Heidegger’s critique: the problem lies not in the locus of control, but in the desire for it.

This critique is echoed throughout Heidegger’s later works. Many of Heidegger’s post-*Kehre* writings are preoccupied with the task of “questioning” the “essence of technology” (QT 3).¹⁶⁴ His definition of this ambiguous term includes the

¹⁶⁴ Commentators sometimes read Heidegger’s preoccupation with technology in the later works as an attempt to avoid, explain or perhaps justify his involvement with National Socialism (e.g. Rockmore 1995, 134). While the relationship of Heidegger’s work to his political action is an important question, I do not read such cathartic value into them. Instead I focus purely on Heidegger’s attempts to reconfigure our understandings of technology.

aforementioned ability to “posit ends and procure and utilize the means to them” (QT 4), but it is not confined to this “instrumental and anthropological definition” (QT 5). And while this understanding of technology shapes our interactions with the concept, Heidegger’s primary concern in *The Question Concerning Technology* is to reorient our thinking, “bring[ing] us into a free relationship with that which concerns us from out of its essence [technology]” (QT 6). Where, he asks, would the will to mastery stand if technology “were no mere means” (QT 5)?

Much of this essay can be read as Heidegger’s attempt to re-characterize technology, bringing it into relationship with other potential meanings. This is not a redefinition in the sense that Heidegger never replaces the instrumental definition with another, “correct” version.¹⁶⁵ Nor does he sever the colloquial association of technology with instrumentality, efficiency, manufacturing and production. These associations are “correct” in that they “fix upon something pertinent in whatever is under consideration” (QT 6); but they are not “true” (QT 6). Instead, through an act of uncovering, Heidegger sees himself as opening a space in which the true can make its appearance. In this way, he wants to direct his readers’ attention to the “essence” of technology. This uncovering involves a complex series of etymological moves that expose meanings long ago obscured. Heidegger superimposes these meanings over the familiar; the anthropological definition of technology thus remains, but it takes on a new multidimensionality. In so doing, Heidegger “rehabilitates” the concept of technology (Lovitt 1977, xix).

¹⁶⁵ As Heidegger says in another context, the attempt to replace the current definition altogether with a previous one would constitute an “open violation of language” (WCT 389)

To get a better sense of how we might go about “rehabilitating” the language of genetics, this section proceeds with a detailed recounting of Heidegger’s journey. Heidegger’s uncovering begins with an exploration of causality. He starts here because “wherever ends are pursued and means employed, wherever instrumentality reigns, there reigns causality” (QT 6). In other words, the assumption is that means “effect” ends (QT 6). Central to instrumentality, causality is seen by Heidegger as a “way of being responsible for something else” (QT 7). Being responsible is itself the “starting [of] something on the way to arrival” (QT 9). In this way, technology becomes more and more intricately linked to the concept of bringing-forth, or *poiesis*. *Poiesis*, which also involves “artistical and poetical bringing into appearance,” is, according to him, a mode through which truth reveals itself (QT 10, 11).¹⁶⁶ While Heidegger’s exact understanding of how “truth happens” (QT 13, OWA 163) is difficult to grasp, what is astonishing is that even this brief series of linkages serves to reconfigure our image of the company “technology” keeps. The machines, robots, and computers that typically populate our imagination are joined by works of art, music and poetry. Indeed, technology becomes a companion of truth itself. Instead of a means to an end, it becomes a “mode of revealing” (QT 10).¹⁶⁷

For some, this quasi-etymological approach is unsatisfying. Aside from its pure complexity, Heidegger’s essay might seem nostalgic, as if it is suggesting that we

¹⁶⁶ To further elucidate his point, Heidegger traces the root of technology, *techne*, also to *poiesis* and *episteme*. His point seems to be that regardless of whether we take instrumentality as central to technology, we arrive at the idea that technology is a mode of revealing (QT 12-13).

¹⁶⁷ In the above section, I have made quick work of Heidegger’s more intricate journey from technology to *poiesis*, skipping over many of the other branches in Heidegger’s tree. The jump is not nearly as seamless as I have made it appear, but some of the meanings which go unmentioned here will be dealt with in a later section.

should revert to a previous understanding of technology. However, critiques of Heidegger's "torturous etymologies" (Rockmore 1995, 137) arise out of a fundamental mischaracterization of Heidegger's mode of theorizing. For instance, Rockmore assumes that Heidegger sees himself as uncovering the "true" meaning of words like technology.¹⁶⁸ Thus his forays into the past are interpreted as calls to an (inappropriate) authority: aside from the question of whether or not we can ever know "what the Greeks meant" by a particular term, Rockmore sees this fact as irrelevant to contemporary understandings. Because language changes over time and through social convention, linguistic deviations are simply matters of fact: "Earlier meanings are not true since language itself is not true; it is only an instrument with which to point, to refer, and to communicate" (Rockmore 1995, 137).

Rockmore's reliance on an instrumental understanding of language leaves him unable to appreciate Heidegger's moves. Because Heidegger sees language as part of the phenomenon of "what is" (CCP 71), he suggests that it works through humans—and is never simply there to be picked up and used. Heidegger's own diction demands that his reader become conscious of the implicit constraints language imposes and is "torturous" primarily because he creates his own words and alters customary syntax. The introductory comments on *The Question Concerning Technology* warn the reader that "in reading Heidegger he is encountering words that he must learn to let come to him with fresh meaning" (Lovitt 1977, xxi). In the same way that Haraway's fusion of

¹⁶⁸ Granted, Heidegger is inconsistent on this point. His tendency, especially in his earlier works, to speak in terms of "primordial" relationships and "authenticity" and "inauthenticity" do not help attempts to free him from a certain kind of nostalgia (see Zimmerman 1990). In suggesting this mode of reading Heidegger, I should be clear that I am making no claims about his own understanding of his work. Regardless of Heidegger's own self-understanding, I argue that his texts nonetheless reveal a way of thinking technology that is worthy of engagement.

science and technology into “technoscience” points to the increasing difficulty of differentiating between them, Heidegger’s writing style physically supports his contention that man is subject to the phenomenon of “what is” by making it *grammatically* difficult to put man as the subject of our sentences. His use of the passive tense—as well as his continued relocations that situate man as the object of our locutions—are conscious efforts designed to “unfreeze” language and call our attention to the sediment and reification inherent in our own ways of speaking. If we read Heidegger as attempting to tell us what technology “really means,” Rockmore’s criticism is well-deserved. However, if we understand Heidegger’s activity of uncovering not as a fact-finding mission, but as an exploration of possible alternative meanings, it can take on a more critical (and illuminative) role.

Following Heidegger’s explorations of truth in his other works (e.g. CCP or ET), the reader is encouraged to shift his or her attention away from what humans do to what is done to them. Just as truth must reveal itself, rather than relying on humans to uncover it, so, too, is technology more than “the handiwork of man” (QT 18). As we saw in chapter two in Heidegger’s discussion of “that-which-regions,” he points throughout his works toward a powerful phenomenon that churns about us, encompassing and acting upon the world of humans.¹⁶⁹ Not exactly God or Nature, this phenomenon reveals and conceals itself of its own accord. Much of Heidegger’s work might be read as a repudiation of human arrogance, which attempts to force this phenomenon into unconcealment (QT 18). Instead, he describes the role of human

¹⁶⁹ As we saw in chapter two, Heidegger makes use of many names in his attempts to understand “what is”—names that change with almost every essay. This perpetual shift in terminology is necessitated by Heidegger’s conviction that this phenomenon that can be neither said or seen in its entirety.

beings as one of preparation, whereby we train ourselves to apprehend this phenomenon in a manner that both recognizes and respects. He advocates for what he calls “meditative” thinking as a way in which to prepare ourselves for the presencing of truth (CCP 59). This preparatory work consists of freeing ourselves from the “shackles” of preconceptions and habits (OWA 157, AWP 117), and creating (or protecting) a space in which “what is” can make itself known. Following the essay on technology chronologically, we see that Heidegger does exactly this—freeing technology from the “shackles” of instrumentality and creating a space in which technology as a mode of revealing begins to make sense.

Heidegger’s inversion of the relationship between “what is” and human beings represents an attempt to contest a relation of anthropocentric dominance that he sees as characteristic of modernity.¹⁷⁰ He continues this inversion in his discussion of language. For him, thinking represents an (always provisional) attempt to bring “what is” to language. Said differently, “what is” attempts to articulate itself through the speech of humans. Instead of using language to say something, Heidegger suggests that language speaks through us. “Woven into language” (WL 398), humans are “enjoined” by it (WL 408). Thinking allows itself to be “claimed” by language so that we can hear “what is” speaking (WL 411). In “What Calls for Thinking,” Heidegger says, “it is not we who play with words; rather, the essence of language plays with us . . . It is as though man had to make an effort to live properly with language” (WCT 388). In holding at bay the instrumental definition of technology and reminding his readers of its

¹⁷⁰ I remain unclear whether Heidegger’s inversion is simply a reversal of this relationship of dominance that substitutes the agency of “what is” for that of human beings (and thus bespeaks its own sense of fatalism), or whether, in so doing, he calls our attention to a non-sovereign understanding of action that can accommodate numerous other agents.

status as a mode of revealing, Heidegger attempts to “live properly” with the language of technology.

IV, NATURE ‘ON CALL’

Heidegger’s attempts at rehabilitation offer a critical edge for thinking modern technoscience. Because his discussion of technology allows his readers to see it as a mode of revealing, he is then able to provoke an implicit comparison between this multidimensional conception of technology and its modern counterpart. Although modern technology is still a mode of revealing, it is but one, very specific, way in which truth comes to presence (QT 13). Modern technology, according to Heidegger, involves a “challenging” to nature. Instead of letting “what is” reveal itself, modern technology seeks it out, forcing it into unconcealment (QT 18). “The revealing that rules in modern technology is a challenging [*Herausfordern*], which puts to nature the unreasonable demand that it supply energy that can be extracted and stored as such” (QT 14). Contrary to the “work of the peasant [which] does not challenge the soil of the field,” modern technology takes truth’s presencing into its own hands (QT 15). In much the same way that Heidegger sees modern research science as forcing open a sphere in which truth can make itself known (AWP 118), modern technology “sets-upon” nature (QT 15). Although emblematic of the same urge to mastery, modern research science and technology involve slightly different challenges. As I argued in chapter one, Heidegger’s critique of modern science focuses on the fact that such research always

already knows what it is calling forth and thus structures it and its relationships in advance (AWP 118; QT 22). Modern technology attempts a similar structuring in the demands that such a challenging puts to nature and natural resources.

Heidegger's critique here is reminiscent of his discussions of the earth in *Building, Dwelling, Thinking*.¹⁷¹ In that essay too, Heidegger criticizes the modern way in which we appropriate nature. Take, for instance, his example of the Black Forest farmhouse in this essay. Instead of razing trees and leveling ground to place the structure where humans have decided it should be, the farmhouse was built into the hillside, allowing the natural contours of the land to protect the building, provide warmth and create space for the various activities central to the lives of the farmers (BDT 362).

While this aspect of Heidegger's thinking poses a formidable challenge to those tempted to raid the earth of its resources, Heidegger extends (and perhaps radicalizes) his critique via the concept of the "standing-reserve." Because nature is conceived only in terms of its ability to supply energy, it must always be "on call" (QT 15). Heidegger says, "everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering" (QT 17). In other words, nature is transformed into "mere function" (QT 17). Instead of being water,

¹⁷¹ In *The Origin of the Work of Art*, Heidegger uses the concept of the "earth" in order to differentiate a naturally acting dynamic, capable of acting upon man (OWA 170), from that of which man is the creator (i.e. the "world"). But a dichotomy that makes what is physical an aspect of the earth as somehow opposed to the world, is misleading. Both world and earth encompass physical things, as well as the abstract. While this is a vital definitional distinction, deserving of much more time and attention (especially given the way in which other thinkers like Arendt, will employ this terminology), for the moment, suffice it to say that the earth is independent of man's control, though never unaffected by human action (OWA 172). It is a living, moving force, capable of great destruction and never able to be fully ordered.

trees, and sunlight, these entities are seen only in terms of the hydroelectric power the water enables, the construction the tree's lumber permits, and the agriculture the sun nourishes. Rather than objects, which "stand over against us" (QT 17), these entities become only that which they enable; nature is conceived only in its ability to supply.

The problem with such challenging is not simply that it is disrespectful of nature and the power inherent in this ultimately unknowable entity. Heidegger's is not a critique of exploitation—indeed this word is absent from his essay. His concern is with the "ordering" such a challenging involves and the way in which "regulating and securing become the chief characteristics of the challenging revealing" (QT 16). This ordering takes on two forms: for him, modern technology involves ordering in both the sense of instruction (a call to do something) and as structuring (that something which we are called to do). Nature is both ordered *to* stand-by and ordered *as* standing-reserve.

While Heidegger's poetic repudiation of "unlocking, transforming, storing, distributing and switching about" (QT 16) often obscures this fact, ordering and challenging are not intrinsically harmful. Indeed, these activities are still "ways of revealing" (QT 16). For Heidegger, it is part of man's nature to challenge; he is called to it by the phenomenon of "what is" (QT 19). Thus reading Heidegger's essay as a call for a reversion to a time "before" technology challenged would be a mistake; there is no linear or temporal regression here. Instead, Heidegger wants to show that this need not be the only manner in which we apprehend "what is"; it is but one of many modes of revealing.

The problem for Heidegger is that modern technology obscures this pluralism because this challenging mode of interaction is continually reproduced. It is as if we become so habituated to ordering objects as standing reserve that we become unable to see them in another light—and thus unaccustomed to other modes of interaction. The end result, or “danger,” says Heidegger, is that eventually man himself will become comprehensible only as standing reserve: “as soon as what is unconcealed no longer concerns man even as object, but does so, rather, exclusively as standing reserve, then he . . . comes to the point where he himself will have to be taken as standing reserve” (QT 27). Man himself becomes conceivable only in terms of the functions he/she can perform and is ordered to continually stand by.

V. HUMANITY’S SEEMING EXULTATION

This suggestion that man might be taken as standing-reserve is but one of the warnings Heidegger posts in *The Question Concerning Technology* (QT 27), and it gives rise to another, perhaps more disturbing, threat. The “danger” is that in this crowding out of other modes of revealing, modern technology obscures the very fact of revealing itself. Man becomes so habituated to responding to the call of “what is” in the form of challenging that he begins to lose sight of the fact that his is a *response*. Heidegger refers to this danger as “enframing” [*Gestell*] (QT 20). Enframing, for Heidegger, is the mode of revealing specific to modern technology (QT 21). Just as

technology is but one mode of revealing and challenging is but one form of technology, so, too, is enframing but one form of challenging.¹⁷²

A complex concept, enframing might be thought of as the culmination of this challenging ordering. In Heidegger's dense prose, "enframing means the gathering together of that setting-upon which sets upon man, i.e. challenges him forth, to reveal the real, in the mode of ordering, as standing-reserve" (QT 20). Not only is man called to challenge nature, but he is himself challenged when he orders the world as standing-reserve. In the course of this ordering, man's very essence as a being beholden to "what is" is assaulted. Drawing on the connotations of enclosure and constraint, the concept of enframing captures both the challenging-forth and the crowding-out that modern technology accomplishes.¹⁷³

Because objects have become standing-reserve and have meaning only insofar as their relationship to man's needs, the existence of anything more powerful or autonomous than man is forgotten. The very fact that man does not control that phenomenon which reveals and conceals itself is concealed:

Man . . . exalts himself to the posture of lord of the earth. In this way the impression comes to prevail that everything man encounters exists only insofar as it is his construct. This illusion gives rise in turn to one final delusion: It seems as though man everywhere and always encounters only himself." (QT 27)

¹⁷² Though it is easy to lose track of Heidegger's path in the course of his frustratingly dense prose, his essay can also be thought of as an activity of rarefaction, by which he repeatedly refines the specific aspects of modern technology that trouble him. The effect is not only to offer a very specific delineation of the problem which technology poses, but also to highlight the narrowness of our conception and illuminate the many other paths which technology might take.

¹⁷³ Interestingly, *die Gestellung*—which shares with the concept of *Gestell* a similar root—has a military connotation in German and references the call to military duty. Though Heidegger never uses *Gestellung*, this association with the strict order and control of the military offers another sense of the constraints inherent in enframing.

In other words, far from seeing himself as creating a space in which truth can make itself known (or even seeing himself as seeking a truth which is in some sense still outside of himself),¹⁷⁴ man becomes a truth-maker.

This assumption that man has made everything that appears before him turns the relationship between man and “what is” on its head. Because man becomes unschooled in the preparatory activities so central to his apprehension of “what is,” this “exultation” obscures the very essence of what it is to be human. The problem with modern science and technologies lies not simply in what we have done to nature, but in “the human distress caused by the *technological understanding of being*” (Dreyfus 1995, 99). To be human, for Heidegger is “to be beheld by what is, to be included and maintained within its openness and in that way to be borne along by it, to be driven about by its oppositions and marked by its discord” (AWP 131).¹⁷⁵ If the experience of being beheld, driven, marked, maintained, and borne is itself part of what it means to be human (QT 18), then the loss of this experience (or the lack of recognition thereof) coincides with the loss of man’s essence. Thus, despite the seeming ubiquity of man’s encounter with himself and that which he has made, “in truth, however, precisely nowhere does man today any longer encounter himself, i.e. his essence” (QT 27). In the modern age, the encounter with ourselves can only ever be a “delusion.”

¹⁷⁴ Heidegger is also critical of this understanding of thinking as truth-seeking (CCP 62). As I proposed in chapter two, thinking, for him, should be transformed from a deliberate seeking into a constrained “waiting” (CCP 62).

¹⁷⁵ While this quote refers specifically to the “essence of man in the age of the Greeks, it functions as an apt description of the workings of “what is” in any age—what changes is not the essential nature of “what is” but our own awareness of its actions (AWP 131).

VI. THINKING AGAINST ITSELF

As I noted in the introduction, one of the promises of reprogenetic technologies are that they have the potential “to make less random the sometimes most unfair courses of human evolution” (Watson 1999, 91). This desire to “make less random” life’s uncertainties certainly lies at the heart of many forays into reprogenetics. Although physics, with its great hydroelectric dams and atom bombs, constitutes Heidegger’s paradigmatic science, it takes no great stretch of the imagination to see in reprogenetic technologies similar “dangers.” For instance, the image of couples picking and choosing from a sampling of different embryos while undergoing PGD offers a vivid depiction of what it might mean to take human beings as standing reserve. Cloning, which has been suggested as a means of supplying tissue for transplantation, offers an even more jarring picture of nature “on call” (QT 17).

It is this interpretation that Klawiter adopts in her attempt to bring Heidegger and Arendt’s works to bear on assisted reproductive technologies. Through a discussion of surrogate motherhood, she suggests that “the natural ability to bear children becomes part of the standing reserve” (Klawiter 1990, 73). Because she interprets Heidegger as insisting that “modern technology is not a neutral force but one which in its very essence poses a threat to human beings,” she comes to the conclusion that “modern reproductive and infertility technologies pose a danger to women regardless of the relations of production in which they function and the people who control them” (Klawiter 1990, 70). Unable to escape modern technology’s “orientation to the world,” Klawiter is convinced that “human beings must undergo some transformation *at an*

essential level before this change in character can become manifest in a new technology” (1990, 75). Although I am skeptical of the turn to Arendt Klawiter makes at this point in her essay, her discussion of Heidegger’s conception of modern technology provides a useful, and refreshingly clear, example of what it might mean to adopt Heidegger’s substantive critique of technology with regard to rerogenetics.

However, I want to resist the temptation to simply apply Heidegger’s discussion of the standing reserve and enframing to rerogenetic technologies. Given the intricacy with which he constructs his “thought trains” (TAP 10), picking up these concepts and running with them seems akin to interrupting his thinking midstream. Instead I have tried to highlight *how* Heidegger comes to these conclusions and my aim in the coming sections will be to (however humbly) emulate the *how* of his thinking rather than appropriate his substantive critique. To do so, I attempt my own series of uncoverings, again with the caveat that my intent is not to find a correct definition of the gene or genetics but to flesh out their multidimensionality. What happens to gene talk, I ask, once we place it in the company of other words and ideas? What meanings have been obscured and covered over? How might we prepare a space in which the phenomenon of rerogenetics might reveal itself in all its complexity?

Heidegger is again an admittedly strange ally in this endeavor. His reputation as a technophobe certainly precedes him and, indeed, his later works have been frequently criticized for embodying a sense of fatalism no less deterministic than that associated with genetics. His critique of man as *subiectum*, his continual use of the passive sense, and the cryptic “only a God can save us now” comment from the *das Spiegel* interview certainly seem in conflict with the conceptions of human agency those most critical of

reprogenetics seek to restore.¹⁷⁶ In particular, the turn toward meditative thinking (especially when combined with Heidegger's own political activities in support of National Socialism) appears to have a necessarily conservative bent.

As I highlighted in chapter two, meditative thinking for Heidegger stands in stark contrast to “calculative” thought (MA 46).¹⁷⁷ Whereas the latter involves a chasing after and an attempt to apprehend “what is,” meditative thinking is best understood in terms of “releasement” (CCP 62). Again, the challenge is not to seek “what is,” but to hold “steadfast,” “waiting” to “receive” this phenomenon (CCP 81). Never quite sure what it is that we are waiting for (CCP 62), Heidegger suggests that we must relinquish our capacity to will and “let in” (or open ourselves to) “that which is” (CCP 61).

However, despite its connotations of inaction, meditative thinking is no easy task. Never passive or professionalized, this mode of thinking entails great effort (MA 47). We must “exert ourselves . . . in preparing for . . . reflection” (LH 251). Throughout his works, Heidegger suggests that thinking demands courage (AWP 116), resolve (CCP 81), patience (CCP 85), practice (BDT 362), and above all “more delicate care than any other genuine craft” (MA 47). Indeed, the understanding of meditative

¹⁷⁶ Take, for example, Jürgen Habermas, whose worries about autonomy rest on the sense that the genetically “designed” would be unable to “see ourselves as the authors of our own life histories, and to recognize one another as autonomous persons” (Habermas 2003, 25).

¹⁷⁷ In this dissertation, I deal primarily with texts written post-*Kehre*. Although Heidegger makes no explicit reference to meditative thinking in works like the *Letter on Humanism*, he nonetheless consistently differentiates between “thinking purely” and the “technical interpretation of thinking” (LH 218). Although technical thinking is not exactly equivalent to calculative thinking, I hope the reader will grant an affinity between “thinking purely” and meditative thinking. Given that Heidegger utilizes a variety of names in his attempt to articulate the phenomena with which he is concerned, I hope my reader will grant certain affinities in meaning (if not terminology) throughout the various works I discuss.

thinking as passive only makes sense in terms of a sovereign understanding of agency—whereby it must be the exclusive provenance of a single entity. If we understand agency not as an exclusive property, but one that can be exercised by a variety of different agents, Heidegger’s recognition of the power inherent in “what is” becomes less threatening.

In turning to meditative thinking, Heidegger seeks a new way of living with technology. In the “Memorial Address,” he argues that:

. . . releasement toward things and openness to the mystery . . . grant us the possibility of dwelling in the world in a totally different way. They promise us a new ground and foundation upon which we can stand and endure in the world of technology without being imperiled by it.” (MA 55)

This explicit connection between technology and a new way of thinking highlights the fact that, despite his reputation as a technophobe, Heidegger, like Arendt, never argues against technological advancement. He makes no attempt to control the direction of technological development, but instead concerns himself with the relationship between technology and human beings. The problem with modern technoscience, he suggests, is not *what* we can and cannot do, but with *how* we comport ourselves with regard to our tools. The challenge is to find a way to “affirm the unavoidable use of technical devices, and also deny them the right to dominate us”—to say “both yes and no” to technology (MA 54).

