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The Last Man
and
The Banality of Immortality

by

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- NQ

Preface

January 1st, 2011. Somewhere over the Atlantic Ocean.

"The promise we should all believe in" – he sips his wine – "is the promise of a future free from our biological prison." Resplendent in suit and tie, perpetually armed with a mischievous smile displaying his shark-like teeth, my flight neighbor had the air of somebody desperately unwilling to let go of his youth. His receding hairline, however, suggested that his struggle was purely mental.

The plane shudders, embracing turbulence.

He pauses, waiting for a response. Who *is* this guy? And why does he keep talking to me? All I want to do is to get through this flight, and the vein pounding on my left temple certainly isn't helping. I actively subvert the invitation, opting to sip my drink instead. Maybe if I kept my responses to a minimum, he'll get the picture.

But of course, he doesn't.

The man drones on and on, telling me about his work, about his life. A biogerontologist, he tells me that he is currently working on cryonics in a lab somewhere in central Germany. It is his dream, he emphasized, to realize the prospect of reanimation – that is, of reviving a whole human body after it has been frozen for preservation. He assures me that he is not alone; according to him, he stands with a movement, a rag-tag bunch of people with pretty interesting and odd ideas of science and the future.

They share a vision, it seems. They do not approve of the fact that we age, that we feel pain, and most pressingly, that we die. Our biological body is inadequate to them, and they treat it as a hostile thing to be tamed and mastered. They call

themselves “Transhumanists,” and their movement, “Transhumanism” – names that struck me as more than a little peculiar.

When we landed three hours later, he firmly shook my hand by way of saying goodbye. I didn’t think much else of him. Long after he disappeared in the transit hallway, and long after I got on a taxi, I realized that we didn’t even exchange names. To be honest, I was relieved. That man did nothing but unsettle me. Perhaps it’s best just to let this guy and his crazy ideas float away.

But of course, they did not.

There is a meme on the internet called the Baader-Meinhof Phenomenon. It refers to the peculiar occurrence where one happens upon some obscure piece of information - usually an unfamiliar word – and soon afterwards encounters the same piece of information again, often repeatedly. It started slowly, but soon enough, it began to fill spaces in my consciousness. By late January, I saw Transhumanism everywhere. In small, forgettable articles in *Scientific American*. In episodes of a cult TV show. On *The Colbert Report*. Sprayed graffiti on the streets of New York City.

Now, I don’t believe in fate. But I do recognize when small pieces fall together to make up more than the sum of its parts - when a compelling puzzle naturally emerges from the static of over-information. These are the things that are interesting about the world; these are the things that call to you.

This thesis, then, is my small way of answering the call.

Introduction

On (Biotechnological) Revolution

> **Biotechnology** – the use of biology to solve problems and make useful products
> [*Encyclopedia Britannica*]
>
> **bio·tech·nol·o·gy** [bahy-oh-tek-**nol**-*uh*-jee]
> The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals); *also***:** any of various applications of biological science used in such manipulation.
> [*Merriam-Webster Dictionary*]

Do not let the banality of these standard-issue definitions fool you. The word "biotechnology" is typically understood today as primarily denoting stuff like crop enhancements and genetically modified organisms (GMOs). To be sure, the word as a concept certainly includes these things - but you should be aware that it entails far more than that. Within the boundaries of this concept lies also instruments, explorations, and aspirations that contain within themselves potentialities so dramatic, complex, and revolutionary than it transcends the gravity of mere fertilizer.

Consider the following:

1. Imagine a life free from your natural psychological burdens. Where your chronic tendency to worry, obsess, and lose focus can be easily dealt with in a matter of seconds. Where motivation and a rich sense of existential purpose lie at your fingertips. All you have to do is pop a pill.

2. Now imagine a life where not only your mind is beneath your full control, but the entire fabric of your body as well. From the curve of your lips to the pace of your heartbeat, you can be exactly how you want to be.

These are not pretty little pictures painted by science fiction. They might have been at one point in time, but not any more. These are instances of very real pieces of modern biotechnology, and the two hypotheticals described above are ever closer to becoming common, everyday occurrences than you might think. The first is very

much realizable with the growing ubiquity of pharmaceutical products like Adderall and Prozac. Adderall is a brand-name drug meant to counter attention-deficit hyperactivity disorder (ADHD), often consumed to still the mind and focus one's concentration. It is currently well abused by grade hungry students across college campuses nationwide. Prozac, on the other hand, is a widely used (and abused) anti-depressant that can break a person's melancholia with relative ease.[1] While they are still known to produce certain detrimental side effects (the most distressing of which is addiction), given enough time researchers will eventually refine their compositions such that the casual usage described above will no longer be a mere hypothetical.

The second hypothetical is also on the horizon as procedures like plastic surgery and sex reassignment surgery are refined and extended. The former is fairly common these days, while the latter is slowly growing in quantity and societal prominence. A 2007 report presented at the World Professional Association for Transgender Health (WPATH) by Femke Olyslager and Lynn Conway estimates that the number of post-op transgendered women in the US is well above 32,000 and steadily rising.[2] While these researchers do not possess reliable statistics for post-op men, they suspect the number of post-op men ranges around 60% the number of post-op women, additionally noting that the number is on an upward curve.

The human body is a subject often seen by some as created in the untouchable image of God and others as a system far too complex, delicate, and dangerous for us

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[1] The technical name for Adderall is "Dextroamphetamine," while Prozac is known as "Fluoxetine." Currently, both are mostly prescription-only drugs. Info obtained from PubMed Health Website, National Institute of Health. Url: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000885/ (last accessed: March 11, 2012).

[2] Olyslager, Femke and Conway, Lynn, "On the Calculation of the Prevalence of Transsexualism," presented at the WPATH 20th International Symposium, Chicago, Illinois, September 5-8, 2007. Accessible url: http://ai.eecs.umich.edu/people/conway/TS/Prevalence/Reports/Prevalence%20of%20Transsexualism.pdf. (last accessed: March 11, 2012).

to tamper with. But the fact of the matter is