To say “both yes and no” to rerogenetic technologies would seem to leave the thinker without critical purchase. As I have tried to highlight in my recounting of Heidegger’s own attempts at meditative thinking, however, this is not the case.

Although Heidegger may not provide the resources for a thoroughly *political* critique of

these technologies—primarily because he fails to fully appreciate the condition of human plurality so central to political thinking—his attempts to unfreeze thinking are nonetheless illuminative. And when taken in combination with Arendt’s writings on technoscience, Heidegger’s writings on language and thinking might help reorient our thinking with regard to reprogenetics

In a stanza from a poem in *The Thinker as Poet*, Heidegger suggests that thinking must “think against itself, which it can only seldom do.”¹⁷⁸ In resisting the urge to equate reprogenetic technologies with those with which Heidegger was concerned, I argue that we must be prepared to think against Heidegger at the same time that we think with him. As he himself recognized, all thinking is an “adventure” that entails the “risk” that we might find something we had not expected (LH 264, 248). Rather than joining Heidegger at the end of thinking’s journey, I suggest that we need to take up the challenge to formulate our own response to thinking’s call.

VII. THE GENESIS OF GENES

In this section, I ask what happens when we try to encounter gene talk anew? This is necessarily only a provisional attempt. Time and space constraints (as well as the fact that I am no Heidegger) prevent me from undertaking a full analysis. But I hope that even this brief sketch might suggest that thinking genetics with (and against) Heidegger helps illustrate the potentially destructive (and freeing) potential of thinking.

¹⁷⁸ Thanks to Della Zurick for her suggestion to look at Heidegger’s poetry.

In Heidegger's texts, his efforts at uncovering often begin by questioning the everyday usage of a term. In the case of gene talk, it would seem that genetics is used to refer to the study of genes, just as biology studies life (*bios*); that which is studied (genes) thereby precedes the name for the science (genetics). And yet, the term genetics, coined in 1906 by William Bateson, actually precedes the first use of the term "gene" by a good three years.¹⁷⁹ Instead of a derivative of genes, genetics is the prior term, designating, as Keller has shown, a science the subject of which had yet to be determined.

What then does genetics study if not genes? In current parlance, genetics is associated with the study of heredity, or how traits get passed on from generation to generation.¹⁸⁰ And yet, in its earliest incarnations, the study of inheritance was intricately linked to the study of development or embryology. The question was not simply how children take on the characteristics of their parents, but how embryos grow into human beings at all. In addition to questions of "intergenerational stability" were posed questions of "developmental stability" (Keller 2000, 15).¹⁸¹ In the ensuing years,

¹⁷⁹ Although sources are unclear on this point, the adjectival form of genetics—"relating to a common origin"—seems to have predated Bateson's usage of it as a noun referring to a specialized discipline (see "genetic" 1995, n. pag.)

¹⁸⁰ I should point out that this association is not necessarily accurate, given the rapidly expanding field of molecular genetics and its successor, genomics, each of which concerns itself with questions far removed from heredity. That said, public discussions of the subject often focus on this branch of molecular genetics.

¹⁸¹ This latter term is used to "refer to the reliability with which organisms of a particular species undergo the passage from fertilization to maturity, generation after generation, each time reproducing a phenotype that is clearly recognizable as characteristic of that 'type'" (Keller 2000, 15).

this multidimensionality has been replaced with an increasingly specialized focus not simply on questions of inheritance but on molecular genetics.¹⁸²

This emphasis on heredity—the “who begat whom” question—should be no surprise given that genetics is derived from the word *genesis*.¹⁸³ But what about genesis as an origin, the start of something new?¹⁸⁴ What would it mean to think genetics not in terms of that something which comes to be (an end result), but as a beginning, a site of potentiality? From the viewpoint of genetic determinism, there is a connecting thread (or chain) that links parents to children and children to adults. Because these adults will in turn become parents to a new generation, genetic determinism posits a seemingly unbreakable series of linkages—with the focus always geared toward the next in line. Although the use of genetics to trace ancestry would seem to resist this interpretation—working as it does “backwards” through history—it nonetheless leaves this chain intact; it simply reads it in reverse.

Genesis, however, also connotes creation and natality—a sense of the unknown and unknowable. This reading of genetics breaks this chain because every new child constitutes precisely that—something new and ultimately unpredictable. It is this fact that each new person by virtue of their distinctiveness is capable of beginning

¹⁸² See Hubbard (1999) for a critique of this allocation of funding and scientific attention.

¹⁸³ All etymologies are taken from the Oxford English Dictionary. See the bibliography for particular entries consulted.

¹⁸⁴ The affinity between genetics and genesis allows for interesting plays on both words. In a 2004 traveling art exhibit, “Gene(esis),” Eduardo Kac plays with this metaphor by taking a biblical phrase and “translating” it into a genetic sequence which scientists then created and added to a bacteria. In the exhibit, the bacteria is housed in a petri dish under a video microscope in the middle of an empty room as both the sequence of the added gene and a real-time picture from the microscope are projected onto the wall. Visitors to Kac’s website could alter the bacteria’s genetic sequence by manipulating an ultraviolet light. At the end of the exhibit, Kac translates the genetic sequence of the mutated bacteria back into the (now-mutated) text of the Bible. The commentary on the human ability to alter this religious text provided a vivid depiction of the attempt to “play God.”

something new that Arendt points to in her discussion of natality—her way of naming the miraculous (HC 247). Although a comprehensive discussion of natality is beyond the scope of this chapter, I propose that just as a focus on the event-like character of modern technoscientific inventions seeks to restore to these inventions a sense of contingency, so, too might an emphasis on genetics as genesis reaffirm the future as “an authentic tense” (LM-Willing 15).

Returning to my efforts at uncovering, we can see that understanding genesis in terms of its Greek root, *gignesthai*, further complicates matters, because *gignesthai* points to the *activity* of becoming, not to its outcome or origin. What might it mean to think genetics as the study of an activity of becoming? *Gignesthai* implicates genetics in an attempt to understand a phenomenon in motion. In the company of *gignesthai*, genetics loses some of its deterministic connotations and reveals itself as an interactive dynamic that deals with questions of *how* we come to be rather than *what* makes us. This focus on coming to be reveals both inheritance and development as dynamic activities—in which change and variability are the norms and the static assumptions of genetic determinism exceptions.

Already, in preparing a space in which genetics might reveal itself differently, the assumptions of genetic determinism start to make less sense. But what about the gene? Does it, too, share the company of *gignesthai*? As we have seen, the gene does not refer to a single, material entity. Nonetheless as a noun, it is frequently attributed agency in conceptions of disease. Almost daily, reporters announce the discovery of a

new “gene for” a condition or trait.¹⁸⁵ Via this locution, the gene becomes tethered to that for which it is responsible—thereby reconstituting (at least in part) the chain upon which genetic determinism relies. Even in the definition of a molecular gene concept referenced earlier, the gene is a “gene for a linear sequence” (Waters 1994, 178).

But what is a gene for? When Wilhelm Johannsen coined the term “gene” in 1909, he intended it as an empty signifier:

The word gene is completely free from any hypothesis; it expresses only the evident fact that, in any case, many characteristics of the organism are specified in the germ cells by means of special conditions, foundations, and determiners which are present in unique, separate, and thereby independent ways – in short, precisely what we wish to call genes.” (qtd. in Keller 2000, 2)

Derived not from genetics, but from “pangens,” de Vries’ term for hereditary units, Johannsen thought his neologism superior because it implied little allegiance to a particular theory of inheritance (Keller 2000, 2).¹⁸⁶ Indeed, it may be the very emptiness of the term that has allowed it to attach itself so easily to the metaphors and connotations mentioned in the earlier sections. As Johannsen stated explicitly, “the ‘gene’ is nothing but a very applicable little word, easily combined with others” (qtd. in Keller 2000, 2).

Unlike the term genetics, however, “gene” derives only indirectly from genesis; its direct antecedent is *genos*—which denotes “race, kind or offspring.” In this sense, the gene has a different set of “wordly” companions than does genetics. In addition to

¹⁸⁵ In the example used at the beginning of this chapter, it was a “gene for” sexual desire. Other examples would be the genes for diabetes, multiple sclerosis, Huntington’s Disease, etc. The HGP explicitly encourages this use; for instance, on its website it contains a powerpoint presentation with a timeline, outlining the “Gene Discoveries for Common Complex Diseases 1990 – 2007” (<http://www.genome.gov/Education/>)

¹⁸⁶ The blog of T. Ryan Gregory, an evolutionary biologist, provides another useful overview of both the theory of pangenesis and the evolution of the terms gene and genetics. See <http://genomicron.blogspot.com/2007/04/from-pangens-to-genomes.html>

the emphasis on belonging to a certain kind, *genos* and its scientific cousin, *genus*, imply an activity of classification or differentiation. Embedded within the very term, then, is a tension between the simultaneous individualization genetic enables—because no two human genomes are exactly alike—and the universalizing instinct that sees the biological commonalities between all human beings. Whereas the former assumption of individuality enables practices like DNA fingerprinting and pharmacogenomics, the latter rests at the center of searches for the genetic bases of human behavior.

Although this association of the gene with an activity of differentiation and classification implicates genes in an activity of ordering, this ordering is not captured by the instruction and structuring inherent in Heidegger's conception of the standing reserve. Because Heidegger concerns himself with physics, he thinks the standing reserve in terms of a "demand" put to nature "that it supply energy that can be extracted and stored as such" (QT 14). For him, nothing differentiates one form of energy from another because they can all be transformed into electricity; the atom bomb and a hydroelectric dam thus make similar claims upon nature. In his sense, ordering has a leveling effect—all things become understood in terms of that which they enable.

The ordering enabled by genes, however, is a differential one. It classifies human beings in terms of their relation to both other human beings and to their own predictable future. This is a hierarchical ordering in that some humans are understood as having a more desirable future than others. In this sense, the "danger" is not that all humans become standing reserve, but that some humans become more valuable than others. Note that this danger has little to do with genetic determinism; instead the concern is with plurality and the relationships between human beings. Because, as we

will see in the last chapter, plurality is a fundamental condition of political life, this is a political concern of the highest order.

But we have still not answered the question of what a gene is for. If geneticists themselves need it only as shorthand for a contextually determined referent, why bother with the term at all? If we are not committed to a causal explanation of genetics, do we even need this noun?

Biotechnology companies do. Without an understanding of genes as material entities, it would be impossible to patent them. Even in discussions that show a remarkable degree of sensitivity regarding the use of the term gene, the subject of patenting invokes it as a material entity (e.g. Lenoir 1999, 625). Precisely because it is necessary to delineate a specific, easily identifiable, object capable of being owned, and thus bought and sold, the gene still has remarkable influence in this realm. In some sense, then, what the conception of the gene as a material entity enables it is its commodification.

Given the constrained understanding of genetics and the more troubling associations of genes, I suspect that the language of gene talk does discussions of reprognetics a disservice. Keller concludes on a similarly skeptical note, but suggests that genes still have more explanatory work to do. Although she briefly mentions the ways in which gene talk “shapes popular hopes and anxieties in ways that are often off target, and in fact counter-productive to effective discussions of public policy” (Keller 2000, 148), her primary concern is still the constraints gene talk imposes on scientific and not political thinking. Mine is precisely the opposite. In seeking to rehabilitate the language of genetics and free it from its deterministic connotations, my overarching

goal has been to create a space in which the phenomenon of rerogenetics might reveal itself in all its *political* complexity. Although I suspect that Heidegger's assistance is only partial, his discussion of language helps release this phenomenon from the shackles of genetic determinism and create (or protect) a space in which to truly "question" rerogenetics.

VIII. QUESTIONING REPROGENETICS

What then does this mean for rerogenetic technologies? How might skeptics of such technologies benefit from a renewed encounter with gene talk? I conclude by laying out but a few ways in which the debate surrounding rerogenetic technologies might reorient itself. This is not to say that this understanding of genetics eliminates all concerns, but that these concerns register on different levels—raising questions overlooked by those whose worry is genetic determinism.

Take, for instance, the idea of genetics as a site of potentiality. Understood in this manner, the predictive testing associated with rerogenetics indicates not a certain outcome, but a potentiality—a possibility that may be forestalled with attention to the environmental factors that also increase one's risk of disease. Indeed, contrary to popular opinion, most predictive testing (for Alzheimer's, breast cancer, heart disease, etc.) indicates precisely this—a predisposition or heightened risk. Very few genetic tests can accurately and decisively determine a future outcome.¹⁸⁷ In this light, predictive tests indicate a future course of action rather than submission to one's fate.

¹⁸⁷ And those that can are precisely the ones of which many people are wary. For example, the test for Huntington's chorea is one of the most accurate and truly predictive tests on the market. A late-onset progressive neurological disease, Huntington's is easily identifiable through genetic testing. A seemingly healthy person with no symptoms of the disease (someone who is

An understanding of genetics as interaction and dynamism also complicates attempts to “design” or “program” a child’s future. When thinkers like Habermas worry about the affront to the autonomy of future generations represented by reprobogenetics, they implicitly acquiesce to a form of genetic determinism that sees parents in the position of “programmers” (Habermas 2003, 23). Just as those who support reprobogenetic attempts to “make less random” the vagaries of human reproduction see genetic interventions as having the potential to ensure future outcomes, so, too do skeptics attribute to genes a heightened sense of agency.

In this attribution of agency to a non-human entity, it might seem that we are overcoming Heidegger’s worry about man as *subiectum*. Instead of man, it is the gene that “directs,” “determines” and “governs.” Although genes, as a part of nature, may indeed be part of the phenomenon of “what is,” it would be a mistake to assume that assigning agency to a gene overcomes the tendency of modern humans to see themselves as “lord of the earth.” While it may be true that a deterministic understanding of genetics shifts attention away from what human beings do to what is done to them, reprobogenetic technologies attempt to wrest control away from genes and back into human hands. Because they use the natural abilities of the gene in the service of human ends, reprobogenetic technologies, too, constitute an extension of the turn inward and the attempt at mastery.

That said, the fact that genes have some form of agency need not be as threatening as thinkers like Habermas anticipate; there is nothing to say that an

presymptomatic) can be tested for a mutation on chromosome 4 whereby a sequence of three letters is repeated over and over; persons with more than thirty-nine repetitions will develop the disease (Ridley 1999, 55). As yet, however, no effective treatment exists, so aside from foretelling a painful future, this genetic test has little therapeutic value.

understanding of genes as agents is antithetical to a conception of human agency.¹⁸⁸

Maybe the problem with genetic determinism is not that we've endowed genes with agency, but that we've given them exclusive agency—simply substituting one dominator (humans) for another (genes). Perhaps, as I suggested in chapter one, the problem lies not in genetics but in the desire for control or in an understanding of agency that can admit of only one master.

Nonetheless, this is not to absolve reprobogenetics from political responsibility. In particular, the activity of differentiation enabled by genes might yet have significant political consequences. Take, for example the move toward a molecular understanding of disease encouraged by genetic research. Although individualized medicine is often touted as the ultimate promise of genetics, it remains uncertain how the proliferation of different genes associated with diagnostically similar conditions might affect not simply medical treatment, but the sense of political community that accompanies a shared diagnosis. The deaf community, for instance, is comprised of a dense network of persons who can attribute their deafness to wide variety of causes (both genetic and non).¹⁸⁹ This community has fought long and hard for political recognition. What happens to its already tenuous cohesiveness once we start being able to differentiate between those whose deafness can be traced to connexion 26 (and hence might

¹⁸⁸ Moss (2007) makes a similar critique of Habermas as relying on an overly deterministic understanding of genetics. Why, he and others ask, should we assume that reprogenetic attempts to direct a child's future are any more significant than other, non-genetic attempts to guide and mold a child's future?

¹⁸⁹ The fact that deaf persons tend to associate with others who are deaf (albeit for different reasons) has continually frustrated attempts to understand the genetic basis of deafness. Because families with genetic forms of deafness are difficult to locate and are often formed through intermarriage with others whose deafness can be attributed to different causes, they pose an exceedingly difficult case for genetic analysis (van Cleve 2004).

someday be “curable”)¹⁹⁰ and others whose is the result of an unfortunate illness in early childhood? Or, will it matter to the community of breast cancer survivors that some have the BRCA genes and others a non-hereditary form of the disease? What about when it comes time to fund what might be vastly different treatment options?

My purpose in posing these questions is not to answer them, but to highlight the different tenor and content of a discussion of reprogenetic technologies that is not haunted by the threat of genetic determinism. If, as Heidegger, suggests, our language constrains our thinking, what I hope I have shown is a need for awareness (of the words we use and connections we make) on the part of those who seek to explore the political implications of the phenomenon of reprogenetics. Only by recognizing the ways in which language patterns our thinking is possible to truly “question” reprogenetics.

¹⁹⁰ A mutation on the gene labeled Connexion 26 is associated with many of the genetic forms of deafness (Nance 2004, 96).

Chapter 4: The ‘unnatural growth of the natural’: reconsidering Arendt on nature and artifice

I. BLURRING THE DISTINCTION BETWEEN NATURE AND ARTIFICE

In the previous chapter, I identified thinking’s destructiveness as both its promise and potential danger. Turning to Heidegger, I argued that the first step in thinking what we are doing is to “unfreeze” the language of genetics and prepare ourselves to understand rerogenetics as a phenomenon that deals with potentialities rather than predetermined futures. However, I suggested, we must nonetheless remain attentive to the hierarchical ordering and classificatory activities the language of genetics enables. In the coming chapter, I continue along thinking’s destructive path—highlighting another “preconception” that poses significant problems for those interested in thinking rerogenetics. Leaving aside the question of language for the moment, I return to PGD and rerogenetics in order to question the kinds of *conceptual* shackles that hinder political theoretical engagements with these technologies. In particular, I focus on the difficulties that arise when we theorize rerogenetics out of a concern for the distinction between nature and artifice.

In his essay, *The Future of Human Nature*, Habermas suggests that “[w]hat is so unsettling [about PGD] is the fact that the dividing line between the nature we *are* and the organic equipment we *give* ourselves is being blurred ” (2003, 22). There is a deep-seated anxiety that attends the blurring of this distinction between nature and artifice. For Habermas, it is merely “unsettling.” Others argue that this ambiguity should

“offend,” “repel” and “repulse” us “because we intuit and feel, immediately and without argument, the violation of things that we rightfully hold dear” (Kass 1998, 19). In *Our Posthuman Future*, Fukuyama suggests that the loss of this distinction between the natural and the human-made “threatens” our humanity and pushes us toward “a ‘posthuman’ stage of history” (Fukuyama 2002, 6).¹⁹¹

For each of these thinkers, biotechnology, in the form of rerogenetics, challenges the distinction between nature and artifice.¹⁹² The fact that human beings can create life and pattern it according to our own design confounds the ability to distinguish between the “grown” and the “made.” But the sense of anxiety these works exude cannot be traced to a simple fear of the “unnatural.” Although each begins with the question of how rerogenetic technologies affect the nature of humanity, they shift quickly to articulating another, far more interesting, dilemma. For these thinkers, the problem with blurring this distinction between nature and artifice is that it calls into question our ability to think ethically. For Habermas, the issue is how the

¹⁹¹ Indeed, it is the continuing development of science and technology that have forced Fukuyama to rethink the “end of history” thesis for which he is best known. In Fukuyama’s words: “As the more perceptive critics of the concept of the ‘end of history’ have pointed out, there can be no end of history without an end of modern natural science and technology” (Fukuyama 2002, 15).

¹⁹² A note on the thinkers with whom I engage: there are obviously numerous other thinkers who engage rerogenetics on a more specific and sometimes (at least in the case of Fukuyama and Kass) sophisticated basis. And yet, these three are perhaps the best known *public* intellectuals who have attempted to discuss the ethical issues at stake in the development of rerogenetic technologies. They also, as Rose (2007) notes, make three of the best known cases for establishing normative limits on the use of rerogenetic technologies. Moreover, Habermas and Fukuyama are two of the few political theorists who have specifically addressed questions surrounding genetic technologies and PGD. While Kass is a bioethicist by trade, he is known as much for his public activities—as the first chair of George W. Bush’s Council on Bioethics—as for his scholarly ones. His work is frequently cited and Fukuyama makes explicit reference to his thinking. Although the work I reference here is specifically on cloning and not PGD, he offers a prime example of a more conservative approach to bioethics, and it is for this reason that I include him here.

“biotechnological dedifferentiation of the habitual distinction between the ‘grown’ and the ‘made’ . . . changes our ethical self-understanding as members of the species” (Habermas 2003, 23). For Kass, “ a world whose once-given natural boundaries are blurred by technological change” becomes synonymous with one “whose moral boundaries are seemingly up for grabs” (Kass 1998, 8). Fukuyama makes the connection to ethical thinking most explicitly when says that “nature itself, and in particular human nature, has a special role in defining for us what is right and wrong, just and unjust, important and unimportant” (Fukuyama 2002, 7). For each of them, blurring the line between nature and artifice eliminates one of the key bearings by which we navigate our world.¹⁹³ Absent the ability to distinguish between the grown and the made, they argue that we cannot make the kinds of political judgments genetic technologies demand.

Because these thinkers connect the distinction between nature and artifice to the ability to think ethically, they respond to this “biotechnological dedifferentiation” in a defensive manner. Leaving aside Habermas’ response for the moment, Fukuyama and Kass assuage their anxiety by attempting to rebuild the wall separating nature from artifice. Empirically, they try to shore up this barrier by calling for an outright ban on certain technologies. Theoretically, they work to re-establish conceptual distinctions between nature and artifice. Fukuyama seeks to reinvigorate the tradition of natural law by offering a definitive conception of human nature informed by recent research in

¹⁹³ Buchanan et al. (2000, 82-95) provide a useful overview of the various ways conceptions of human nature become tied to theories of justice and how genetic interventions challenge these assumptions.

neuroscience and genetics.¹⁹⁴ Kass asks his readers to attend to their gut feelings of “repugnance” when confronted with technologies like cloning in order to erect sharp boundaries between the natural and unnatural.

This framing of the debate surrounding rerogenetic technologies as a threat to the distinction between nature and artifice is typical of conservative political theoretical approaches to biotechnology. In this chapter, I argue that fetishizing the *concepts* of nature and artifice and worrying about the loss of their distinctness actually impedes meaningful discussions about the political implications of these technologies. Rather than attempting to re-inscribe this distinction onto an empirical reality to which it no longer corresponds (if it ever did),¹⁹⁵ I suggest that we need to take up the Arendtian challenge to think rerogenetics “without a banister” (HA 336).

¹⁹⁴ Fukuyama’s overarching goals in *Our Posthuman Future* are threefold. First, he wishes to introduce his readers to recent research in neuroscience, pharmacology, and genetics in order to suggest that this research (and the technologies it enables) carries with it disturbing potentialities. Second, he offers a philosophic argument in favor of a stable conception of human nature that is informed by recent biological research. However, he warns his readers that “those not inclined to more theoretical discussions of politics may choose to skip over some of the chapters here” (Fukuyama 2002, 16). The final, and in his opinion more important, section of the book entails a discussion of exactly how biotechnology ought to be (and is) regulated. In this section he admonishes his readers to “act!” with regard to biotechnology and prevent “a posthuman future and the potential moral chasm that such a future opens before us” (Fukuyama 2002, 17).

¹⁹⁵ The question of whether nature has ever been something separate from ourselves is a topic far too complex for me to address here (and depends entirely on the standpoint from which it is taken up). Whether or not the distinction between nature and artifice has ever corresponded to empirical reality is one that recent works, such as Bruno Latour’s *Politics of Nature*, have subjected to critical inquiry. See Latour (2004) or Haraway (1997) for a more thorough discussion of the political implications of this constructed distinction. For my purposes, I am less interested in the empirical basis of the distinction than in its effects on our thinking. I only ask what the blurring of this distinction does to our ability to think politically in the manner suggested by Arendt.

II. THE GROWN AND THE MADE

For Kass, Fukuyama and Habermas, the threat posed by reprobogenetics rests on the sense that these technologies allow parents ever-greater control over the genetic makeup of their offspring. Although all three thinkers find both prenatal testing and PGD worrisome, it is the specter of *future* developments in reprobogenetics that haunts them. As yet unfeasible, gene therapy and reproductive cloning exemplify more extreme forms of genetic manipulation, and these thinkers worry that they will bring “more and more of what we are ‘by nature’ . . . within the reach of biotechnological intervention” (Habermas 2003, 23). In order to recognize these potential threats, each takes up a futuristic perspective in their discussions of reprobogenetics—what Habermas terms the “perspective of a future present” (Habermas 2003, vii). This move to speak in terms of hypothetical situations and what “might” and “could” happen effectively evokes a sense of heightened urgency while simultaneously implying that ethical thinking can still be “rescued.”

In this section, I trace the specific ways in which these thinkers connect this conceptual distinction to ethical thinking. For Kass and Fukuyama, the translation from nature and artifice to right and wrong is relatively simple. Habermas’s translation is far more complex and deserving of attention. In particular, his discussion of the communicative relationships forged by reprobogenetics merits further discussion and will be taken up in the next chapter. Despite their varying political and theoretical commitments, however, all three thinkers end up with a call to protect something like

human nature from the incursion of biotechnology—thereby putting the theorist in a defensive position with regard to future developments in rerogenetics.

For Kass and Fukuyama, the concepts of nature and artifice map sloppily onto a whole series of conceptual dualisms they see as necessary guides for ethical thinking. Nature and artifice are used almost interchangeably with the natural/unnatural, natural/artificial, natural/cultural, natural/conventional dualisms that so many contemporary political theorists seek to contest. Despite the fact that each thinker makes use of a variety of different terms, I will use nature/artifice to refer to the dualism they set up between that over which human beings seem to have little control (nature) and that which is the product of intentional design (artifice).

Kass, more obviously influenced by a religious background, frames his discussion in terms of the “begotten” and the “made” (Kass 1998, 12).¹⁹⁶ In one of his most famous essays, “The Wisdom of Repugnance,” he goes to great trouble to differentiate the natural from the conventional. “It is wrong,” he argues, “to treat such naturally rooted social practices [particularly heterosexual marriage] as mere cultural constructs” (Kass 1998, 26). He laments that bioethicists must now “risk charges of giving offense to those adults who are living in ‘new family forms’ or to those children who, even without the benefit of assisted reproduction, have acquired either three or four parents or one or none at all” (Kass 1998, 7). This deep desire to connect

¹⁹⁶Because Kass comes out of a more conservative (and less secular) background than the other thinkers mentioned here, his worries are of a somewhat different ilk. In addition to the concern over instrumentalization and the distinction between the begotten and the made, he worries about the breakdown in traditional marriage as instigated by feminists and gay rights advocates (Kass 1998, 7). His worries about cloning and artificial insemination are based at least in part on the fact that they are forms of asexual reproduction—which enable the “manufacture” of children without the experience of the deep “profundity of sex” between a man and a woman (Kass 1998, 24).

traditional marriage and family-rearing practices to nature reflects his belief that what is natural is permissible and valuable, whereas what is unnatural is questionable. The distinction between the natural and the non- thus operates to elevate and justify “natural” social practices above those that Kass can label the result of convention.¹⁹⁷ What is important to note about this way of understanding the distinction between nature and artifice is that it requires a clear-cut demarcation between the two concepts. The barrier separating them serves to protect nature from human interference and puts human life decisively on the side of the natural. Eliding the difference between nature and tradition, Kass conceives of nature as an important source of knowledge and stability in the realm of human affairs.

For Fukuyama, the translation from nature and artifice into right and wrong is (only slightly) more complicated. Fukuyama argues that we simply need to *know* humans’ intrinsic capabilities in order to develop a conception of human dignity. Absent a “stable human nature,” Fukuyama is convinced that we have no way of talking about “ultimate human goods or ends” (2002, 108). And without a conception of these goods and ends, Fukuyama argues that human rights cannot be defined or protected. Although he admits to a “huge variance” in this nature, he insists that human beings are not “infinitely plastic” (Fukuyama 2002, 13). In an interesting twist, he suggests that recent research into the genetic bases of behavior can actually help theorists better

¹⁹⁷ When natural and conventional practices conflict, the latter become “unnatural” and should inspire gut feelings of “repugnance” (Kass 1998, 19). This attempt at hierarchical ordering is, according to theorists like Donna Haraway, intrinsic to the nature/artifice (or what she terms nature/culture) distinction (Harway 1985, 167). For her, the dismantling of these oppositions is thus part of an emancipatory project.

understand what this nature might look like (Fukuyama 2002, 15).¹⁹⁸ But any attempt to *change* this nature through engineering—social or genetic—is unconscionable to him. His basic argument is that without an understanding of what human beings *are*, we cannot say what should not be done to them (Fukuyama 2002, 147). Like Kass, Fukuyama sees nature—in this case human nature—as in desperate need of protection. Although his understanding of what constitutes this nature is perhaps broader than Kass', Fukuyama, too, requires that nature be something stable and separate to which theorists can have recourse when they want to determine what is permissible.

For Habermas, the path from nature and artifice to right and wrong is far more circuitous.¹⁹⁹ In the context of his ongoing attempts to differentiate strategic from communicative action, the concept of instrumentality is more salient than the nature/artifice dualism. For him, the decisive line that needs to be drawn is between therapeutic and enhancement technologies. Whereas the former are oriented toward enabling personal autonomy, the latter are seen by Habermas as an affront to the self-determination of future generations. Because enhancement technologies fundamentally alter the life chances of future children, Habermas sees them as a form of “alien determination” that creates an asymmetrical relationship between child and parent

¹⁹⁸ For instance, he suggests that a better understanding of human nature might help explain the persistence of “capitalist liberal democratic institutions,” because it would presumably show that the assumptions embedded in these institutions conform more closely to human nature than do alternative attempts at social organization (Fukuyama 2002, 106). He connects biotechnology to socialism and other forms of “engineering” that represent “techniques for pounding the square peg of human nature into the round hole of social planning” (Fukuyama 2002, 15).

¹⁹⁹ I should note that my claims regarding Habermas are restricted to his work in *The Future of Human Nature*. In placing the text of thinker whose works I admire alongside those who certainly do not share either his political views or theoretical sophistication, I intend only to underscore the ubiquity of the nature/artifice dualism in political theoretical discussions of reprobogenetics.

(Habermas 2003, 87).²⁰⁰ For him, conceptual distinctions like that between nature and artifice (or the grown and the made, as he terms it) form the “taken-for-granted background“ upon which all ethical self-understandings are based (Habermas 2003, 72). It is because we understand ourselves as “born” rather than “made,” Habermas argues that we can “critically appropriate” our life histories (Habermas 2003, 59). The concern registered in his text is that these background conditions might so drastically change that “we may no longer see ourselves as ethically free and moral beings guided by norms and reasons” (Habermas 2003, 41).²⁰¹

In his focus on the asymmetrical relationships created by the use of rerogenetics technologies, Habermas adeptly sidesteps many of the pitfalls inherent in Kass and Fukuyama’s accounts and provides a welcome reprieve from conservative discussions of bioethics. Despite his somewhat misleading title, Habermas is not primarily worried about “unnatural” relationships and makes few claims about a stable human nature.²⁰² Instead, he convincingly argues that the instrumentalization of human life occasioned by rerogenetics is what should concern us (Habermas 2003, 40). Rather than seeing ourselves as autonomous beings capable of political action and ethical decision-making, Habermas states that “we cannot rule it out that knowledge of one’s

²⁰⁰ His primary concern about genetic technologies is that he believes that the knowledge of oneself as externally designed—i.e. the knowledge of oneself as the product of parents’ choices about the characteristics they want their child to display—will interfere with the self-understandings of both the resulting child and his/her contemporaries.

²⁰¹ I should note that Habermas’s concerns about rerogenetic technologies are exacerbated by the context in which he writes, namely a German state that is (rightly) extremely cautious about any research that calls to mind the eugenic practices of the National Socialists. As he recognizes, debates over genetic technologies have a far different tone in Europe than in the United States—despite this country’s own experience with eugenic theories and practices (Habermas 2003, 75).

²⁰² Indeed, he argues for a very different kind of “moralizing human nature” than that engaged in by thinkers like Kass and Fukuyama (Habermas 2003, 24).

own hereditary features as programmed may prove to restrict the choice of an individual's way of life" (2003, 23).²⁰³

In this sense, Habermas's undertaking seems to require no ontological claims about what humans *are*; instead, he attempts to lay out a path of "deontological virtue" by articulating "an ethical self-understanding of the species which is crucial for our capacity to see ourselves as the authors of our own life histories, and to recognize one another as autonomous persons" (Habermas 2003, 25). However, the extent to which this project avoids the pitfalls of a conception of human nature is debatable, as Habermas, himself, recognizes (Habermas 2003, 125). While rare, worries about the "transgression" of boundaries and the "penetration" of nature (Habermas 2003, 54, 27) nonetheless construct nature as a separate sphere—capable of being invaded. Although his is far more plastic than either Fukuyama or Kass's, an implicit understanding of human nature lies behind Habermas's distinction between therapeutic and enhancement technologies and he remains bound to the dichotomous thinking such dualisms encourage. Absent knowledge of what we are, it would seem impossible to recognize what constitutes enhancement. Although he posits no direct line between the natural and the right, he nonetheless argues that we need the "stabilizing context of an ethics of the species . . . to endure if morality itself is not to start slipping" (Habermas 2003, 67). In this way, the formulation of ethical arguments becomes once again bound (albeit in a far more nuanced manner) to the nature/artifice dualism.

²⁰³ The extent to which Habermas's understanding of reprogenetic technologies rests on a false sense of genetic determinism—i.e. the idea that we are controlled by our genes—was addressed in the previous chapter. Again I will note, however, that he makes extensive use of the terminology of genetic "programming"—a concept of which thinkers like Evelyn Fox Keller are extremely critical (Keller 2000).

Because each of these thinkers views nature as threatened by advances in rerogenetics, each calls upon the state to enact strict guidelines for the use of certain technologies and to outlaw some altogether. Given the importance each ascribes the nature/artifice distinction, this call for regulation can be understood as the empirical component of their theoretical attempts to shore up a conceptual distinction that seems to safeguard ethical thinking. So long as certain rerogenetic techniques are unlawful, the fissure occasioned by rerogenetic research remains manageable.

However, basing this call for regulation on a fissure in the wall separating nature from artifice puts the theorist in a peculiar position—attempting to rebuild what appears to be a barrier that has already been breached.²⁰⁴ With every passing year, the particular technologies that concern thinkers like Kass, Fukuyama and Habermas become simultaneously more commonplace and impervious to control—and arguments critical of them become more difficult to make. I argue that this defensive posture is an unproductive one for the political theorist. It puts those who are skeptical of rerogenetics in the uncomfortable company of conservative political movements or else in the awkward position of attempting to draw almost arbitrary distinctions between those technologies that are permissible and those that or not. In the coming pages, I turn to Arendt’s work in order to suggest that there might be a way beyond this impasse.

²⁰⁴ I should be clear that I am not suggesting we should simply accept rerogenetic technologies in an uncritical manner. All three thinkers suggest that the bioethics profession has become extremely adept at providing this kind of retrospective justification for controversial technologies. Serving on commissions and advisory boards, “the ethicists have for the most part been content, after some ‘values clarification’ and wringing of hands, to pronounce their blessings upon the inevitable” (Kass 1998, 10). In an insightful comment, Beck suggests that technoscience thus proceeds via a “policy of the *fait accompli*” (1992, 207). For this reason we should be wary of the assertion that a technology no longer requires critical engagement simply because it has become commonplace. What I am suggesting here, however, is that this kind of defensive posture is unproductive and there are more useful ways to approach rerogenetics.

If we approach the task of thinking reproductives not out of a concern for the conceptual categories of nature and artifice, but with an eye toward the political implications of their various entanglements, different questions and concerns emerge.

III. THINKING REPRODUCTIVES WITHOUT A BANISTER

For Arendt, traditional concepts like nature and artifice may indeed have oriented ethical thinking in the past; but this does not mean that we can continue to rely upon them in the future.²⁰⁵ As new phenomena emerge, we are forced to relinquish “categories and formulas that are deeply ingrained in our mind but whose basis of experience has long been forgotten and whose plausibility resides in their intellectual consistency rather than in their adequacy to actual events” (PRD 37). Instead of relying on these “safe guiding lines,” she insists that we are capable of thinking without these inherited constructs—“without a banister” (HA 336). As this chapter proceeds, I argue that nature and artifice—conceived as discrete concepts between which a barrier must be erected—are precisely the sort of “deeply ingrained” categories of which we should be wary. The problem with such preconceived notions, for Arendt, is that they actually interfere with our capacity to “understand,” “comprehend” and “think” events in their “originality” (UP 310; OT viii).

It is important to note that Arendt’s is a call to think *without* a banister—not to construct a new one. Hers is no simple appeal to her readers to find new concepts and

²⁰⁵ See the essay “Tradition and the Modern Age” for Arendt’s discussion of precisely how and why tradition no longer functions to guide thinking (BPF 17-40)

categories more suited to contemporary reality. As we relinquish time-worn “categories and formulas,” we take on the far more difficult tasks of “thinking and judging” (PRD 37). In this way, the turn to Arendt compels us to move away from philosophical-conceptual questions and toward more political ones. As such, hers is a challenge to displace an entire analytical framework that seems more interested in conceptual fidelity than political potency. In what is to come, my concern is not to articulate the “correct” relationship between nature and artifice given new reprogenetic technologies, but to *reorient* our thinking. I leave aside the question of whether a conception of human nature (let alone second nature) is ever useful for political theorizing and assert only that this framework need not be the only one through which we approach reprogenetics. What I suggest is that the nature/artifice dualism acts like the spotlight on a stage set, directing the audience’s attention toward certain tableaux (or interpretations) and away from others. In the case of reprogenetics, I suspect that what is going on in the shadows—still on stage, but not necessarily the center of attention—is still in need of articulation.

Arendt is an admittedly strange ally to enlist in this endeavor. Given the many distinctions she draws in *The Human Condition*—between labor, work, action, public, private, social, etc.—it is tempting to read this work as if she, too, desires a clear-cut demarcation between nature and artifice (see Curtis 1995, 185). Her work often seems to call for a shoring up of boundaries—a re-inscription of distinctions which modernity has obscured.²⁰⁶ However, this reading of Arendt remains mired in the same

²⁰⁶ As I noted earlier, Benhabib refers to this aspect of Arendt’s work as her “phenomenological essentialism” and traces it to Heidegger’s influence (cf note 62).

philosophical-conceptual framework she wishes to displace. In the pages that come, I aim to develop an alternative reading.

I suggest that instead of understanding Arendt's conceptual work as a chronicle of loss, we can read her concepts as provisional attempts to grasp multidimensional phenomena that defy simplistic description (LM 25, 32). In this sense, concepts intrude upon phenomena—organizing and articulating, but never fully representing them. Because concepts are “thought words” that try to fix in language invisible and ever-changing ideas (LM 52), they exist in an uneasy tension with the phenomena they try to depict. Instead of attending to the definitions of the different concepts Arendt lays out in *The Human Condition*, I draw attention to those moments in which these concepts appear and disappear—intertwine and intersect. In this context, nature and artifice emerge not as clear-cut historical categories she attempts to impose on modernity but as provisional attempts to articulate this phenomenon.²⁰⁷ While I doubt Arendt herself could ever take the kind of “pleasure in the confusion of boundaries” to which some theorists confess (Haraway 1985, 66), I aim to use her work to approach reproductives not out of an attitude of fear and revulsion—afraid of what we might lose—but with a posture of resolved inquisitiveness—curious about what we might learn about ourselves and the world in which we dwell.²⁰⁸

²⁰⁷ Indeed, Arendt is often criticized for the rigidity of her concepts, their historical inaccuracy and their inapplicability to modernity.

²⁰⁸ I would argue that the latter comportment makes public discussions of genetic technologies easier because it aligns more closely with the mode of inquiry of many scientists. Whereas the defensive posture puts critics at odds with their subject of inquiry, the latter comportment enables a critique of genetics more akin to literary criticism—in which the critique is motivated by a love of the object of inquiry (literature) that is shared by both critics and practitioners (authors). As Don Ihde (1996) argues, modeling critiques of science and technology after literary criticism might enable a far different relationship between science and its skeptics.

In the pages to come, I argue that whereas interpreters are right to see in Arendt's thinking a deep appreciation for the protection the human artifice offers us from the unpredictability of nature, Arendt's conceptions of both nature and artifice are far more complicated than often allowed. Thus, I suggest that blurring the distinction between nature and artifice does not threaten to render us incapable of thinking. Instead, reprogenetics represents a unique phenomenon that must be understood in all its singularity and originality. Like totalitarianism—the particular historical constellation of events that inspired Arendt's thinking—reprogenetics confronts political theorists with a peculiar dilemma in that “the very event, the phenomenon, which we try—and must try—to understand has deprived us of our traditional tools of understanding” (UP 310).

IV. FROM NATURE TO NATURAL PROCESSES

The first thing we notice about Arendt's discussion of nature and artifice is that this dualism maps awkwardly onto the tripartite structure of *The Human Condition*. In her discussion of labor, work and action, it is difficult to locate nature and artifice with regard to these activities. If we make the usual move to connect nature to labor and align artifice with work, something appears to be missing. Not only do we have to collapse Arendt's complex understanding of both nature and artifice into one-dimensional concepts to make them fit, but we start to notice the conspicuous absence of a third term corresponding to action. Rather than spend our time searching for this

third term—a futile attempt that remains at the level of philosophical-conceptual analysis—I argue in the coming sections that we need a more complex understanding of Arendt’s discussions of both nature and artifice. Rather than representing distinct spheres, nature and artifice are always already intersecting.

Unsurprisingly, Arendt attributes the distinction between nature and artifice to Aristotle and briefly appropriates his concepts of *physis* and *nomos* in her discussion of work (HC 150).²⁰⁹ Unlike the thinkers mentioned above, however, she highlights the activities of nature—not the entity itself:

It is characteristic of all natural processes that they come into being without the help of man, and those things are natural which are not “made” but grow by themselves into whatever they become (This is also the authentic meaning of our word “nature,” whether we derive it from its latin root *nasci*, to be born, or trace it back to its Greek origin, *physis*, which comes from *phyein*, to grow out of, to appear by itself). (HC 150)

Where Habermas, Fukuyama and Kass’s works refer to nature as a noun, a static entity, Arendt emphasizes the verb from which it originates. Instead of “*the natural*,” “*the grown*” or “*what has come to be*,” Arendt refers to the activities of nature—its growing and becoming. In her description of biological life, she says that nature is characterized by continuous activity—a constant cycle of creation and destruction, birth and decay (HC 96). Where natural processes reign, there exists “no beginning and no end” (HC 96). In her insistence on the motion inherent in nature’s activities, Arendt immediately calls into question both the stability for which theorists like Kass and Fukuyama yearn and the separation of nature and artifice upon which they rely. In this context, calls to return to the “natural order” of things (Kass 1998, 24) make little sense.

²⁰⁹*Physis* and *nomos* are usually translated as “nature” and “convention.” Whether Habermas and Fukuyama’s are accurate interpretations of Aristotle is not the point here. However, I will suggest that Arendt, in her insistence on “natural processes” underscores the fact that *physis* is not a static concept, but a state of activity.

If we look beyond Arendt's discussion in the *Human Condition*, we recognize what appear as deep inconsistencies in her many references to "nature."²¹⁰ At times it is "hostile," a "silent wilderness" that makes eking out even the paltriest existence almost impossible (OT 191). Elsewhere, nature is described as a source of respite from the superficiality of society. It is "majestic" (OT 192) and can occasion "boundless delight" (RV 151). Nature consists of "good" (HC 120) and "'green things'"—it is one of the "'true realities'" of existence (RV 151).²¹¹ It can be revealed in (RV 152, HC 120) or sunk back towards (OT 207). The forces of nature are "elemental" and "powerful" (HC 148) and yet also monotonous—"swing[ing] in changeless, deathless repetition" (HC 96). Natural processes are "cyclical" (HC 98) and "destructive"—"devouring" matter (HC 100)—but nature's household is characterized by "superabundance" (HC 106). Needless to say, the one thing nature is not, for Arendt, is simple.²¹²

More importantly, even within *The Human Condition*, specific references to "Nature" are rare. Instead, Arendt refers to the earth (HC 2), "natural things" (HC 96), "nature's forces" (HC 148), nature's "household" (HC 97, WF 144) and, most often, "natural processes" (HC 148, 231 *passim*). She explicitly disavows a conception of

²¹⁰ In *The Attack of the Blob*, Hanna Pitkin argues that Arendt's understanding of nature undergoes a full-scale transformation between the writing of Varnhagen's biography and *The Human Condition*. In keeping with the chronological structuring of her book and its focus on the concept of the social, Pitkin suggests that Arendt shifts from articulating nature as something opposed to society to understanding it as part and parcel of the social (Pitkin 1998, 76). I would suggest that this earlier understanding of nature does not disappear altogether but is instead overlaid with other conceptions.

²¹¹ As Curtis notes, this experience of the majesty of nature contributes to "a very fundamental sense of belonging to the earth" (1995, 183).

²¹² We can read these various conceptions as simply incoherent—yet more evidence of Arendt's impossibly paradoxical understanding of the human condition. Or, (perhaps and), we can recognize that these inconsistencies are themselves reflective of the multidimensionality of the concept—the fact that it changes shape depending on the perspective from which one engages it.

human nature (HC 10, OT 347) and at times seems almost to mock the attribution of “naturalness”—particularly with regard to imperial encounters with indigenous peoples (e.g. OT 192).

This move to think of nature in terms of forces and processes again highlights the sense of motion inherent in Arendt’s understanding and suggests that hypostatizing the concepts into “spheres” would be a mistake. It also helps explain the antipathy towards nature often attributed her. Although many feminists read her as hostile towards the bodily dimensions of human existence and thereby construct a hierarchical relationship between labor, work and action,²¹³ Arendt’s hostility is directed towards processes—particularly historical processes that take on the appearance of natural ones—not nature itself.²¹⁴ For Arendt:

human life, placed on the earth, is surrounded by automatic processes—by the natural processes of the earth, which in turn, are surrounded by cosmic processes, and we ourselves are driven by similar forces insofar as we too are a part of organic nature. (WF 168)

Facts of human existence, processes nonetheless stand in stark opposition to action.²¹⁵

Where she can wonder at the majesty of nature and the *cosmos*, Arendt’s attitude towards processes is more negative.

The problem with processes, for Arendt, is two-fold. First, they are inherently destructive—“ruinous” she calls them (WF 168). The “natural life process that drives our organism . . . leads from being to non-being, from birth to death” (WF 168).

Second, this destructive trajectory is all the more worrisome to her given its

²¹³ Dietz (1995) provides a useful overview of “feminist receptions” of Arendt’s work and this oft-cited criticism on the part of thinkers like Adrienne Rich and Mary O’Brian.

²¹⁴ Note that in these artificially natural processes of human history, nature and artifice are always already intersecting.

²¹⁵ As I noted in my first chapter, there are many affinities between Arendt’s discussion of the pitfalls of historiography and her critique of technoscience (c.f. CH).

automatism. As we saw in chapter one in Arendt's critique of history as process, the inevitability associated with processes is understandably troublesome if we take freedom as the principle that guides Arendt's work (WF 168). Although they *can* be interrupted, processes, particularly when viewed from within, make the unexpected appear "infinitely improbable" (WF 168).²¹⁶

However, Arendt levels this charge against all processes—regardless of whether they occur in nature or in human affairs. In this way, she calls into question attempts like Kass and Fukuyama's to put nature and artifice into a hierarchical relationship that accords one greater moral or epistemic value. She also explicitly refuses to locate human beings on one side of a nature/artifice dualism. For her, the relationship between these natural processes and humans is a complicated one. Where the nature/artifice dualism allows thinkers like Kass and Fukuyama to code human beings as natural—and thereby in need of protection from the unnatural—Arendt recognizes that humanity exists at the intersection of nature and artifice. As *animal laborans*, humans are creatures of nature—subject to the same processes of birth and decay as any other living being. "Nature seen through the eyes of the *animal laborans*" is coterminous with life; it is simply that with which human beings "mix" in order to exist (HC 134). But acting as *homo faber*, human beings separate themselves from nature; it appears as the raw material out of which the world is built (HC 135). Arendt suggests that modern

²¹⁶ That one of Arendt's more extensive discussions of natural processes can be found in the essay, "What is Freedom?" which is prefaced with a concern not about totalitarianism but modern science, shows that for Arendt, the questions of politics, freedom, science, technology, are all intertwined. Bringing these concerns about freedom to questions of reproductives is partially what I mean when I advocate a political comportment toward this phenomenon.

technoscience has made it “more difficult to remain aware of the urges of necessity” (HC 135), but humans are nonetheless both growing and making beings.²¹⁷

It is precisely because human beings cannot be assigned to either side of a nature/artifice dualism that Arendt refuses the language of “human nature” and speaks instead of the “human condition” (HC 10). Only the fact that we live on this earth (and not even that) allows us to say that we are human as opposed to something else. The only thing human beings have in common, according to Arendt, is that they are conditioned beings—conditioned by that which they themselves create (HC 9).

For her, the problem with conceptions of human nature is threefold. First, the very idea of a human nature implies that this nature is immutable—incapable of being changed. Given her experience with totalitarianism, Arendt argues that this is a false hope. Above all, her works suggest “we can, with a frightening degree of ease, adjust ourselves to ignoble conditions” (Curtis 1995, 176). Second, Arendt believes that, even if something like a human nature did exist, it would be unknowable to any but a god—someone or something that is itself not human (HC 10). Third, and most important for my purposes, the idea of human nature can interfere with our ability to understand events and phenomena. In *The Origins of Totalitarianism*, Arendt argues that the assumption that human beings act on the basis of rational interests blinded observers to the significance of totalitarian propaganda (OT 347). Because observers assumed that both Hitler and the masses would act on this basis, they were unprepared to confront “the lack of self-interest of masses who are quite prepared to sacrifice themselves” (OT 348). This “anti-utilitarian” behavior thus “introduced into politics an element of

²¹⁷ Natural processes are also involved in action (especially with regard to modern technoscience). More on this below.

unheard-of unpredictability” (OT 347). While these observations may seem far removed from her discussion of human nature in *The Human Condition*, they offer a prime example of how preconceived categories imposed onto a phenomenon function to obscure what is really happening.

Arendt’s emphasis on the perspective from which nature is viewed (the eyes through which it is seen) is important to note because it underscores the fact that natural processes appear differently depending on the comportment of the viewer. Although she is inconsistent on this point, Arendt at times seems to suggest that nature only “become[s] a process” because modern science needed it to appear in this way (HC 296). Elsewhere, she argues that nature “appears” as automatic only “if we see these processes against the background of human purposes,” which have an altogether linear trajectory (HC 151). As we saw earlier, just as events are subsumed by processes when history becomes obsessed with the concept of development, so, too does it seem that natural things begin to “derive their significance and meaning solely from their functions in the overall-process” only with the advent of modern science (HC 296).

Even the destructive aspect of natural processes only makes sense from the viewpoint of *homo faber*. Because they are inherently cyclical, endless “small” and “single” natural processes work together to form the “over-all gigantic circle of nature” (HC 96). From the perspective of nature’s “metabolism” (HC 100), dead matter is simply food for consumption—to be incorporated into another process. The time structure of natural processes is thus circular—without beginning or end. The ideas of birth and death, however, impose linearity on this circular motion. Only from the perspective of the world do the ideas of birth and death even make sense:

It is only within the human world that nature's cyclical movement manifests itself as growth and decay. Like birth and death, they, too, are not natural occurrences, properly speaking; they have no place in the unceasing, indefatigable cycle in which the whole household of nature swings perpetually. Only when they enter the man-made world can nature's processes be characterized by growth and decay. (HC 97-98)

Because birth and death represent absolute beginnings and endings, they punctuate nature's cyclical movement and can only be conceived in the linear terms of the world.

V. MODERN TECHNOSCIENCE: UNLEASHING NATURAL FORCES

Arendt's shift away from nature writ large and toward the idea of natural processes is crucial for understanding the distinctiveness of modern technoscience. In *The Human Condition*, Arendt distinguishes three stages of modern technological development: the invention of the steam engine, the use of electricity, and automation (HC 147-150). Each of these stages is characterized not by a hard and fast distinction between nature and artifice, but by a different relationship between human fabrication and natural processes. In this sense, nature and artifice are always already intersecting. What changes is their interaction.

Take, for example, the steam engine. Via Arendt's interpretation, the steam engine "imitates" natural processes. Electricity, which characterizes the second stage of mechanical development, more directly interferes with natural processes, "killing" and "interrupting" them; electricity is thereby an attempt at "denaturalization" (HC 148). In contrast to these earlier forms of technology, Arendt's work suggests that technologies like the atom bomb and rerogenetics constitute a different relationship to natural

processes. Following Arendt, humans do not simply appropriate naturally occurring activities; acting into nature,” they “provoke” them. They initiate “‘natural’ processes which without men would never exist” (HC 231).

Whereas Habermas, Fukuyama and Kass worry that reprogenetic technologies “denaturalize” human beings by making them into something less “natural” (Habermas 2003, 72), Arendt’s concern is the “unnatural growth of the natural” (HC 47).²¹⁸ Inherent in this formulation is *both* the “denaturalization” of that which we take as natural (the “unnatural growth”) *and* the naturalization of the artificial (the “growth of the natural”). Given her experience with totalitarianism, Arendt is particularly attuned to the ways in which matters of choice become transformed into “biological fatality” (Pitkin 1998, 74). The concern is not that we are “overcoming nature” (Fukuyama 2003, 119), but that we are “unleashing” natural processes and “channeling” them into the human artifice (HC 150). Despite her earlier characterization of processes as repetitive and predictable (HC 96), they acquire an element of unpredictability as soon as they are “unleashed.” This element of unpredictability is what allows Arendt’s interpreters to characterize technoscientific inventions as “technological actions” (Curtis 1995, 179).

²¹⁸ Arendt uses this phrase in the context of her discussion of the social—that sphere in which the matters of the household (*oikos*) become public. Nonetheless, it suggests that “*animal laborans* is the accomplice of a nature that threatens the man-made world, not with natural decay, but with an unnatural growth” (Zerilli 1995, 176). The idea of the “unnatural growth of the natural” takes on additional complexity when connected to reprogenetics. In the case of PGD, “natural” children are those born with diseases like Huntington’s and Tay-Sachs—because their parents did not make use of technologies like PGD. “Unnatural” children, in this case, are born healthy. In short, our conceptions of natural and unnatural are turned upside down when we start to think PGD from within these categories. This incoherency provides yet another reason for political theorists to be skeptical of this way of framing debates surrounding reprogenetics.

This understanding of uncontained natural processes as powerful forces beyond human control further underscores the difference between an Arendtian critique of rerogenetic technologies and the concerns registered by Habermas, Fukuyama and Kass. Habermas, in particular, worries that rerogenetic technologies allow for too much predictability—essentially enabling “genetic designers” to determine the life changes of future generations (Habermas 2003, 62). Whereas he, Fukuyama and Kass worry that rerogenetics represent an attempt to “overcome” nature and bring it under human control, Arendt’s additional concern is that we have let loose processes we can never hope to master. Although Arendt recognizes that new reproductive technologies confound the ability to *recognize* ourselves as subject to nature, she does not commit the concomitant fallacy of suggesting that we are no longer—at least in some part—at nature’s mercy. As Kimberly Curtis notes, “the bald assertion that nature now lies, prostrate, in human hands awaiting its fate appears to be foolish hubris” (Curtis 1995, 160).

Although Arendt also sees rerogenetic technologies as borne of a *desire* for control (HC 2), an Arendtian critique must recognize that we can “channel” natural process that we cannot even comprehend, let alone master. Rerogenetic technologies represent a supreme example of this ability to use natural processes, without understanding how they work. The very activities of DNA sequencing and replication used to conduct the genetic tests upon which PGD is based make use of the natural properties of DNA to cut and paste sequences of nucleotides. And yet, scientists still have only limited comprehension of why and how we can do so (Keller 2000). From this perspective, the unleashing of natural processes into the human artifice is

troublesome not because it represents a transgression of boundaries, but because it signifies a disjuncture between what we can do and what we can understand and talk about. This is above all a relational concern; it is a question about our ability to understand and articulate technoscientific action, rather than a question about the extent of our technoscientific capabilities.

As I argued in the first chapter of this dissertation, Arendt's work suggests that the desire for control acts as an impetus for technoscientific development. Via this interpretation, reprognetics represents an attempt at mastery that can never be realized. Although they fail to recognize this point, Kass, Fukuyama and Habermas's insistence on the need for the "stability" provided by the nature/artifice dualism is emblematic of a similar urge to mastery.²¹⁹ For them, stability is a necessary prerequisite to ethical thinking and they seek to control reprognetics so as to provide a stable background for thinking.²²⁰ As I argued in the previous chapter, it is this assumption that thinking requires a stable background that Arendt's works help me explicitly complicate. Given the motion inherent in her conception of natural processes, Arendt understands that human beings exist in a perpetual state of instability. The challenge is to think and judge in the context of this unpredictability—not to control it.

²¹⁹ Take, for example, Habermas's insistence on the "authorship" of one's own life story. Whereas Arendt recognizes that stories are told by others about an individual's words and deeds and refuses the terminology of "authorship" (HC 186, 184), Habermas places considerable importance on the ability of an individual to construct his/her *own* life history. He sees this ability as central to the development of personal identity (Habermas 2003, 59)

²²⁰ This interpretation is obviously complicated by Habermas's insistence on the need for debate and discussion surrounding reprognetics. Because he wants these questions to be subject to the decision-making processes of a liberal constitutional state, he cannot tell his readers how to think and act (as Kass and Fukuyama do) but only encourage them to do so.

Kimberly Curtis suggests that this emphasis on the need to “hold. . . in tension” the desire for self-determination and the “continued relevance of the unintended and unknown” is one of Arendt’s greatest contributions to debates surrounding rerogenetics (Curtis 1995, 160). In an insightful essay, Curtis uses Arendt to assert a qualitative difference between those reproductive technologies that attempt to prevent life (birth control, sterilization and abortion) and those that actually produce it (*in vitro* fertilization, artificial insemination, surrogate motherhood, and genetic engineering) (Curtis 1995, 172). This distinction enables us to differentiate between those technologies that enable the self-determination of women (the former) and those that actually interfere with the conditions for freedom (the latter).²²¹ One of the difficulties attending PGD, however, is that it complicates this distinction in that it, as we saw in the introduction, both prevents and produces (albeit a different) life.

Despite the complexity we have seen in Arendt’s account of nature, Curtis’s account is driven by what she sees as Arendt’s “division between things created by nature and things created by humans” (Curtis 1995, 159). Like Habermas, Fukuyama and Kass, Curtis, too, suggests that attempts to produce nature undermine the function of the nature/artifice distinction. In Curtis’s words, “we subvert the age-old purpose of

²²¹ Curtis articulates this difference in the following manner. For her, birth control, sterilization and abortion function to protect us from nature’s compulsion—“giv[ing] women respite from life’s tyranny in favor of a less biology-driven existence” (Curtis 1995, 178). *In vitro* fertilization, artificial insemination, surrogate motherhood, and genetic engineering, on the other hand, import natural processes into the human artifice, thereby constituting technoscientific actions. In this way, they intensify the “tyranny of natural processes” to which women are subject (Curtis 1995, 179). I should be clear that Curtis’s attempt to enable a feminist critique of new reproductive technologies that does not inhibit a woman’s right to an abortion is an important one. All too often the debates surrounding abortion and reproductive technologies are aligned in ways that are detrimental to both. Habermas provides a convincing critique of the attempts to elide the differences between abortion and rerogenetic technologies (2003, 23-29).

the human artifice which was . . . to stabilize . . . our otherwise evanescent human life” (Curtis 1995, 178).

Curtis is right to see that Arendt rarely suggests that nature needs to be protected from human manipulation (as Kass, Fukuyama and Habermas argue).²²² Instead, Arendt argues that *the human artifice* needs to be insulated from the relentless processes of birth and death that characterize nature. For Arendt, the human artifice needs this sort of protection because it, in turn, shields human beings from the unpredictability and uncertainty of action. By providing “permanence” and “stability” to ephemeral human existence (HC 173), the world “offer[s] mortals a dwelling place more permanent and more stable than themselves” (HC 152). The problem with modern technoscience is that “instead of carefully surrounding the human artifice with defenses against nature’s elementary forces, keeping them as far as possible outside the man-made world, we have channeled these forces, along with their elementary power, into the world itself” (HC 148-149).²²³

However, Curtis argues that we need the nature/artifice dualism to appreciate the difference between the necessity of the natural world and the freedom inherent in

²²² Arendt does assert that *homo faber*’s activities, from the perspective of nature, are just as destructive those of *animal laborans*. “From the viewpoint of nature, it is work rather than labor that is destructive, since the work processes takes matter out of nature’s hands without giving it back to her in the swift course of the natural metabolism of the living body” (HC 100).

²²³ In this sense, the human artifice is inherently “frail” (HC 188)—requiring protection from both labor and action. This interpretation might suggest that Arendt sees the human artifice as static entity that is continually assaulted by both labor’s processes and action’s unpredictability. As I will argue later, I think this is a mistaken interpretation. Because the world is built through the manipulation of natural things and is constituted by speech and action, it is always already intertwined with both labor and action. This latter interpretation suggests that the boundary separating nature from artifice is inherently porous.

political action.²²⁴ In this way, Curtis effectively connects the distinction between freedom and necessity to the nature/artifice dualism.²²⁵ She then moves to connect this dualism to our ability to “take our bearings” (TP 257). In tying the ability to distinguish between nature and artifice to taking our bearings, Curtis makes a move that should be familiar by now, given that it mirrors (albeit in a far more nuanced manner) Kass, Fukuyama and Habermas’s similar attempts to connect the nature/artifice dualism to ethical thinking.

Like Kass, Fukuyama, and Habermas, Curtis responds to the dedifferentiation of nature and artifice by insisting on the need to shore up this conceptual distinction. She concludes by suggesting that we need to “articulate principled limits to our efforts to control nature lest we lost [*sic*] important dimensions of what makes us human” (Curtis

²²⁴ For her, Arendt’s work “reveals a vision of what it means to live a fully human life in which our experiences of nature’s necessity and our distinctively human capabilities exist in a difficult tension, a tension Arendt regards as a necessary precondition for human freedom and self-determination” (Curtis 1995, 172). Absent this tension, we are unable to recognize ourselves as “subject to” necessity. “What we lose, then, is not necessity, but the bearings by which we are able to distinguish between freedom and necessity” (Curtis 1995, 185).

²²⁵ Interestingly, Habermas makes a similar move in his discussion of Arendt. Praising her emphasis on the importance of natality, Habermas argues that birth represents a beginning we cannot control (Habermas 2003, 58). It thereby functions as both a “divide” and a “bridge” between nature and culture that he sees as necessary to the adult’s ability to distinguish his own self-determined actions from those imposed by necessity. (Habermas 2003, 59). “It is only by referring to this difference between nature and culture, between beginnings not at our disposal, and the plasticity of historical practices that the acting subject may proceed to the self-ascriptions without which he could not perceive himself as the initiator of his actions and aspirations” (Habermas 2003, 59). Although he is right to see natality as a crucial contribution of Arendt’s thinking to work on reproductives, this insistence on the divide represented by birth highlights the extent to which he remains mired in the nature/artifice dualism. If we understand Arendt as beginning with the premise of interconnection, the idea of a birth as a “divide” or a “bridge” (Habermas 2003, 59) is incoherent because there are no two things to be bridged. Just as Curtis’s focus on natality detracts from the far more interesting question about how reproductives affects our conceptions of plurality, so too does Habermas’s.

1995, 187).²²⁶ Via her interpretation, Arendt “insists” on the “importance of designing social practices and making political judgments which ensure that a protective wall—porous but real enough—can be sustained between nature and the human artifice” (Curtis 1995, 176).

Curtis’s focus on a barrier (however porous) between nature and artifice puts her, too, in an uncomfortable position with regard to the technologies that most concern her. In a contemporary context, more than ten years after Curtis wrote her essay, worries about *in vitro* fertilization, artificial insemination, and surrogacy seem to many alarmist and outdated. Commonplace techniques, they are considered relatively ordinary tools of the fertility specialist and have been used by many to create precisely the kinds of “new family forms” that so worry Kass and interest many feminists. Along with amniocentesis and the ultrasound, these techniques require little by way of technical explanation and justification.²²⁷ If these technologies are examples of fissures in a nature/artifice barrier, this is a barrier that was breached long ago. Despite having started her piece with the explicit intention of overcoming the “particular problem for feminist theory” presented by new reproductive technologies, (Curtis 1995, 161), Curtis’s interpretation can be read as yet another lament which requires a defensive posture on the part of the theorist.

²²⁶ Importantly, Curtis never enlists the state in what remains an effort to “fully theorize” the challenges posed by new reproductive technologies (1995, 187). She has far too great an understanding of the “myriad of unjust patriarchal legal, political, and social practices” sanctioned by state regulation to make this move (Curtis 1995, 187). In this sense, hers lacks the more empirical attempt at shoring up this barrier we can locate in Kass, Fukuyama and Habermas’s works.

²²⁷ Reprogenetic technologies have yet to acquire the kind of wide-spread acceptance (and understanding) that characterizes these first three technologies.

VI. RE-ORIENTING OURSELVES WITHOUT NATURE AND ARTIFICE

As I hope the preceding sections have shown, Arendt's texts complicate this insistence on a nature/artifice dualism. In her emphasis on the interconnectedness of these two concepts and her move away from a philosophical-conceptual level of analysis, Arendt suggests that there might be other ways to orient ourselves in the absence of this conceptual construct. To suggest that we need to think reproductives without this banister is to refocus the spotlight on aspects of reproductives that might be missed in the emphasis on nature and artifice. Take, for example, Curtis's discussion of assisted reproductive technologies. In pointing to the stability the human artifice provides, Curtis draws our attention to the world-building and stabilizing activities to which Arendt ascribes importance. The concepts of nature and artifice enable Arendt to articulate the significance these activities have held in the past. It is the significance of these activities that Arendt wants to maintain.

On this interpretation, the problem with reproductives technologies is not that they call into question some abstract and amorphous conception of what it means to be human, but that they make more difficult specific activities to which we have formerly ascribed importance. Whereas the former inspires a sort of paralytic fear, the latter interpretation demands another response: it encourages us to question whether these are still activities we value. But instead of attending to these *activities*—asking whether they are still important and how we might enable them given the new relationships reproductives crafts, Curtis moves in another direction: Curtis moves to protect the *concepts* of nature and artifice. Despite her many insights into reproductives, she, too,

remains mired in a philosophical-conceptual framework. I want to ask what we might learn if we detour from Curtis's argument at this crucial point. What happens if we attend to the *activities* the nature/artifice dualism enables? Instead of focusing on the concepts themselves and asking whether nature and artifice can be differentiated, we can question what this conceptual construct has previously authorized.²²⁸ Are there other ways to engage in these activities without relying on a strict demarcation of nature from artifice? This detour leads us to ask a different question of Arendt's works, namely: how are these activities affected by reprogenetics?

There are many ways to come at this question. As we saw in chapter two, and as Curtis argues in her essay, one of the primary activities in which the human artifice is implicated is that of stabilization—it enables human beings to “orient” themselves in a world that is, in some sense, always moving. Whereas Kass, Fukuyama and (to some extent) Habermas seek stable ground upon which to base ethical decisions, Arendt asks how we keep ourselves oriented in conditions that are never fixed or motionless. However, this ability to orient ourselves is not simply connected to the nature/artifice dualism. As I argued in the preceding chapter, not just the human artifice, but reality, promises and even language and metaphors all act as “guideposts of reliability” (LM 50, 100; HC 204).

In short, it is the *world*—not simply the objective human artifice—that Arendt implicates in her discussion of “stabilizing forces.”²²⁹ For Arendt, the world is only

²²⁸ Note that this question assumes none of the defensiveness that characterizes inquiries about the status of the nature/artifice distinction. It has no pre-determined answer and does not require a stance on whether human nature is ever a useful conceptual construct.

²²⁹ The extent to which Arendt's understanding of the difference between the world and the earth is premised on Heidegger's thinking is a question to which I cannot do justice here.

partially created by objects. It is also, just as importantly, constituted by the “web’ of human relationships” into which actors insert themselves every time they appear in public. As we saw in the case of political thinking, the activity of stabilization relies as much on the presence of individuated others—against whom we check our perceptions of reality—as it does on the objective human artifice. But by collapsing Arendt’s multifaceted understanding of the world into a purely material artifice, we fail to recognize that this web of other human beings in which we are existentially situated enables many of the same stabilizing activities as the nature/artifice dualism.²³⁰ If we accept that this dualism is problematic,²³¹ we might now turn our attention to how reprobogenetics affects this web and our interactions with others. Given the important role this web plays in enabling political action, this is a political question of the highest order.

However, it is interesting to note, as Dana Villa does, that a Heideggerian understanding of the world places even more importance on the relationships between human beings (Villa 1996, 122).

²³⁰ In her discussions of totalitarianism, Arendt suggests that it was this phenomena’s ability to isolate individuals—thereby disrupting this web of interrelationships—that made it so fundamentally disorienting (OT 474).

²³¹ As Curtis recognizes, this distinction has been used to legitimize a great many practices and prejudices of which we may wish to rid ourselves (Curtis 1995, 187). In her “Cyborg Manifesto,” Donna Haraway celebrates the demise of distinctions like nature and artifice for precisely this reason. In her work she, too, suggests that technologies like pacemakers and insulin pumps, which appropriate and regulate the so-called “natural” activities of the body, challenge our ability to distinguish between the “natural and artificial . . . self-developing and externally-designed” (Haraway 1985, 69). But her attitude toward the blurring of this distinction is one of appreciation rather than apprehension. There is an element of pride in her proclamation that: “by the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs” (Haraway 1985, 167). Although these examples fail to grasp Arendt’s understanding of “producing” nature, Haraway nonetheless offers a good reason for why we might not wish to hold on so tenaciously to the nature/artifice dualism. Because dualisms like nature and artifice carry with them a hierarchical ordering, whereby one side is accorded epistemic precedence over the other, Haraway connects their dismantling to an emancipatory project.

VII. CONCLUSION

Once we shift the discussion away from nature and artifice—and toward questions of interaction—different concerns regarding rerogenetics emerge. For Arendt, the web of human relationships is characterized above all by the condition of human plurality—a fact of our togetherness. In her terms, plurality has a “twofold character of equality and distinction” (HC 175); that is, “we are all the same, that is, human, in such a way that nobody is ever the same as anyone else who ever lived, lives or will live” (HC 8). As I will show in the next chapter, both Habermas and Curtis recognize in rerogenetics potential threats to our appreciation for human plurality. Indeed Curtis worries that “our capacity to cherish the very plurality and diversity celebrated by the democratic spirit might be at stake” in the development of these technologies (Curtis 1995, 185). And yet, their questions about human plurality recede from view when the phenomenon of rerogenetics is approached from the perspective of the nature/artifice dualism.

In the coming chapter, I aim to reorient our thinking—away from philosophical-conceptual concerns and towards the political questions raised by rerogenetic technologies. To do so, I develop Arendt’s account of plurality and underscore its significance for political thinking and judgment. What I show is that an appreciation for human plurality is crucial to the world-building and stabilizing activities to which Arendt ascribes so much importance. Asking how we can understand the qualities of

equality and distinction in the context of rerogenetics, I suggest that these technologies are constantly changing the ways in which we understand human difference and we need to remain attentive to how they might affect our attitudes toward those on the margins of biological 'normality.' It seems to me that if we are going to think rerogenetic technologies, let us think and question on this basis—not because they are 'unnatural,' but because they might interfere with our appreciation for “the fact that men, not Man, live on the earth and inhabit the world” (HC 7).

Chapter 5: Equal yet distinct: plurality and the politics of reprogenetics

I. “SAMENESS IN UTTER DIVERSITY”: ARENDT’S CONCEPTION OF PLURALITY

In the previous chapter, I argued that we need to reorient our thinking away from philosophical-conceptual concerns and towards more political ones. In shifting attention to the ways in which reprogenetics might affect our interactions with other human beings and our appreciation for human plurality, we release ourselves from the “shackles” of the nature/artifice dualism and start to think reprogenetics “without a banister.” In this chapter I turn to Arendt’s conception of plurality in order to highlight the specifically political challenges reprogenetics poses. In so doing, I argue that a focus on plurality brings to the fore questions about language and the status of meaning in the context of modern technoscience.

Although many thinkers have questioned how genetic screening deals with issues of diversity—particularly racial diversity²³²—Arendt’s conception of plurality does not map easily onto our usual ways of thinking about human difference. For Arendt, plurality is not necessarily an ideal state toward which we should strive, but a fact of human existence. As we saw in the last chapter, she describes human plurality as “the fact that men, not Man, live on the earth and inhabit the world” (HC 7). In its

²³² An examination of the assumptions about race inherent in discussions of genetics and the varying responses from different communities to genetic screening programs is beyond the scope of this dissertation. On race and genetics, see Alper and Beckwith (2002) for a useful overview of a vast literature. Others who have questioned the intersection between race and genetics include Cavalli-Sforza (1997); Beeson and Duster (2002); Weir, Lawrence and Fales (1994); Roberts (1996, 1998); Bradby (1996); (Rose 2007). Jacqueline Stevens (2002; 2003) provides a specifically political theoretical discussion of race and genetics.

“most elementary form,” plurality “is implicit even in Genesis (‘Male and female created He *them*)” (HC 8). This understanding that human beings exist in the plural constitutes one of the basic conditions of human existence, along with “life itself, natality, mortality, worldliness . . . and the earth” (HC 11).

Importantly, however, Arendt’s appreciation for plurality does not equate to a simple respect for diversity. Although she recognizes the “great many different forms and shapes” communities take, and the different “laws,” “habits,” “customs” and “memories of the past” they share (LM-Willing 201), Arendt’s understanding of plurality goes beyond the idea that we all have different backgrounds. For her, plurality does not inhere to groups, but to individuals. We are not different simply because I am a woman and you are not, or because you are black and I am white.²³³ Instead, we are plural because we occupy different locations in the world—locations specific to every single individual human being—and hence look upon it from vantage points that can never fully coincide:

For though the common world is the common meeting ground of all, those who are present have different locations in it, and the location of one can no more coincide with the location of another than the location of two objects. (HC 57)

As we saw in chapter two, then, phenomenal reality is thus inherently perspectival. All we can share, Arendt suggests, is “what appears to me.”²³⁴ Because no two persons can

²³³ In Arendt’s thinking, these descriptors only capture “what” I am: “the qualities [I] necessarily share with others like [me]” (HC 181). Arendt’s concern, on the other hand, is with “who-ness”—that impossibly quixotic, “living essence of the person as it shows itself in the flux of action and speech” (HC 181).

²³⁴ Following the Greeks, Arendt calls this appearing to me *dokei moi*. *Doxa* (or opinion) is for her “the formulation in speech of what *dokei moi*, that is, of what appears to me” (PP 80). See chapter two for a more detailed discussion of Arendt on *doxa*.

occupy the same location at the same time, the world presents itself differently to every single human being—even those who have certain qualities (like race, gender, cultural heritage, etc.) in common. It is this inability to see exactly what others see that gives rise, Arendt argues, to the condition of plurality. In this sense, plurality is an effect of the multidimensionality of phenomena.

Indeed, as I argued in the chapter on political thinking, the essence of the public realm is that its reality “relies on the simultaneous presence of innumerable perspectives and aspects in which the common world presents itself and for which no common measurement or denominator can ever be devised” (HC 57). The fact that a phenomenon appears to both you and me (and those with whom we share the world) is what reassures us of the reality of existence. This is why the “space of appearances”—a space where phenomena and persons can appear and show themselves to others—is so crucial to Arendt’s thinking (HC 199).²³⁵ Absent a space in which we can compare our perceptions to others, there would be no way of differentiating reality from fiction. “Only where things can be seen by many in a variety of aspects without changing their identity, so that those who are gathered around them know they see sameness in utter diversity, can worldly reality truly and reliably appear” (57). As I have argued, in Arendt’s thought, this “sameness in utter diversity” is our only guarantee of realness.

However much Arendt’s conception of reality relies on her conviction that no two people see the world in the same way, her understanding of plurality rests on more than an insistence on “otherness” (HC 176). Otherness is, for her, nothing more than

²³⁵ This is also why modern technoscience’s “dissolution of the world of the senses and appearances into a pseudoworld” (Dietz 2002: 165)—what I discussed in the first chapter in terms of Galileo’s telescope and the distinction to which it gives rise between ‘true reality’ and sensory experience—is of such concern to Arendt.

“the reason why . . . we are unable to say what anything is without distinguishing it from something else” (HC 176). Although otherness, or “*alteritas*” is “an important aspect of plurality” (HC 176), it is not the same as the human quality of distinction with which Arendt concerns herself. What is important for Arendt is the *act* of distinguishing oneself. We are not simply existentially different, but in fact *make* ourselves unique. In this sense, plurality is more than an existential fact; it is a condition of human existence that we *re-constitute* every time we speak and act in public. “Only man can express this distinction and distinguish himself, and only he can communicate himself and not merely something—thirst, hunger, affection or hostility or fear” (HC 176). With every word and deed, we show ourselves and reveal “who” we are.

This is not simply a matter of intentionally acting so as to prove something to someone else. Although appearance “rests on initiative,” Arendt says, “it is an initiative from which no human being can refrain and still be human” (HC 176). In other words, we do not pick and choose when we wish to reveal ourselves to others; we do so every time we appear to others. In this sense, Arendt is quite clear that we can never fully control “who” others perceive us to be.

Nor is human distinction always a matter of proving oneself *better* than others. Despite Hanna Pitkin’s arresting image of Arendtian citizens as “posturing little boys clamoring for attention” (1981; 338), human distinction is not, for Arendt, about putting others down in order to show oneself as worthy of attention. Human distinction is instead a matter of making ourselves distinct from every one else who does, has or will live. Combined with otherness “which [man] shares with everything alive,” human

distinction “becomes uniqueness, and human plurality is the paradoxical plurality of unique beings” (HC 176).

II. PLURALITY’S PARADOX

Instead of referring to group differences and common ideas of diversity, Arendt’s conception of plurality has the aforementioned character of *both* “equality and distinction”(HC 175). What concerns her is not only difference, but the sameness to which differences gives rise. In other words, it is not simply that we look upon the world from different locations and are thereby distinct. Instead, Arendt argues that this difference is part of what we all share. It is, actually, the only thing that we have in common.²³⁶ This is the “paradoxical” quality of plurality.

In suggesting that we are all equal, however, Arendt is not arguing that we all share similar characteristics or qualities or capabilities. In an earlier essay published only posthumously, she makes quite clear that we do not enter the public realm as equals. Instead, we *become* equals by entering into community. Citing Aristotle’s *Nicomachean Ethics*, she explains that “community is not made out of equals, but on the contrary of people who are different and unequal. The community comes into being

²³⁶ This fact is intrinsically related to our being “beings capable of beginning.” In Arendt’s terms, beginnings correspond to the condition of natality, another pre-eminently political condition of human existence. Given time and space constraints, I will address natality only peripherally. However, it is important to note that insofar as actions are taken in concert, “the only trait that all these forms and shapes of human plurality [communities] have in common is the simple fact of their genesis, that is, that at some point in time and for some reason an group of people must have come to think of themselves as a ‘We’” (LM-Willing 202).

through equalizing, *iasthénai*” (PP 83).²³⁷ This idea of equalizing is crucial to understanding the equality inherent in Arendt’s twofold definition of plurality. It is not that we are equals and therefore deserve to be treated as such. For Arendt, the paradoxical quality of plurality inheres in the fact that we are unequal but come together as if equals; put simply, our shared inequality is what makes us equal. Without ever becoming the same, we become “equal partners in a common world” (PP 83).

To further complicate matters, Arendt argues that the goal of this coming together is, in fact, to support further differentiation. Again from the essay “Philosophy and Politics”: “equalization has as its polemical point the ever-increasing differentiation of citizens that is inherent in an agonal life” (PP 83). In other words, we are unequal, but come together as equal partners, hoping that in doing so, we might make space for even greater differences among and between us.²³⁸ Instead of making equality and difference opposites—and thereby creating tension between them—Arendt conceives of each as intricately implicated in the other. Never at war, equality and difference work in tandem to create the condition of plurality under which we all live.²³⁹

III. ERASING PLURALITY

Although Arendt repeatedly refers to plurality as a “condition” of human existence, her insistence on its facticity can also be understood as a political act, in that it reminds her reader of plurality’s importance. As Disch suggests, Arendt’s “assertion

²³⁷ Although Arendt is referring specifically to community in this quote, the same goes for plurality, which is of course made up of individuals living in community.

²³⁸ At times, Arendt’s conception of plurality seems more confusing than paradoxical, but I hope the reader will bear with me.

²³⁹ In this context, calls to “reconcile” equality to difference make little sense (Silvers 1995).

that plurality is a ‘condition’ constructs what is actually an achievement of political struggle as an existential given” (1994: 100). In this sense, Arendt’s many references to plurality point to both its facticity—we simply *do* live among others—and the need for an awareness and appreciation of this fact. It is this awareness and appreciation that waver so greatly. Indeed, history and philosophy are replete with attempts to “escape” the kind of uncertainty to which plurality gives rise (PP 86). As her works on totalitarianism show, Arendt is highly skeptical of any attempt to escape this condition—that is, to treat men (and women) as Man.

In her works, Arendt identifies twin threats to plurality, both of which arise out a desire to quell the uncertainty that accompanies mortal (and plural) existence. On the one hand, there is “radical isolation”—which results in an inability to share with others one’s own “it seems to me” and, as I argued in chapter two, a concomitant inability to judge reality from fiction (HC 58). On the other hand, there is also the threat posed by “mass society”—“where we see all people suddenly behave as though they were members of one family, each multiplying and prolonging the perspective of his neighbor” (HC 58).²⁴⁰ Both these threats treat men (and women) in their singularity—“imprisoning” them in a radical “subjectivity” and restricting them to “their own singular experience” (HC 58).²⁴¹ Unable to participate in the common world—“deprived of seeing and hearing others, of being seen and being heard by them” (HC 58)—Man in his singularity is a sorry excuse for a human being.

²⁴⁰ It is disrupting this ability to be “swept away” by mass society that Arendt sees as political thinking’s promise.

²⁴¹ An experience can remain singular even “if the same experience is multiplied innumerable times” (HC 58).

Totalitarianism exemplifies both these threats to human plurality and eventually “destroys” it (OT 466). Simultaneously isolating individuals—cutting them off from meaningful interactions with their peers (OT 474)—and forming out of the masses a single body, it “makes out of the many the One” (OT 466). As I argued earlier, it is precisely this isolation—the creation of Man as a singular being, unable to check one’s own perception of reality against another—that leads to the complete sense of disorientation and “perpetual motion” that accompanies totalitarianism.

Threats to plurality need not, however, come only from totalitarian movements. As I detailed in my discussion of Heidegger’s disorientation in chapter two, Arendt also argues that philosophers have denigrated the plurality that is the “law of the earth” (LM 19). Skeptical of the uncertainty that accompanies political action and desirous of Truth as opposed to “mere opinion,” philosophers have long sought to escape from the political world—to “live undisturbed” by the (seemingly) “unfortunate human condition of plurality” (CP 429). It is for this reason, Arendt argues, that philosophers tend to escape into the realm of thinking—a realm of seeming solitude.

And yet, as we have seen, Arendt refuses philosophers any solace in their retreat into the *vita contemplativa*. Because she conceives of thinking as an internal dialogue between me and myself, she contends that even in solitude, we are never fully alone. The irony of the philosopher’s attempt to escape plurality is that in seeking to shield himself from plurality and retreating into “absolute solitude,” the philosopher:

. . . is more radically delivered to this plurality inherent in every human being than anybody else, because it is the companionship with others, which, calling me out of the dialogue of thought, makes me one again—

one single unique human being speaking with but one voice and recognizable as such by all others. (PP 86)²⁴²
Indeed, plurality, for Arendt, runs right through the middle of every human being: “Men not only exist in the plural as do all earthly beings, but have an indication of this plurality within themselves” (PP 88). Because we are ourselves capable of seeing the world differently—of *re*-locating ourselves in our imagination—thinking always involves others. The plurality of the earth is thus constantly mirrored within our thoughts (LM 187).

IV. THE *CONDITIO SINE QUA NON* OF POLITICAL LIFE

In keeping with my insistence in the last chapter that we need to move away from philosophical-conceptual questions and look instead at the activities Arendt’s concepts enable, the question we need to ask with regard to plurality is the following: what kinds of activities does the condition of plurality facilitate? As I argued in my second chapter, one of the primary activities plurality enables is political thinking. Because the ability to imaginatively re-locate oneself and look upon the world from a different perspective is the hallmark of specifically political or “representative” thinking (TP 241), an appreciation for plurality is crucial to its exercise.

The condition of plurality is also central to political action. It is precisely because we are both equal and distinct that we engage in political action:

If men were not equal, they could neither understand each other and those who came before them nor plan for the future and foresee the needs of those who will come after them. If men were not distinct, . . .

²⁴² As I argued in chapter two, this two-in-one terminology refers to Arendt’s proposition that the duality inherent in the thinking ego is continually transformed into a single entity as soon as the thinking ego enters the world and appears as One subject to others (LM 187).

they would need neither speech nor action to make themselves understood. (HC 175-176)

Absent a common world and the recognition of our relatively shared experiences, no understanding would be possible. However, if the world appeared the same to every human being, there would be no need for speech and action. “Signs and sounds to communicate immediate, identical needs and wants” would be more than sufficient to exist in such a world (HC 176). Along with natality, the fact that action brings something utterly new into the world, plurality constitutes for Arendt the “*conditio sine qua non*” (HC 7) of politics.

It is for this reason that plurality becomes a key concept in understanding the singularly political implications of rerogenetics. Instead of focusing on abstract and amorphous questions about what it means to be human, an Arendtian approach to thinking rerogenetic technologies compels us to question how these technologies might affect the conditions out of which politics and political judgment arise. Given the ways in which these technologies are daily transforming our perceptions of human difference, this is a political question that cries out for further thinking and judging.

V. INEQUALITY AND REPROGENETICS

One important way of thinking about rerogenetics in terms of plurality might be to question the *inequalities* to which these technologies could give rise. For instance, some thinkers base their calls to regulate rerogenetic technologies on the fact that

“only those who can afford the market prices . . . are able to use them to have a genetically related child” (Holland 2007, 99). Within the context of a market-based health care system, the question of equal access to reprogenetic technologies looms large (Ard and Zucker, 2002; Hubbard 1999).

Others have criticized the asymmetrical relationships PGD might forge between parents and children. As we saw in the previous chapters, Habermas registers the concern in *The Future of Human Nature* that the widespread use of PGD for enhancement purposes could institute inequalities heretofore unknown.²⁴³ Although he never suggests, as have some, that reprogenetics constitutes an attempt to “breed some people with saddles on their backs, and others with boots and spurs” (Fukuyama 2002, 10),²⁴⁴ Habermas is nonetheless concerned that PGD significantly alters the relationship between parent and child. While we can assume that children would consent to therapeutic interventions that would prevent painful and debilitating conditions, Habermas argues that enhancement is a different matter. In the former case, “the presumption of informed consent transforms egocentric action into communicative action” (Habermas 2003, 52). In the latter, there is a lack of reciprocity and the communicative relationship between child and parent is stunted:

. . .with genetic enhancement, there is no communicative scope for the projected child to be addressed as a second person and to be involved in

²⁴³ I should note that Habermas’s concerns about genetic technologies are exacerbated by the context in which he writes, namely a German state that is (rightly) extremely cautious about any research that calls to mind the eugenic practices of the National Socialists. As he recognizes, debates over genetic technologies have a far different tone in Europe than in the United States—despite this country’s own experience with eugenic theories and practices (Habermas 2003, 75).

²⁴⁴ In Silver’s early *Remaking Eden*, he suggests that reprogenetic technologies could (and most likely will) continue to polarize society, leading to the creation of two distinct classes of persons—Naturals and the GenRich (Silver 1997). This is an unavoidable result of the use of reprogenetic technologies in the free marketplace.

a communication process. From the adolescent's perspective, an instrumental determination cannot, like a pathogenic socialization process, be revised by 'critical reappraisal.' (Habermas 2003, 62)
Note, Habermas's is a slightly different concern than that of a traditional bioethicist.

Whereas a bioethicist might raise the question of consent because informed consent is perceived as crucial to legitimizing any particular medical intervention, Habermas questions the communicative *relationship* that is forged by the use of PGD. Instead of worrying whether a child might someday say yes or no to a particular intervention, he questions whether taking such action prevents the kind of ongoing conversation and interaction that is essential to the development of a child's individuality. As much as I have criticized Habermas for his overly deterministic understanding of genetics and the connection he draws between ethical judgment and human nature, this emphasis on communication, interaction and their importance to self-identity highlights what differentiates Habermas's approach from so many others. While the coherence of a distinction between therapeutic and enhancement technologies (and its usefulness in drawing ethical guidelines) is easy to find fault with,²⁴⁵ Habermas is nonetheless far more attentive to the concerns of plurality than numerous others who have taken up these questions. While I might disagree with his conclusions, Habermas's underlying concern—i.e. that PGD forges relationships between individuals that do not allow for communicative interaction—is an important one. If it is the case that PGD stunts the kind of interaction upon which politics is based, this is a serious charge.

In the pages to come, however, I want to voice a somewhat different concern—one that registers on a different level than Habermas's. Rather than focusing on whether

²⁴⁵ See Buchanan et al. (2000, 105-155). Habermas's assumption that there is a significant difference between genetic interventions and a "pathogenic socialization process" is equally problematic.

reprogenetic technologies themselves challenge the conditions that foster political thinking and action, I want to argue that this challenge arises out of (and is exacerbated by) the language of reprogenetics. Drawing on the work of theorists of disability, who highlight the normalizing discourses that surround PGD and prenatal testing, I question the language through which we understand reprogenetic technologies.²⁴⁶ Again, my question is not whether reprogenetic technologies are in and of themselves right or wrong, but whether our ways of speaking about them reflect the appreciation for human plurality so crucial to political thinking and action.

VI. REPROGENETICS AND NORMALIZATION

At first glance, Arendt's understanding of plurality's two-fold character seems particularly well-suited to thinking reprogenetics, given that the human genome itself rests on a similar duality. It is both that which is common to all humans (as opposed to other species)—hence our equality—and that which differentiates each individual from every other—hence our distinctness. However, this rendering fails to appreciate that, for Arendt, plurality is both an existential given and something that we reconstitute every time we speak and act in public. If we recall the discussion of equality and

²⁴⁶ To date, the disability rights community remains deeply divided over the use of PGD. Whereas some—particularly those whose lives have been significantly altered by the birth of a disabled child—understand the desire to avoid the difficulties that attend having a severely disabled child (Baily 2000; Kittay 2000), others interpret the use of PGD to ensure that children don't have conditions like Down Syndrome as a rejection of existing disabled persons (Asch 2000, 2002). Still others admit a certain discomfort with these uses of PGD, but are unable to justify interfering with parents'—and specifically women's—reproductive decisions (Ferguson, Gartner and Lipsky 2000).

distinction earlier in this chapter, we are not simply existentially equal but *equalize* ourselves by coming together with others; in the same way, we *distinguish* ourselves through our words and deeds. Whereas the human genome encourages a focus on “what” we are, Arendt’s conception of plurality highlights the “who” that is revealed through political action.²⁴⁷

Moreover, as scholars from within the disability rights community have pointed out, implicit in the search for “the human genome” was an act of normalization, whereby the genome became not a symbol of our common humanity, but a norm against which to measure difference (Wilson 2002). Premised on a statistical generalization, the human genome operated as an “act of canonization” that produced a “standard reference work” (Haraway 1991, 215). The concern voiced by disability advocates was that the production of a standard reference work would construct genetic difference in terms of deviation rather than variation (Wilson 2002, 28).

While the Human Genome Project has been completed and such concerns seem outdated, I argue that they continue to resonate, particularly within the context of reprobogenetics. Take, for example, the very definition of genetic testing: at its most neutral genetic testing can be understood as “comparing the sequence of DNA bases in a patient’s gene to a normal version” (qtd. in Wilson 2002, 28). Again, a “normal” gene or genome provides the standard by which to judge.

²⁴⁷ Because reprobogenetics promotes a molecular understanding of disease—where diagnosis is based primarily on genetic tests rather than on physical symptoms—reprobogenetics shifts attention away from the outward manifestation of human difference (Hubbard 1999, 58). Instead of focusing on how human beings are able to comport themselves in the world, this understanding of disease is concerned with an individual’s intrinsic characteristics.

More frequently, however, genetic tests are described as looking for “mutations” associated with disease; this locution is even more troublesome. Unlike the language of genetic variation and alleles, which provide alternative (albeit slightly different) ways of talking about differences between genetic sequences, genetic *mutations* are almost always associated with a disease and carry with them negative connotations. Not only does the image of a mutant or some kind of disgustingly ill-formed creature spring almost immediately to mind, the language of mutation always implies its opposite—an un-mutated or, dare I say, normal gene; what is a mutation if not a (problematic) deviation from the norm?

This is the problem that attends discussions of reprogenetics. While the argument that PGD actually leads to normalization is dismissed by critics—who point to the small proportion of births that result from PGD and its location within the private space of the doctor’s office—the *language* of PGD bleeds out from the doctor’s office—regardless of whether a patient actually makes use of the procedure.²⁴⁸ Moreover, it is this same language that gets used in discussions of prenatal testing, which is a far more ubiquitous practice. Thus the fact that debates surrounding PGD are deeply enmeshed in talk of normality is a significant concern if we are worried about the political implications of treating men as Man.²⁴⁹

²⁴⁸ In focusing on the normalizing potential of the language of PGD rather than the normalizing potential of the technology itself, I depart from disability theorists for whom the actual use of PGD is problematic.

²⁴⁹ Although I will not fully engage her work here, this concern obviously echoes that registered in Rothschild’s (2005) discussion of the language of perfectibility. However, I should note that Rothschild sees perfection as a step above and beyond normality. My concern is with the language of normality itself.

This question of normality has been crucial to discussions of disability, since it goes to the heart of how to define disabilities and our obligations toward those who are disabled. While my emphasis is primarily on the language of normality in the context of reprobative technologies, a brief detour into the literature surrounding disability highlights the deeper issues at stake in our definitions of what counts as normal or not. What theorists of disability like Silvers, Wasserman and Mahowald (1998) emphasize, is that our conceptions of justice are deeply connected to our conceptions of normality; it therefore makes a great deal of difference—for our attitudes toward those who are disabled as well as for the kinds of political structures we develop—how we define normality.

Take, for example, the framework of justice developed by Buchanan and his fellow authors in *From Chance to Choice*. Their work relies heavily on one of the authors', Norman Daniels's, understanding of "normal species functioning" to determine what kinds of conditions should count as disabling (see Buchanan et al. 2000, 72).²⁵⁰ Although they recognize that conceptions of what counts as normal can be "ratcheted upward," they nonetheless operate within a framework in which talk of normality is crucial to determining what should and should not be allowed (Buchanan et al. 2000, 98).

In their work, Silvers, Wasserman and Mahowald criticize Daniels' focus on normal species functioning because it, in their view, marginalizes those who experience

²⁵⁰ Daniels develops this concept most fully in his work *Justice and Health Care* (1985). See also Daniels (1987), to which Silvers, Wasserman and Mahowald are responding.

disability and too closely links functional equality to other forms of equality (1998).²⁵¹ Silvers, in particular, highlights the extent to which Daniels assumes normal species functioning is necessary to the opportunity to pursue one's life goals (Silvers 1998, 64). Because he so values opportunity, Silvers argues that this linkage leads Daniels to become too complacent with regard to attempts to normalize those with disabilities; in her words, "interventions that normalize seem to Daniels to command a natural warrant" (Silvers 1998, 64). As Silvers argues, all too often attempts at normalization lead to attempts to eliminate deviations from normal species functioning. Tracing the process of normalization in the deaf community, whereby deaf children were forced to learn to speak and lip read and the use of sign language was discouraged, Silvers shows that an emphasis on normalization often has a "deleterious effect" on those actually living with disability (Silvers 1998, 71). As she points out, it is the policy of oralism, rather than deafness itself, that led to the "legacy of reduced literacy in the deaf community" (Silvers 1998, 71). And yet, it is this legacy of reduced literacy that authors like Davis (1997, 2001), who I referenced in my introduction, use as evidence that deafness limits a child's potential future.²⁵²

Wasserman, too, argues the distributive justice approach to questions of disability developed by Daniels and his fellow authors understands deviations from normal species functioning primarily as "internal deficits"; as such this approach

²⁵¹ Like many theorists of disability, Silvers, Wasserman and Mahowald (1998) emphasize that we are all disabled at some point in our lives—be it as children or elderly people, who cannot perform all of the functions of an adult, or those who are temporarily disabled because of sickness and accident. The assumption that a "normal" life is somehow free of disability, they argue, is one of the primary hindrances to more fruitful (and just) discussions of disability (Silvers, Wasserman and Mahowald 1998).

²⁵² See Silvers's (1998) critique of Davis's discussion of deafness.

focuses attention on fixing the individual rather than the environment that limits their participation. Instead, Wasserman suggests, “the issue is not one of natural inequalities, but of accommodating a wide variety of needs, interests, capacities and ends with limited resources (Wasserman 1998, 6).²⁵³

Thus, while the concept of “normal species functioning” might make intuitive sense, both Silvers and Wasserman argue that too great an emphasis on normality tends all too often to marginalize those who do not fit within its ever narrowing boundaries. Moreover, as I will discuss below, although it seems that we should have little trouble distinguishing between what is normal and what is not, disability activists have long reminded us that our conceptions of normality are socially and historically contingent. Not only is social context key to determining whether a condition is disabling (Wilson 2002, 28; Shakespeare 2006; Wasserman 1998), but our conceptions of normality have also changed over time (Davis 2006). In an article frequently cited in the Parens and Asch collection on PGD and disability, Phillip Davis and John Bradley (1996) argue that instead of seeing normal as a “defined standard” or “ordinary finding,” modern medicine has come to define normal as “what we believe normal ‘ought to be’” (1996, 69). In the context of these changing understandings within the field of medicine, they show that variation has come to be understood as deviation—as “pathology” (Davis and Bradley 1996, 70). This has had a dual effect: first, it “refin[es] the definition of normal

²⁵³ Wasserman proceeds from this point to develop his own critique of Daniels’s appropriation of Rawls and the demands of distributive justice. I will skip over this critique and simply remind the reader that, once again, conceptions of what counts as normal (be it in terms of a person’s intrinsic qualities or their species functioning) play a key role in Daniels’s conception of justice and health care.

to ever smaller and smaller ranges”; second, they argue, “the range of abnormality has proportionately increased” (Davis and Bradley 1996, 71).

In his work, Lennard Davis traces the idea of the norm back to the mid 1800s and situates it alongside the rise of modern statistics (Davis 2006, 6). Unlike its earlier counterpart, the ideal, the norm “implies that the majority of the population should somehow be part of the norm” and codes those who do not fit within this (ever narrowing) range as deviant (Davis 2006, 6).²⁵⁴ Although authors like Wilson, Davis and Bradley are not talking directly about reprogenetic technologies, their argument can be easily extrapolated to the medicalizing discourse that attends genetic counseling and the use of PGD (Rapp 2000; Jennings 2000). From a perspective that values human plurality as crucial to the activities of political thinking and action, the idea of normality that undergirds discussions of PGD is highly problematic.

VII. CHOOSING DEFECTS? QUESTIONS RAISED BY REPROGENETICS

Admittedly, my attempt to understand PGD in terms of plurality does not constitute a rejection of this technology, nor need it imply any particular stance on the *use* of PGD. It does, however, imply that we need to be more attentive to the potentially demeaning linguistic context within which discussions of PGD might take

²⁵⁴ A similar critique of statistics’ leveling tendencies can be found in Arendt’s discussion of statistics and behaviorism (HC 42-43)—both of which make out of the many One. Within the context of her skepticism toward mathematics, which I will touch upon later in this chapter, she argues that “the more people there are, the more likely they are to behave and the less likely to tolerate non-behavior” (HC 43). Elsewhere, Arendt argues, “the trouble with modern theories of behaviorism is not that they are wrong but that they actually are the best possible conceptualization of certain obvious trends in modern society” (HC 322).

place. Take, for example, one of the “tough cases” I referenced in the introduction: the use of PGD to choose a child with a disability. In an essay entitled, “Wanting Babies Like Themselves, Some Parents Choose Genetic Defects,” Darshak Sanghavi, a medical doctor at the University of Massachusetts, reports on a study conducted by the Genetics and Public Policy Center at Johns Hopkins University (Sanghavi 2006). This study represents one aspect of the center’s ongoing efforts to better understand the use of PGD in genetic counseling and surveys clinics across the country regarding the different reasons patients utilize PGD. Although the clinics overwhelmingly replied that their patients used PGD to select embryos without common chromosomal defects, a full three percent of respondents reported patients seeking PGD “to select an embryo *for* the presence of a particular disease or disability, such as deafness, in order that the child would share that characteristic with the parents” (Baruch et al. 2008, 5).²⁵⁵ So, for instance, a deaf couple might use PGD to choose embryos that are also deaf.

As the numerous comments which were posted in response to the essay evidence,²⁵⁶ the use of PGD to choose *for* disability raises a number of interesting questions: What does it mean to choose to have a disability—or, more importantly, to choose for someone else to have a disability? How will these children feel about their parents’ choices? What kind of relationships will these reproductive technologies forge—both between parents and children and between those considered disabled and

²⁵⁵ Statistically, most deaf children are born to hearing parents and most deaf parents end up having hearing children because of the complexities of hereditary deafness. This ambiguity regarding whether a child will or will not be deaf gives rise to the above uses of PGD (van Cleve 2004).

²⁵⁶ See the comments at <http://news.blogs.nytimes.com/2006/12/05/wanting-babies-like-themselves-some-parents-choose-genetic-defects/>

those who are not? These questions have been raised in numerous bioethical treatises that attempt to delineate whether PGD should be used in this matter (e.g. Davis 2001; Glover 2006; Rothschild 2005; Buchanan et al. 2000).

Although the text of Sanghavi's essay is somewhat sympathetic to the idea that parents might want to choose children that are like themselves (Sanghavi 2006), the framing of the piece obviates this complexity as soon as it labels deafness a "defect"—a label implicit in the essay's title. It is precisely this labeling that the deaf community seeks to contest (Solomon 1994). Those who have used PGD to have a deaf child do not see deafness as a defect or a source of pain and suffering. For them, deafness is a means of entry into the Deaf community. A tightly-knit community, comprised of members fluent in American Sign Language, the Deaf community has long held that its culture is equally as rich as that of hearing persons. A visual language, with its own syntax and history, American Sign Language has given rise to its own style of artistic expression and norms of behavior. As such, its use has become increasingly associated with a sense of Deaf pride (Solomon 1994). Instead of seeing themselves as disabled, members of the Deaf (with a capital D) community see their deafness as allowing them access to a supportive and loving environment, and they want to share this with their offspring. It is for this reason that they make use of PGD to ensure that their children will also be deaf.²⁵⁷

Sanghavi's *New York Times* article erases this complexity, however, when it asks its readers whether doctors should "honor requests from parents who wish their

²⁵⁷ For an extended discussion of deafness and genetics, see Van Cleve (2004). It should be noted that claims to a Deaf culture are highly controversial within the deaf community itself. Van Cleve's (2004) edited volume on deafness and disability captures some of these opposing views, but not all.

children to be born with genetic defects?” As the readers’ answers to this highly prejudicial question show, such framing only exacerbates existing prejudices against those who are disabled—with readers calling the deaf parents “sick,” “cruel,” “selfish” and “immoral” (“Readers Comments” 2006). “Normal” parents would never do this, they say; and some readers even suggest that such parents “shouldn’t be allowed to have children.”²⁵⁸ Similar discussions attend attempts on the part of women with achondroplasia to select embryos that carry a gene for dwarfism.²⁵⁹

In highlighting the objections from members of the Deaf community, my aim is not to pass judgment on whether deafness constitutes a disability but to underscore that this is a perspective which the requirements of representative thinking would demand we take seriously. As we can see from the *New York Times* example, however, talk about disease and normalcy stymies attempts to understand choices like this from alternate perspectives. As soon as we label deafness a disability, it changes the nature of the potential debate and makes it difficult to even imagine why a parent might make this choice on the part of their child. In Arendt’s terms, talk of normality thus makes the kind of imaginative visiting inherent in representative thinking unnecessary, because it constructs reality as one-dimensional.

²⁵⁸ All of these comments can be found at <http://news.blogs.nytimes.com/2006/12/05/wanting-babies-like-themselves-some-parents-choose-genetic-defects/>

²⁵⁹ Similar discussions attend attempts on the part of women with achondroplasia to select embryos that carry a gene for dwarfism. Interestingly, Davis (2001), in her discussion of the use of PGD to choose for deafness or dwarfism, differentiates between the two—suggesting that the latter may be a legitimate choice, whereas the former constitutes an undue restriction on a child’s right to an open future. Since my interest lies not in making a moral or ethical judgment about this particular use of PGD, what is important about Davis’ discussion of this case for my purposes is that it is premised, at least in part, on a discussion of a potential child’s characteristics and traits, not necessarily on “who” the child might show him/herself to be.

VIII. WHAT NOT WHO: CONSTRUCTING THE GENETIC IMAGINARY

An Arendtian appreciation for plurality and the activities it enables raises additional concerns about the ways in which discussions of PGD tend to focus on “what” an individual is at the expense of the “who.” For instance, in his work, Bruce Jennings suggests that:

Genetic tests provide a highly charged and theory-laden form of knowledge that structures our perceptions of our physical bodies, our social selves, and our temporal futures in selective and distinctive ways. And this form of knowledge also structures the perception of the bodies, selves and futures of our unborn children. (Jennings 2000, 137)

From Jennings’ perspective, prospective parents are confronted with a “genetic imaginary”: a distorted image that magnifies the importance of a disability at the expense of other aspects of a child. In other words, the genetic imaginary denotes the “exclusive emphasis on some particular DNA sequence(s) and some particular biochemical processes associated with that sequence” that comes to stand for the whole of a potential child (Jennings 2000, 139). Adrienne Asch voices a similar concern when she argues for a distinction between choosing not to have *any* child (either through birth control or abortion) and choosing not to have *a particular* child (i.e. one with a disability). According to Asch the former position—choosing not to have *this* child—puts the parent in the position of judging a child on the basis of one known characteristic: the disability. For her, the problem with PGD and prenatal testing is that

“this one characteristic of the embryo or fetus is the basis for the decision not to continue the pregnancy or to implant the embryo” (2000, 236).²⁶⁰

In Arendt’s terms, this exclusive focus on a single characteristic is troubling not simply because it is singular, but because it understands human beings in terms of “what” they are—rather than as unique individuals who reveal their “whoness” through word and deed.²⁶¹ This focus on speech and action is crucial to understanding the uniqueness of an approach that takes plurality as central to the exercise of politics. As I will show in the pages to come, questions of language are at the core of Arendt’s concerns about modern technoscience. They are also at the core of how we might contest the disturbingly bleak picture of the future it sometimes seems that *The Human Condition* paints.

²⁶⁰ Another problem with choosing not to have a child with a disability, Asch (and others) suggests, lies in the message that this choice sends to the broader community. In the light of already-existing prejudices against those we see as different, Asch argues that the use of PGD will exacerbate the problems faced by disabled persons in the broader community by “invalidating the effort to lead a life in an inhospitable world” (Asch 2000, 240). Because this use of PGD “expresses” the idea that disabled persons are expendable, Asch worries that it makes it harder for disabled persons in general (regardless of whether their disabilities are genetic or not) to work toward the rights so long denied them. This argument, known as the “expressivist objection,” has been subject to numerous criticisms because it is unclear whether individual reproductive decisions—taken in private and for a multitude of different reasons—can ever be understood as “expressing” a particular viewpoint is also a matter of debate (Nelson 2000; Press 2000; Buchanan et al. 2000, 258-303). This objection is irrelevant for my purposes because my focus is on the way in which we talk about reprogenetics, rather than whether any particular reproductive decision making act is normalizing.

²⁶¹ Because Arendt’s understanding of “who” a person is relies so heavily on the ability to appear in public, it is unclear how she would deal with cognitive disabilities that significantly impair an individual’s ability to speak and act. But this question is beyond the scope of this chapter.

IX. PROVOKING NATURAL PROCESSES: WHEN WORD AND DEED PART COMPANY

The concerns I have pointed to above—about normality and the emphasis on the “what” a person is— are exacerbated by Arendt’s anxiety regarding the relationship between technoscientific action and language. Whereas speech and language are the media of *political* action, technoscientific actions are, in some sense, wordless. This does not mean, that reprobogenetics are used in silence—without the use of words; indeed, we have seen throughout this dissertation that reprobogenetics occasions a great many words—some of which, I argued in the preceding section, we might wish it did not! What Arendt means by this assertion that technoscientific actions are wordless, however, is that they unleash their unpredictability into the natural world rather than into the medium of politics: as Curtis puts it, “although these technologies are genuine actions because they initiate new processes, the processes they generate enter *not* into the web of human relationships and specifically political actions, but into the mute natural world” (Curtis 1999, 179).²⁶² While both political action and technoscientific action set into motion something that would not have existed otherwise, what is set into motion by technoscientific action is a “new process” (CH 60). Contrast this to Arendt’s discussion of *political* action. In her oft-quoted description of action, what is started or created is left conspicuously vague—what action brings into the world is almost always a “*something new*” (HC 176, italics added). When Arendt does celebrate that which

²⁶² In the case of PGD, the decision to make use of a particular technology takes place within a linguistic context, but the actual use of this technology, the actual performance of PGD, is performed elsewhere. As I will show, this worry of Arendt’s is somewhat overstated, but is nonetheless crucial to understanding what she finds problematic about modern technoscience.

action creates, it is a “story” –not a process—that is the “product” of action (HC 184).²⁶³ This story is a result of the fact that political action for Arendt consists of both word and deed. Equally as important to the activity of action as its newness and unpredictability is its “revelatory character”—its ability to disclose individuals “as subjects, as distinct and unique persons” (HC 183). In saying that technoscientific actions are wordless, Arendt questions the “revelatory character” of their words—rather than the actual sounds that surround them.²⁶⁴

This revelation is only made possible by speech—by an individual’s *words*.

Absent speech, according to Arendt:

. . . action would not only lose its revelatory character, but, and by the same token, it would lose its subject . . . not acting men but performing robots would achieve what, humanly speaking, would remain incomprehensible. (HC 178)

In this passage, Arendt connects action, speech and, most importantly, meaning. The desire to understand action and imbue it with meaning is crucial to Arendt’s conception of what is troubling about the action made possible (and initiated) by technoscience.

Where *homo faber*, *animal laborans* and action intersect, the status of speech is unclear.

While technoscientific action might *include* speech, and may not *preclude* it, Arendt sees nothing inherent in technoscience that *requires* either speech or language. In this

way, meaning, and our very ability to comprehend it are at risk.

²⁶³ This is not to say that Arendt never talks about action initiating new “processes.” But when she does revert to this type of language, she is already in the process of discussing the confusion between acting and making (HC 190). When action is discussed in terms of “word and deed,” stories are its only “product” (HC 176).

²⁶⁴ See Curtis 1999, 179. Acting into nature, technoscientific actions “do not occur in a context that can provide a means of making human sense of their unprecedented appearance . . . thus unpredictability, irreversibility and automatism almost wholly govern these events” (Curtis 1999, 179).

However, the potential wordlessness of the actions initiated by reprogenetic technologies is troublesome not simply because language is a tool of communication. For Arendt, language constitutes the condition of plurality; it is only through speaking and acting that individuals can make their distinctness known. In the context of wordless deeds, the act of distinguishing oneself becomes meaningless.

This fear that technoscientific action might lose its revelatory character because it is unappreciative of the demands of speech (Curtis 1995, 179) is most blatant in Arendt's discussion of mathematics.²⁶⁵ Her distrust of mathematics rests on its reliance on a "non-spatial symbolic language" (HC 265) that "overrules the testimony . . . of the senses" (HC 267). This language—based in abbreviations and symbols—"contains statements that can in no way be translated back into speech" (HC 4).²⁶⁶

While Arendt focused primarily on mathematical language, a similar criticism might be made of the so-called "language" of genetics—inscribed in sequences of Gs, As, Ts, and Cs. Although they are letters and not numbers, and can be manipulated to create words and acronyms, the very fact that we can think about such sequences as speaking to us—that we can even talk about a Book of Life or ideas being "written in our genes"—would be an anathema to Arendt. The fact that we have created an entire profession of genetic counselors—whose *raison d'être* is to translate the language of

²⁶⁵ The extent to which Arendt's theorization of technoscience is intrinsically linked to her understanding of physics as the paradigmatic science of the age goes beyond the confines of this project. However, her discussion of the mathematicization of technoscience suggests that the abstract nature of physics is crucial to her understanding of this activity.

²⁶⁶ Of course, the flip side of this translational difficulty is the fact that mathematics is seen by many as a universal language. The ability of researchers from around the world to communicate via this language is one aspect of the mathematization of science that Arendt fails to appreciate. Whether this sort of wordless communication has the transformative abilities Arendt ascribes political speech is, however, unclear.

genetics into everyday speech and language just shows how very removed the language of the genome is from our everyday understandings.²⁶⁷

It is the fact that scientists spend so much time engaged with this sort of non-revelatory use of language that worries Arendt in “The Conquest of Space and the Stature of Man” (CS 268-269), arguably her most critical work on modern technoscience.²⁶⁸ Here, she suggests that the problem with technoscientific action might be “that man can *do*, and successfully do, what he cannot comprehend and cannot express in everyday human language” (CS 270). At her most troubled moments, Arendt worries that technoscientific action has become a series of wordless deeds and subjectless actions.

X. RETHINKING THE WORDLESSNESS OF TECHNOSCIENTIFIC ACTIONS

As I attempted to show in the second chapter with my discussion of Arendt’s understanding of the telescope, however, Arendt’s own way of thinking technoscience might belie these pessimistic assertions. Despite the fact that technoscience appears as if

²⁶⁷ The importance of these counselors in performing this activity of translation cannot be overstated, as Rapp’s work clearly shows (Rapp 2000). Nor should the skill their job requires be underestimated. However, the very fact that genetic counselors are trained *not* to reveal their own opinions and beliefs when they engage in discussions with genetic counseling patients shows that they cannot be said to be engaged in the kind of revelatory activity Arendt so praises. The hierarchical relationship between patient, counselor and doctor also revealed in Rapp’s work (2000) also complicates the effort to understand these kinds of encounters as truly deliberative.

²⁶⁸ The extent to which Arendt’s characterization of either scientists or the laboratory is empirically correct is held at bay in this project. However, the extensive literature on the sociology of the scientific laboratory (e.g. Latour 2004) would suggest that, at least to some extent, Arendt fails to appreciate some of the collaborative nature of the contemporary scientific endeavor.

it were “a biological development” (HC 153), Arendt quite clearly connects each technoscientific advance with human activity. In her commitment to specifying a “maker/user/doer,” Arendt works hard to effectively *create* a subject who engages in technoscientific action. And in her attempts to trace the consequences of technoscientific actions, she effectively writes the “story” for which she yearns. As I proposed at the outset of this project, Arendt’s discussion of Galileo highlights the fact that technoscientific action certainly has the ability (if perhaps not the propensity) to initiate a “story.” What is interesting about Arendt’s characterization of scientists is that she seems to forget her own earlier admonition that a story is always authored “*ex post facto*” and never by its “hero” (i.e. the agent of action) (HC 186). “Even Achilles,” she reminds her reader, “remains dependent upon the storyteller, poet, or historian, without whom everything he did remains futile” (HC 194).²⁶⁹ Thus, the crucial activity of meaning-making is always in some sense beyond the capacity of any single actor.²⁷⁰ If this is the case, then, Arendt’s mode of thinking—with its attempt to re-inscribe a maker/user/doer onto technoscientific action and thereby to think these actions as events—can be read as a form of resistance against the wordless tendency of modern technoscience.

²⁶⁹ Again, the question of the similarity between Arendt’s mode of thinking and “storytelling” is a significant one to which I have not yet given the time and attention it deserves. However, it seems important that none of these scientists appears, at least in *The Human Condition*, as a true character. There is no attempt to recreate their experiences—merely to interpret their words. When compared to Arendt’s more explicitly “storytelling” mode of thinking (e.g. in *Men in Dark Times*), there is a decided lack of attention to experiential details in her discussion of scientists.

²⁷⁰ In suggesting that Arendt might be thought of as re-inscribing words on to actions, I do not mean to make light of her highly suggestive discussion of the status of language in the sciences. I merely mean to suggest that Arendt’s attempts to reintroduce the question of the maker/user/doer into discussions of technoscientific inventions resists the tendency toward wordless action.

Another form of resistance might be found in Arendt's writing style. Despite her repeated assertions that scientists speak in a language that is incomprehensible to the outsider, her works resound with quotations from scientists. Einstein (CS 269), Planck (CS 270), Bohr (CS 271), Heisenberg (HC 261), Newton (HC 272) and Galileo himself (HC 271) all appear in her description of "the modern age." And while she does not interpret their words in the manner that they were perhaps intended, Arendt nonetheless finds meaning in them and "translates" them "back into speech."²⁷¹ In this way, Arendt attempts to re-inscribe words onto what might have passed as wordless deeds.²⁷²

In interpreting Arendt's understanding of modern technoscience in this manner, I propose that Arendt's mode of thinking raises questions not about the extent of technoscientific knowledge and whether we have gone "too far," but about the status of speech and our ability to create meaning. If these are truly the questions at stake in thinking modern technoscience, our ability to contest the troublesome aspects of the "spiritual consequences of Galileo's invention" might be transformed. Instead of an antagonistic attitude toward scientists and their inventions—one which attempts to control what should be allowed and invented—Arendt's method suggests that the impetus is on technoscience's *interpreters* (scientists included) to create meaning out of the various activities of *homo faber*.²⁷³

²⁷¹ Indeed, we can never be sure how our words and deeds will be interpreted. It is this fact of uncertainty that requires courage of those who dare to step into the "light" of the public (HC 186, 237).

²⁷² Given the "inevitability with which men disclose themselves as subjects, as distinct and unique persons, even when they wholly concentrate upon reaching an altogether worldly, material object (HC 183), how any action could be entirely wordless is unclear.

²⁷³ However, as I argued in my third chapter, this kind of interpretive work is extremely difficult in the case of rerogenetics. Because the technologies of rerogenetics are embedded within what Evelyn Fox Keller refers to as "gene talk," efforts to think rerogenetics require rethinking

the very language of genetics itself. It was for this reason that I turned to Heidegger’s writings in order to “unfreeze” the language of genetics, and in so doing, questioned the sense of genetic determinism that permeates discussions of reprogenetics. Given Arendt’s concern for the spontaneity of political action—what she refers to as natality— and its crucial relationship to plurality, preserving a space in which we can appreciate human beings as “beings whose essence is beginning” (UP 321) is crucial to my project.

Conclusion

In this project, I have argued that Arendt's works offer a glimpse at a mode of political thinking that simultaneously resists the urge to master uncertainty at the same time it allows us to take our bearings in response to an ever-changing world. Insofar as the phenomenon of reproductives daily calls into question many of the conceptual distinctions upon which ethical thinking is based, reproductives requires that we learn to think without these inherited standards of judgment. Only by thinking reproductives in the absence of such "banisters" can we begin to comprehend the political significance of reproductive technologies.

It is to the significance of reproductives for our political life that I turn in these last few pages. Although I have focused primarily on the challenges reproductives poses to our appreciation for plurality and the concomitant impact on political thinking, this critique does not exhaust the political questions posed by reproductive technologies.

In addition to concerns about plurality, reproductives also raises questions about our conceptions of autonomy and our capacity for political action. Returning again to Habermas's problematic, yet important, work, we see that one problem with reproductive technologies is that they forge an unequal relationship between designer and designed (Habermas 2003, 52). Moreover, he argues, the knowledge of ourselves as designed interferes with our conceptions of autonomy and self-determination—making it more difficult to see ourselves as the "authors of our own life stories" (Habermas 2003, 25). In this way, he worries, we might begin to lose sight of our capacity for autonomous political action.

In many ways, this worry accords with (and indeed is partially rooted in) Arendt's understanding of natality as the uniquely human capacity to bring something utterly new into the world (HC 9). Natality is, for Arendt, "the miracle that saves the world" (HC 247), and, along with plurality, constitutes one of the existential conditions of political action. Although I have focused primarily on the condition of plurality in the preceding pages, a discussion of how reprogenetic technologies might affect our appreciation for the kind of spontaneity and innovation that characterizes political action would be crucial to carrying on the approach I have begun to develop here.

But, I admit that I am less perturbed by the perceived threat to autonomy than Habermas is—primarily because I am far from convinced that the kind of genetic programming he worries about is at all within the range of human capacities; as Curtis notes, Arendt's emphasis on the unpredictability occasioned by technoscientific actions reminds us that it is "foolish hubris" to assume that "nature now lies prostrate, in human hands" (Curtis 1995, 160). Additionally, as I argued in chapter three, the idea that reprogenetics poses a threat to our autonomy is intrinsically connected to a deterministic understanding of genetic causality that is increasingly called into question by recent research. Nonetheless, even if the kind of programming to which Habermas makes reference never becomes possible, the desire on the part of parents to have this kind of control over their offspring, and the public assumption that it is feasible, deserve further attention.

Also deserving of additional attention are questions about what kinds of deliberative spaces might allow for a more fruitful discussion of reprogenetics. It remains to be seen how we might open up questions about reprogenetic technologies to

contestation and debate in a manner that respects the freedom of scientific inquiry at the same time it recognizes the value of other epistemological approaches. Such an endeavor requires more than a panel of experts; it requires new ways of thinking the discrepancy Feenberg points to between our political theoretical commitment to democracy and the actual power dynamics of modern technoscience (1995, 3). In his words, “so far as decisions affecting our daily lives are concerned, political democracy is largely overshadowed by the enormous power wielded by the masters of technical systems” (Feenberg 1995, 3). It is for this reason, he argues, that we need to “democratize” modern technoscience (Feenberg 1999).

Although the political challenges posed by reprogenetic technologies are many, I have focused in the preceding pages on what I see as an especially pressing question: again, how to ensure the kind of respect and appreciation for human plurality that is central to the activity of political thinking. While I focused primarily on questions of disability, similar concerns attend the ways in which race, homosexuality and other forms of human difference are constructed—both in the genetic counselor’s office and in public discussions of reprogenetics. To be sure, the concerns I registered are not all that different from those of disability advocates, who have a long history of engagement with reprogenetics; indeed my argument that we need to attend to the way in which disability is constructed aligns closely with more recent research into how the practice of genetic counseling might better address the concerns of the disability community (see e.g. Patterson and Satz 2002). But what my work offers is a reminder of the importance of language in the context of genetic testing and PGD, as well as an alternative justification for concerns regarding plurality and reprogenetics; ultimately, it also

suggests a different mode by which future engagement with these questions might proceed.

First, I have argued that we need to pay more attention to the language through which we engage the debates surrounding rerogenetics—and genetic research more generally. Although the language of genetic determinism is already being contested, more attention needs to be directed to the ways in which this concept creeps back into political and ethical discussions of rerogenetics—particularly when concerns are raised about autonomy. Instead of fearing the influence of genes and/or discounting them altogether, we need to become comfortable thinking about multiple sites of agency and seeing the science of genetics in terms of potentialities rather than pre-determined futures.

We also, as I mentioned above, need to pay particular attention to how our discussions of rerogenetics construct those who fall outside our expectations of biological normality—emphasizing not just diseases and mutations, but the “who” individuals show themselves to be. Only in this way, I argued, can we fully respect the fact that the world reveals itself differently to each and every individual.

Moreover, we need to recognize that concerns about the language through which we engage questions of disability are not peripheral to the practices of rerogenetics, but central to our very ability to think about them politically. It is this connection between a respect for plurality and the activity of thinking that my work most clearly demonstrates. As soon as we lose this appreciation, we are in danger, as Arendt puts it, of treating individual human beings (men, in her words) as Man; and we have seen how disastrous the consequences of this move can be. In this sense, my work justifies

attention to questions of difference not out of a commitment to some kind of politically correct understanding of diversity, but because it is crucial to the very activity of thinking itself. Given the close relationship between political thinking and judgment, this is a concern that goes to the heart of how we take our bearings in the contemporary world.

I admit that the question of political judgment has not been given its due in this project, primarily I would suggest, because we need a better understanding of thinking before we can fully articulate the relationship between these two activities. However, in the words of Dana Villa, judgment is the “‘by-product’ of thinking, not because it is in any sense the direct result of thought, but rather because thinking clears the space which makes it possible” (Villa 1999, 101). By freeing ourselves from time-worn categories and concepts—all the while remaining attentive to the fact of human plurality—political thinking thus opens a space in which phenomena can shine through and reveal themselves in all their splendor and uniqueness. This kind of preparatory work—the clearing of the way—is what has occupied much of this dissertation.

In order to fully engage in thinking reproductives, however, we need to return to Arendt’s discussion of representative thinking. In short, we need to recognize that engaging the perspectives of unique, historical, individuated others is the true hallmark of this activity. Thus what my dissertation suggests is that the answer to how we might begin to more fully appreciate human plurality in discussions of reproductives is not to develop additional ethical rules and guidelines, but to engage the life stories of those to whom the phenomenon of reproductives appears so very differently. This kind of endeavor would entail not only personal interaction with those with disabilities, as

Patterson and Satz (2002) recommend, but also engagement with biographical, autobiographical and even fictional accounts of unique individuals' experiences of rerogenetics. The ethnographic accounts of rerogenetic practices offered by scholars like Rapp (1999), Franklin and Roberts (2006) are also invaluable in this effort; however, they are by no means sufficient. In Arendtian terms, we need to "populate" our "imagination[s] with a multiple cast of characters" (Disch 1994, 154) in order to develop the kind of "enlarged mentality" that is crucial to political judgment.

Now obviously, these reflections have only skimmed the surface of the political questions raised by rerogenetics. But what I hope I have done here is provide additional (and indeed compelling) reasons for why we need to rethink our relationship to the tools and practices of rerogenetics. I cannot say for certain what the effects of such a rethinking might be, but I am sure that the stakes in doing so are high. Indeed, our very ability to take our bearings in a world of perpetual change and motion (in other words, the very world in which we find ourselves with regard to rerogenetics) might be at stake.

Bibliography

- Tenth anniversary of preimplantation genetic diagnosis. 2001. *Journal of Assisted Reproduction & Genetics* 18, (2): 64.
- Agar, Nicholas. 2004. *Liberal eugenics: In defence of human enhancement*. Malden, MA: Blackwell Publishing.
- Allen, Garland E. 2001. Is a new eugenics afoot? *Science* 294, (5540) (10/05): 59.
- Alper, Joseph S., and Jon Beckwith. 2002. Genetics, race, and ethnicity: Searching for differences. In *The double-edged helix: Social implications of genetics in a diverse society.*, ed. Joseph S. Alper. Baltimore, Md: Johns Hopkins University Press.
- Alper, Joseph S. 2002. *The double-edged helix: Social implications of genetics in a diverse society*. Baltimore, Md: Johns Hopkins University Press.
- . 2002. Genetic complexity in human disease and behavior. In *The double-edged helix: Social implications of genetics in a diverse society*. ed. Joseph S. Alper. Baltimore, Md: Johns Hopkins University Press.
- Amos, Jonathan. 2006. US scientists reject interference. BBC Online. 14 Dec. Online. <http://news.bbc.co.uk/2/hi/science/nature/6178213.stm> Accessed 1/12/09
- Andersen, A. N., V. Goossens, A. P. Ferraretti, S. Bhattacharya, R. Felberbaum, J. de Mouzon, K. G. Nygren, European IVF-monitoring (EIM) Consortium, and European Society of Human Reproduction and Embryology (ESHRE). 2008. Assisted reproductive technology in europe, 2004: Results generated from european registers by ESHRE. *Human Reproduction (Oxford, England)* 23, (4) (Apr): 756-71.
- Anderson, John M. 1966. Introduction. In *Discourse on thinking*, eds. John M. Anderson, Martin Heidegger, 93 p. New York,: Harper & Row.
- Andrews, Lori B. 2001. *Future perfect: Confronting decisions about genetics*. New York: Columbia University Press.
- Angier, Natalie. 2008. Scientists and Philosophers Find That ‘Gene’ Has a Multitude of Meanings. *New York Times*. November 10. D12.
- Ard, Catherine, and Deborah Zucker. 2002. The commercialization of genetic technologies: Raising public awareness. In *The double-edged helix: Social*

implications of genetics in a diverse society., ed. Joseph S. Alper, Baltimore, Md: Johns Hopkins University Press.

Arendt, Hannah. 1994. *Eichmann in Jerusalem : A report on the banality of evil.* Penguin twentieth-century classics. New York, N.Y., U.S.A.: Penguin Books. [EJ]

_____. 1990. For Martin Heidegger's eightieth birthday. In Gunther Neske and Emil Kettering, eds. *Martin Heidegger and national socialism.* New York: Paragon House. [B]

_____. 1990. Philosophy and politics. *Social Research.* 57:1 (Spring) [PP]

_____. 1978. *The life of the mind.* New York: Harcourt Brace Jovanovich. [LM]

_____. 1974. *Rahel Varnhagen, the life of Jewish woman.* Rev. ed. New York: Harcourt Brace Jovanovich. [RV]

_____. 1973. *The origins of totalitarianism.* New ed. New York: Harcourt Brace Jovanovich. [OT]

_____. 1972. On violence. In *Crises of the republic; lying in politics, civil disobedience, on violence, thoughts on politics, and revolution.* 1st ed. New York,: Harcourt Brace Jovanovich. [OV]

_____. 1968. The concept of history: ancient and modern. *Between past and future; eight exercises in political thought.* New York, Viking Press. [CH]

_____. 1968. The conquest of space and the stature of man. *Between past and future; eight exercises in political thought.* New York, Viking Press. [CS]

_____. 1968. Crisis in culture: its social and political significance. *Between past and future; eight exercises in political thought.* New York, Viking Press. [CC]

_____. 1968. Truth and politics. *Between past and future; eight exercises in political thought.* New York, Viking Press. [TP]

_____. 1968. What is authority. *Between past and future; eight exercises in political thought.* New York, Viking Press. [WA]

_____. 1968. What is freedom. *Between past and future; eight exercises in political thought.* New York, Viking Press. [WF]

_____. 1958. *The human condition.* [Chicago]: University of Chicago Press. [HC]

- Arendt, Hannah, and Ronald Beiner. 1982. *Lectures on Kant's political philosophy*. Chicago: University of Chicago Press.
- Arendt, Hannah, and Melvyn A. Hill. 1979. *Hannah Arendt, the recovery of the public world*. New York: St. Martin's Press. [HA]
- Arendt, Hannah, Karl Jaspers, Lotte Köhler, and Hans Saner. 1992. *Hannah Arendt Karl Jaspers : Correspondence, 1926-1969*. 1st U.S. ed. New York: Harcourt Brace Jovanovich.
- Arendt, Hannah, and Jerome Kohn. 2005. *The promise of politics*. 1st ed. New York: Schocken Books.
- . 2003. Personal responsibility under dictatorship. *Responsibility and judgment*. 1st ed. New York: Schocken Books. [PRD]
- . 2003. *Responsibility and judgment*. 1st ed. New York: Schocken Books.
- . 1994. Heidegger the fox. *Essays in understanding, 1930-1954*. 1st ed. New York: Harcourt, Brace & Co. [HF]
- . 1994. Understanding and Politics. *Essays in understanding, 1930-1954*. 1st ed. New York: Harcourt, Brace & Co. [UP]
- . 1994. *Essays in understanding, 1930-1954*. 1st ed. New York: Harcourt, Brace & Co.
- Asch, Adrienne. 2002. Prenatal diagnosis and selective abortion: A challenge to practice and policy. In *The double-edged helix: Social implications of genetics in a diverse society.*, ed. Joseph S. Alper. Baltimore, Md: Johns Hopkins University Press.
- Asch, Adrienne. 2000. Why I haven't changed my mind about prenatal diagnosis: Reflections refinement. In *Prenatal testing and disability rights*. eds. Erik Parens, Adrienne Asch, Washington, D.C.: Georgetown University Press.
- Asch, Adrienne, and Erik Parens. 2000. *Prenatal testing and disability rights*. Variation: Hastings center studies in ethics. Baltimore, Md; Wantage: Georgetown University Press; University Presses Marketing.
- Baily, Mary Ann. 2000. Why I had amniocentesis. In *Prenatal testing and disability rights.*, eds. Erik Parens, Adrienne Asch. Washington, D.C.: Georgetown University Press.

- Baruch, Susannah, David Kaufman, and Kathy L. Hudson. 2008. Genetic testing of embryos: Practices and perspectives of US in vitro fertilization clinics. *Fertility and Sterility* 89, (5) (5): 1053-8.
- Beeson, Diane, and Troy Duster. 2002. African American perspectives on genetic testing. In *The double-edged helix: Social implications of genetics in a diverse society.*, ed. Joseph S. Alper. Baltimore, Md: Johns Hopkins University Press.
- Beiner, Ronald. 1983. *Political judgment*. Chicago: University of Chicago Press.
- Beiner, Ronald, and Jennifer Nedelsky. Eds. 2001. *Judgment, imagination, and politics: Themes from Kant and Arendt*. Lanham, Md.: Rowman & Littlefield.
- Benbabib, Seyla. 2001. Judgment and the moral foundations of politics in Hannah Arendt's thought. In , eds. *Judgment, imagination, and politics: Themes from Kant and Arendt*. Lanham, Md.: Rowman & Littlefield.
- Benhabib, Seyla. 2003. *The reluctant modernism of Hannah Arendt*. Modernity and political thought (unnumbered). New ed. Lanham, Md.: Rowman & Littlefield.
- Bernstein, Richard J. 2000. Arendt on thinking. In *The Cambridge companion to Hannah Arendt*, ed. Dana Villa, Cambridge, U.K. ; New York: Cambridge University Press.
- Bickford, Susan. 1996. *The dissonance of democracy: Listening, conflict, and citizenship*. Ithaca, NY: Cornell University Press.
- Biesecker, Barbara Bowles, and Lori Hamby. 2000. What difference the disability community arguments should make for the delivery of prenatal genetic information. In *Prenatal testing and disability rights*. eds. Erik Parens, Adrienne Asch. Washington, D.C.: Georgetown University Press.
- Boedeker, Edgar C. Jr. 2005. Phenomenology. In *A companion to Heidegger.*, eds. Hubert L. Dreyfus, Mark A. Wrathall, 156-540. Malden, MA: Blackwell Pub.
- Bonnicksen, Andrea. 2007. Oversight of assisted reproductive technologies: the last twenty years. In *Reprogenetics: Law, policy, and ethical issues.*, eds. Lori P. Knowles, Gregory E. Kaebnick, 302. Baltimore, Md: Johns Hopkins University Press.
- Boseley, Sarah. 2009. Embryo selection : Science - and ethics - of cancer screening are complex. *The Guardian (London) - Final Edition*, January 10, 2009, Online <http://www.guardian.co.uk/science/2009/jan/10/embryo-screening-ethics-designer-babies> Accessed 1/11/09

- Bradby, Hannah. 1996. Genetics and racism. In *The troubled helix: Social and psychological implications of the new human genetics.*, eds. Theresa Marteau, Martin Richards. Cambridge [England] ; New York, NY, USA: Cambridge University Press.
- Brecht, Bertolt, 1970. Galileo. *Collected plays*. Eds. John Willett, and Ralph Manheim. 1970. London: Methuen.
- Buchanan, Allen E. 2000. *From chance to choice: Genetics and justice*. Cambridge, U.K.; New York: Cambridge University Press.
- Carman, Taylor. 1993. The principle of phenomenology. In *The Cambridge companion to Heidegger.*, ed. Charles B. Guignon, 97-389. Cambridge England] ; New York, NY, USA: Cambridge University Press.
- Centers for Disease Control and Prevention. Division of Reproductive Health, American Society for Reproductive Medicine, and Society for Assisted Reproductive Technology. 2006. Assisted reproductive technology success rates. Online <http://www.cdc.gov/ART/ARTReports.htm> Accessed 1/10/2009.
- Corveleyn, A., M. A. Morris, E. Dequeker, K. Sermon, J. L. Davies, G. Antinolo, A. Schmutzler, et al. 2008. Provision and quality assurance of preimplantation genetic diagnosis in Europe. *European Journal of Human Genetics: EJHG* 16, (3) (Mar): 290-9.
- Curtis, Kimberley F. 1995. Hannah Arendt, feminist theorizing, and the debate over new reproductive technologies. *Polity* 28, (2) (Winter): 159-87.
- Daniels, Norman. 1987. Justice and health care. In *Health care ethics : An introduction.*, eds. Donald VanDeVeer, Tom Regan. Philadelphia: Temple Univ. Press.
- Daniels, Norman. 1985. *Just health care*. Studies in philosophy and health policy. Cambridge Cambridgeshire] ; New York: Cambridge University Press.
- Davis, Dena S. 2001. *Genetic dilemmas : Reproductive technology, parental choices, and children's futures*. Reflective bioethics. New York: Routledge.
- . 1997. Genetic dilemmas and the child's right to an open future. *The Hastings Center Report* 27, (2) (Mar. - Apr.): 7-15.
- Davis, Lennard J. 2006. Constructing normalcy In *The disability studies reader*. ed. Lennard J. Davis. 2nd ed., 451. New York: Routledge.

- . 2006. *The disability studies reader*. 2nd ed. New York: Routledge.
- D'Entreves, Maurizio Passerin. 2000. Arendt's theory of judgment. In *The Cambridge companion to Hannah Arendt*, ed. Dana Villa. Cambridge, U.K. ; New York: Cambridge University Press.
- Dietz, Mary G. 2000. Arendt and the holocaust. In *The Cambridge companion to Hannah Arendt*, ed. Dana Villa. Cambridge, U.K. ; New York: Cambridge University Press.
- . 1995. Feminist receptions of Hannah Arendt. In *Feminist interpretations of Hannah Arendt*, ed. Bonnie Honig. University Park, Pa.: Pennsylvania State University Press.
- Dietz, Mary G. 2002. *Turning operations : Feminism, Arendt, and politics*. New York: Routledge.
- Disch, Lisa Jane. 1994. *Hannah Arendt and the limits of philosophy*. Ithaca: Cornell University Press.
- Dreyfus, Hubert L. 1995. Heidegger on gaining a free relation to technology. In *Technology and the politics of knowledge*, eds. Andrew Feenberg, Alastair Hannay, Bloomington: Indiana University Press.
- Dreyfus, Hubert L., and Mark A. Wrathall. 2005. *A companion to Heidegger*. Blackwell companions to philosophy ; 29. Malden, MA: Blackwell Pub.
- Duster, Troy. 2003. *Backdoor to eugenics*. 2nd ed. New York: Routledge.
- Elshtain, Jean. 1998. To clone or not to clone. In *Clones and clones : Facts and fantasies about human cloning*, eds. Martha Craven Nussbaum, Cass R. Sunstein. 1st ed., 351. New York: Norton.
- Feenberg, Andrew. 1999. *Questioning technology*. London ; New York: Routledge.
- . 1995. Subversive rationalization : Technology, power, and democracy. In *Technology and the politics of knowledge*, eds. Andrew Feenberg, Alastair Hannay, x, 288 p. Bloomington: Indiana University Press.
- Feenberg, Andrew, and Alastair Hannay. 1995. *Technology and the politics of knowledge*. Bloomington: Indiana University Press.
- Franklin, Sarah, and Celia Roberts. 2006. *Born and made: An ethnography of pre-implantation genetic diagnosis*. Princeton, N.J.; Woodstock: Princeton University Press.

- Fukuyama, Francis. 2002. *Our posthuman future : Consequences of the biotechnology revolution*. 1st ed. New York: Farrar, Straus and Giroux.
- Galton, Francis. 1904. Eugenics: Its definition, scope, and aims. *The American Journal of Sociology* x, (1). Online <http://galton.org/essays/1900-1911/galton-1904-am-journ-soc-eugenics-scope-aims.htm> Accessed 12/1/09
- Geller, Lisa. 2002. Current developments in genetic discrimination. In *The double-edged helix: Social implications of genetics in a diverse society*. ed. Joseph S. Alper. Baltimore, Md: Johns Hopkins University Press.
- Glover, Jonathan. 2006. *Choosing children: Genes, disability, and design*. Uehiro series in practical ethics. Oxford; New York: Clarendon Press; Oxford; Oxford University Press.
- Grubb, Andrew. 2007. Regulating reprogenetics in the United Kingdom. In *Reprogenetics: Law, policy, and ethical issues.*, eds. Lori P. Knowles, Gregory E. Kaebnick, 302. Baltimore, Md: Johns Hopkins University Press.
- Guignon, Charles B. 1993. *The Cambridge companion to Heidegger*. Cambridge England]; New York, NY, USA: Cambridge University Press.
- Habermas, Jürgen, and Jürgen Habermas. 2003. *The future of human nature*. Cambridge, UK: Polity.
- Haraway, Donna J. 1997. The virtual speculum in the new world order. *Feminist Review* (55, Consuming Cultures) (Spring): 22-72.
- Haraway, Donna Jeanne. 1997. *Modest Witness@Second millennium.FemaleMan meets OncoMouse : Feminism and technoscience*. New York: Routledge.
- . 1991. *Simians, cyborgs, and women : The reinvention of nature*. New York: Routledge.
- Harmon, Amy. 2008. Fear of insurance trouble leads many to shun or hide DNA tests. *The New York Times*, February 24, 2008, sec A; National Desk; THE DNA AGE. Online. Accessed 6/1/08
- . 2007. After DNA diagnosis : ' hello, are you just like me?'. *The New York Times*, December 28, 2007, sec A; National Desk; THE DNA AGE. Online. Accessed 6/1/08

_____. 2007. DNA studies and racism; genetic variance fuels speculation and fears. *The International Herald Tribune*, November 12, 2007, sec NEWS. Online. Accessed 6/1/08

_____. 2007. My genome, myself : Seeking clues in DNA. *The New York Times*, November 17, 2007, sec A; National Desk; THE DNA AGE. Online. Accessed 6/1/08

_____. 2006. Couples cull embryos to halt heritage of cancer. *The New York Times*, September 3, 2006, sec 1; National Desk.

Harris, John. 2001. *Bioethics*. Oxford readings in philosophy; variation: Oxford readings in philosophy. New York: Oxford University Press.

Harris, John, and Søren Holm. 1998. *The future of human reproduction : Ethics, choice, and regulation*. Issues in biomedical ethics. Oxford; New York: Clarendon Press; Oxford University Press.

Heidegger, Martin. 1993. Letter to the rector of Freiburg University (1945) *The Heidegger controversy*. Richard Wolin, ed. Cambridge: MIT Press.

_____. 1977. The age of the world picture. *The question concerning technology, and other essays*. Harper colophon books. 1st ed. New York: Harper & Row. [AWP]

_____. 1977. The question concerning technology. *The question concerning technology, and other essays*. Harper colophon books. 1st ed. New York: Harper & Row. [QT]

_____. 1976. Nur noch ein Gott kann uns retten. *Der Spiegel*, 31 May. 193-219.

_____. 1971. *Poetry, language, thought*. New York: Harper & Row.

_____. 1968. *What is called thinking?* New York: Harper & Row. [WCT]

_____. 1966. Conversations on a country path about thinking. *Discourse on thinking*. New York: Harper & Row. [CCP]

_____. 1993. Building, dwelling, thinking. In *Basic writings : From being and time (1927) to the task of thinking (1964)*. Heidegger, Martin, and David Farrell Krell, ed. San Francisco, Calif.: Harper. [BDT]

_____. 1993. Letter on humanism. In *Basic writings : From being and time (1927) to the task of thinking (1964)*. Heidegger, Martin, and David Farrell Krell, ed. San Francisco, Calif.: Harper. [LH]

- _____. 1993. Origins of the work of art. In *Basic writings : From being and time (1927) to the task of thinking (1964)*. Heidegger, Martin, and David Farrell Krell, ed. San Francisco, Calif.: Harper. [OWA]
- _____. 1993. The way to language. In *Basic writings : From being and time (1927) to the task of thinking (1964)*. Heidegger, Martin, and David Farrell Krell, ed. San Francisco, Calif.: Harper. [WL]
- Henig, Robin Marantz. 2004. The genome in black and white (and gray). *New York Times Magazine* (Oct 10): 46.
- Hinchman, Lewis P., and Sandra K. Hinchman. 1984. In Heidegger's shadow: Hannah Arendt's phenomenological humanism. *The Review of Politics* 46, (2) (Apr.): 183-211.
- Holland, Suzanne. 2007. Market transactions in reprogenetics: a case for regulation. In *Reprogenetics: Law, policy, and ethical issues*. Knowles, Lori P., and Gregory E. Kaebnick, eds.. Baltimore, MD: Johns Hopkins University Press.
- Honig, Bonnie. 1995. Toward an agonistic feminism: Hannah Arendt and the politics of identity. In *Feminist interpretations of Hannah Arendt.*, ed. Bonnie Honig. University Park, Pa.: Pennsylvania State University Press.
- Honig, Bonnie. 1995. *Feminist interpretations of Hannah Arendt*. University Park, Pa.: Pennsylvania State University Press.
- Hubbard, Ruth. 1990. *The politics of women's biology*. New Brunswick, N.J.: Rutgers University Press.
- Hubbard, Ruth, and Elijah Wald. 1999. *Exploding the gene myth. : How genetic information is produced and manipulated by scientists, physicians, employers, insurance companies, educators, and law enforcers*. 1999 ed. Boston: Beacon Press.
- Hull, Richard T. 1990. *Ethical issues in the new reproductive technologies*. Belmont, Calif.: Wadsworth Pub. Co.
- Ihde, Don. Why not science critics? Online.
http://www.sunysb.edu/philosophy/research/ihde_5.html
- Jasanoff, Sheila. 2005. *Designs on nature : Science and democracy in Europe and the United States*. Princeton, N.J.: Princeton University Press.

- . 1998. The eye of everyman: Witnessing DNA in the Simpson trial. *Social Studies of Science* 28, (5/6, Special Issue on Contested Identities: Science, Law and Forensic Practice) (Oct. - Dec.): 713-40.
- Jones, Steve. 1994. *The language of genes: Solving the mysteries of our genetic past, present, and future*. 1st Anchor Books ed. New York: Doubleday.
- Kass, Leon, and James Q. Wilson. 1998. *The ethics of human cloning*. Washington, D.C.: AEI Press.
- Kateb, George. 2000. Political action: Its nature and advantages. In *The Cambridge companion to Hannah Arendt*, ed. Dana Villa, xvi, 304 p. Cambridge, U.K. ; New York: Cambridge University Press.
- Kateb, George. 1984. *Hannah Arendt, politics, conscience, evil*. Philosophy and society. Totowa, N.J.: Rowman & Allanheld.
- . 1984. *Hannah Arendt, politics, conscience, evil*. Philosophy and society. Totowa, N.J.: Rowman & Allanheld.
- Keller, Evelyn Fox. 2002. *Making sense of life: Explaining biological development with models, metaphors, and machines*. Cambridge, Mass: Harvard University Press.
- . 2000. *The century of the gene*. Cambridge, Mass.: Harvard University Press.
- Kellner, Douglas. 1991. Introduction. In *One-dimensional man: Studies in the ideology of advanced industrial society.*, ed. Douglas Kellner. Boston: Beacon Press.
- Kevles, Daniel J. 1985. *In the name of eugenics : Genetics and the uses of human heredity*. 1st ed. New York: Knopf.
- Kevles, Daniel J., and Leroy E. Hood. 1992. *The code of codes: Scientific and social issues in the human genome project*. Cambridge, Mass.: Harvard University Press.
- Kitcher, Phillip. 1992. Gene: Current usages. In *Keywords in evolutionary biology.*, eds. Evelyn Fox Keller, Elisabeth Anne Lloyd. Cambridge, Mass.: Harvard University Press.
- Kittay, Eva. 2000. On the expressivity and ethics of selective abortion for disability: Conversations with my son. In *Prenatal testing and disability rights.*, eds. Erik Parens, Adrienne Asch. Washington, D.C.: Georgetown University Press.

- Klawiter, Maren. 1990. Using Arendt and Heidegger to consider feminist thinking on women and reproductive / infertility technologies. *Hypatia* 5, (3) (Autumn): 65-89.
- Knowles, Lori P., and Gregory E. Kaebnick. 2007. *Reprogenetics: Law, policy, and ethical issues*. Bioethics. Baltimore, Md: Johns Hopkins University Press.
- Latour, Bruno. 2004. *Politics of nature: How to bring the sciences into democracy* Cambridge, Mass.: Harvard University Press.
- Laurie, G. T. 2002. *Genetic privacy: A challenge to medico-legal norms*. Cambridge, U.K.; New York: Cambridge University Press.
- Longino, Helen. 1995. Knowledge, bodies, and values: Reproductive technologies and their scientific context. In *Technology and the politics of knowledge.*, eds. Andrew Feenberg, Alastair Hannay, Bloomington: Indiana University Press.
- Lovitt, William. 1977. Introduction. In *The Question Concerning Technology*. Martin Heidegger. William Lovitt, ed. New York: Harper & Row.
- Lyotard, Jean François. 1990. *Heidegger and "the Jews"* Minneapolis: University of Minnesota Press.
- Maassarani, Tarek. 2007. *Redacting the science of climate change: an investigative and synthesis report*. Government Accountability Project. Washington, DC. Online.
<http://www.whistleblower.org/doc/2007/Final%203.28%20Redacting%20Climate%20Science%20Report.pdf>. Accessed 1/12/2009
- Mahowald, Mary Briody. 2000. *Genes, women, equality*. New York: Oxford University Press.
- Marcuse, Herbert. 1991. *One-dimensional man: Studies in the ideology of advanced industrial society*. Boston: Beacon Press.
- Marteau, Theresa, and Martin Richards. 1996. *The troubled helix: Social and psychological implications of the new human genetics*; New York, NY, USA: Cambridge University Press.
- McMahon, Jeff. 2001. Wrongful life: paradoxes in the morality of allowing people to live. In *Bioethics*. Harris, John, ed. New York: Oxford University Press.
- Michie, Susan, and Theresa Marteau. 1996. Genetic counseling: Some issues of theory and practice. In *The troubled helix: Social and psychological implications of*

the new human genetics., eds. Theresa Marteau, Martin Richards: New York, NY, USA: Cambridge University Press.

Moss, Lenny. 2007. Contra Habermas and towards a critical theory of human nature and the question of genetic enhancement. *New Formations*: 139.

Murray, Thomas H. 1990. Moral obligations to the not-yet-born: The fetus as patient. In *Ethical issues in the new reproductive technologies.*, ed. Richard T. Hull. Belmont, Calif.: Wadsworth Pub. Co.

Nelkin, Dorothy. 2001. Molecular metaphors: The gene in popular discourse. *Nature Reviews Genetics* 2, (7) (07): 555-9.

Nelkin, Dorothy, and M. Susan Lindee. 1995. *The DNA mystique: The gene as a cultural icon*. New York: Freeman.

Nelson, James Lindemann. 2000. The meaning of the act: Reflections on the expressive force of reproductive decision making and policies. In *Prenatal testing and disability rights*, eds. Erik Parens, Adrienne Asch. Washington, D.C.: Georgetown University Press.

Ornstein, Peggy. 2008. In vitro we trust. *The New York Times*, July 20, 2008, sec MM; Magazine Desk; THE WAY WE LIVE NOW.

Parekh, Bhikhu C. 1981. *Hannah Arendt and the search for a new political philosophy*. Atlantic Highlands, N.J: Humanities Press.

Parens, Erik, and Adrienne Asch. 2000. The disability rights critique of prenatal genetic testing: Reflections and recommendations. In *Prenatal testing and disability rights*. eds. Erik Parens, Adrienne Asch. Washington, D.C.: Georgetown University Press.

———. 2000. *Prenatal testing and disability rights*. Hastings center studies in ethics. Washington, D.C.: Georgetown University Press.

Patterson, Annette, and Martha Satz. 2002. Genetic counseling and the disabled: Feminism examines the stance of those who stand at the gate. *Hypatia* 17, (3, Feminism and Disability, Part 2) (Summer): 118-42.

Paul, Diane. 2007. On drawing lessons from the history of eugenics. In *Reprogenetics : Law, policy, and ethical issues.*, eds. Lori P. Knowles, Gregory E. Kaebnick. Baltimore, Md: Johns Hopkins University Press.

Paul, Diane B. 1995. *Controlling human heredity, 1865 to the present*. The control of nature. Atlantic Highlands, N.J: Humanities Press.

- Pitkin, Hanna Fenichel. 1998. *The attack of the blob: Hannah Arendt's concept of the social*. Chicago: The University of Chicago Press.
- Plumb, by Robert K. 1957. Scientist doubts freedom is vital. *New York Times (1857-Current file)*, Nov 23, 1957. Accessed via ProQuest Historical Newspapers. 5/1/08
- Pollack, Andrew. 2008. The race to read genomes on a shoestring, relatively speaking. *The New York Times*, February 9, 2008, sec C; Business/Financial Desk.
- President's Council on Bioethics (U.S.). Human cloning and human dignity : The report of the president's council on bioethics. in PublicAffairs [database online]. New York, 2002. Online.
<http://www.bioethics.gov/reports/cloningreport/fullreport.html> Accessed 5/1/08
- Rabinow, Paul. 1996. *Making PCR: A story of biotechnology*. Chicago: University of Chicago Press.
- Rapp, Rayna. 1999. *Testing women, testing the fetus: The social impact of amniocentesis in America*. Anthropology of everyday life. New York: Routledge.
- Reinhardt, Mark. 2003. Review: What's new in Arendt? *Political Theory* 31, (3) (Jun.): 443-60.
- Ridley, Matt. 1999. *Genom : The autobiography of a species in 23 chapters*. 1st U.S. ed. New York: HarperCollins.
- Robertson, J. 2009. Extending preimplantation genetic diagnosis: Medical and non-medical uses. *Journal of Medical Ethics* 29, (4): 213-6.
- Robertson, John A. 1994. *Children of choice: Freedom and the new reproductive technologies*. Princeton: Princeton University Press.
- Rockmore, Tom. 1995. Heidegger on technology and democracy. In *Technology and the politics of knowledge*, eds. Andrew Feenberg, Alastair Hannay. Bloomington: Indiana University Press.
- Rojcewicz, Richard. 2006. *The gods and technology: A reading of Heidegger*. Albany: State University of New York Press.
- Rose, Nikolas S. 2007. *Politics of life itself: Biomedicine, power, and subjectivity in the twenty-first century*. Princeton; Princeton University Press: .

- Rothman, Barbara Katz. 1993. *The tentative pregnancy: How amniocentesis changes the experience of motherhood*. 1993 ed. New York: Norton.
- Rothschild, Joan. 2005. *The dream of the perfect child*. Bloomington, IN: Indiana University Press.
- Rothstein, Mark A. 1997. *Genetic secrets: Protecting privacy and confidentiality in the genetic era*. New Haven: Yale University Press.
- . 1997. *Genetic secrets: Protecting privacy and confidentiality in the genetic era*. New Haven: Yale University Press.
- Safranski, Rüdiger. 1998. *Martin Heidegger: Between good and evil*. Cambridge, Mass.: Harvard University Press.
- Sandel, Michael J. 2007. *The case against perfection: Ethics in the age of genetic engineering*. Cambridge, Mass: Belknap Press of Harvard University Press.
- Sanghavi, Darshak. 2006. Wanting babies like themselves, some parents choose genetic defects. *The New York Times*, December 5, 2006, sec F.
- Savulescu, J. 2002. Deaf lesbians, "designer disability," and the future of medicine. *BMJ: British Medical Journal* 325, (7367): 771-3.
- Schmidt, E. B. 2007. The parental obligation to expand a child's range of open futures when making genetic trait selections for their child. *Bioethics* 21, (4) (05): 191-7.
- Shakespeare, Tom. 2006. The social model of disability. In *The disability studies reader.*, ed. Lennard J. Davis. 2nd ed. New York: Routledge.
- Silver, L. M. 2000. Reprogenetics: Third millennium speculation. the consequences for humanity when reproductive biology and genetics are combined. *EMBO Reports* 1, (5) (Nov): 375-8.
- Silver, Lee M. 1997. *Remaking Eden: Cloning and beyond in a brave new world*. 1st ed. New York: Avon Books.
- Silvers, Anita. 1995. Reconciling equality to difference: Caring (F)or justice for people with disabilities. *Hypatia* 10, (Winter): 30-55.
- Silvers, Anita, David T. Wasserman, and Mary Briody Mahowald. 1998. *Disability, difference, discrimination: Perspectives on justice in bioethics and public policy*. Lanham, Md.: Rowman & Littlefield Publishers.

- Sluga, Hans D. 1993. *Heidegger's crisis: Philosophy and politics in Nazi Germany*. Cambridge, Mass.: Harvard University Press.
- . 1993. *Heidegger's crisis: Philosophy and politics in Nazi Germany*. Cambridge, Mass: Harvard University Press.
- Snustad, D. Peter, and Michael J. Simmons. 2003. *Principles of genetics*. 3rd ed. New York, NY: John Wiley & Sons.
- Spriggs, M. 2009. Lesbian couple create a child who is deaf like them. *Journal of Medical Ethics* 28, (5): 283.
- Stevens, Jacqueline, 1962-. 2003. Racial meanings and scientific methods: Changing policies for NIH-sponsored publications reporting human variation. *Journal of Health Politics, Policy and Law* 28, (6): 1033-87.
- . 2002. Symbolic matter: DNA and other linguistic stuff. *Social Text* 20, (1): 105-36.
- Taussig, Karen-Sue, Rayna Rapp, and Deborah Heath. 2003. Flexible eugenics: Technologies of the self in the age of genetics. In *Genetic nature/culture anthropology and science beyond the two-culture divide*. eds. Alan H. Goodman, Deborah Heath and M. Susan Lindee.. Berkeley: University of California Press.
- Thiele, Les. 2005. Judging hannah arendt: A reply to zerilli. *Political Theory: An International Journal of Political Philosophy* 33, (4): 706-14.
- Thom, Deborah, and Mary Jennings. 1996. Human pedigree and the 'best stock':From eugenics to eugenics. In *The troubled helix: Social and psychological implications of the new human genetics*., eds. Theresa Marteau, Martin Richards. New York, NY, USA: Cambridge University Press.
- Tijmes, Pieter. 1995. The Archimedean point and eccentricity: Hannah Arendt's philosophy of science and technology. . In *Technology and the politics of knowledge*., eds. Andrew Feenberg, Alastair Hannay, Bloomington: Indiana University Press.
- Tribe, Laurence. 1973. Technology assessment and the fourth discontinuity. *Southern California Law Review* 46, (3) (June): 617-650.
- Van Cleve, John V. 2004. *Genetics, disability, and deafness*. Washington, D.C.: Gallaudet University Press.

- Villa, Dana. 2001. Hannah Arendt: Modernity, alienation, and critique. In *Judgment, imagination, and politics: Themes from Kant and Arendt*. eds. Ronald Beiner, Jennifer Nedelsky, 319. Lanham, Md.: Rowman & Littlefield.
- Villa, Dana Richard. 2000. *The Cambridge companion to Hannah Arendt*. Cambridge, U.K.; New York: Cambridge University Press.
- . 1999. *Politics, philosophy, terror: Essays on the thought of Hannah Arendt*. Princeton, N.J.: Princeton University Press.
- . 1996. *Arendt and Heidegger : The fate of the political*. Princeton, NJ: Princeton University Press.
- Wade, Nicholas. 2007. Genome of DNA discoverer is deciphered. *The New York Times*, June 1, 2007, sec A; National Desk.
- . 2007. Pas de deux of sexuality is written in the genes. *The New York Times*, April 10, 2007, sec F; Science Desk.
- Watson, James D. 1999. All for the good. *Time* 153, (1) (01/11): 91.
- Watson, James D., and Andrew Berry. 2003. *DNA: The secret of life*. 1st ed. New York: Alfred A. Knopf.
- Waxman, Henry A. 2003. *Politics and science in the Bush administration*. United States House Of Representatives Committee On Government Reform — Minority Staff Special Investigations Division. Online. <http://oversight.house.gov/documents/20080130103545.pdf> Accessed 1/12/09.
- Weigmann, Katrin. 2004. The code, the text and the language of god. *EMBO Reports* 5, (2) (Feb): 116,116-118.
- Weir, Robert F., Susan C. Lawrence, and Evan Fales, eds. 1994. *Genes and human self-knowledge: Historical and philosophical reflections on modern genetics*.
- Wendell, Susan. 1996. *The rejected body: Feminist philosophical reflections on disability*. New York: Routledge.
- Wilson, James C. 2002. (Re)writing the genetic body-text: Disability, textuality, and the human genome project. *Cultural Critique* (50) (Winter): 23-39.
- Wolf, Susan M. 1996. *Feminism and bioethics: Beyond reproduction*. New York: Oxford University Press.

- Wolf, Susan M., Jeffrey P. Kahn, and John E. Wagner. 2003. Using preimplantation genetic diagnosis to create a stem cell donor: Issues, guidelines & limits. *Journal of Law, Medicine & Ethics* 31, (3): 327.
- Wolin, Richard. 2001. *Heidegger's children : Hannah Arendt, Karl Löwith, Hans Jonas, and Herbert Marcuse*. Princeton, N.J.: Princeton University Press.
- Young, Julian. 2002. *Heidegger's later philosophy*. New York: Cambridge University Press.
- Young-Bruehl, Elisabeth. 1989. *Mind and the body politic*. New York: Routledge.
- . 1982. *Hannah Arendt, for love of the world*. New Haven: Yale University Press.
- Zerilli, Linda. 2005. "We feel our freedom": Imagination and judgment in the thought of Hannah Arendt. *Political Theory: An International Journal of Political Philosophy* 33, (2): 158-88.
- . 2005. Response to Thiele. *Political Theory: An International Journal of Political Philosophy* 33, (4): 715-120.
- . 1995. The Arendtian body. In *Feminist interpretations of Hannah Arendt*. ed. Bonnie Honig. University Park, Pa.: Pennsylvania State University Press.
- Zimmerman, Michael E. 1990. *Heidegger's confrontation with modernity: Technology, politics, and art*. Bloomington, IN: Indiana University Press.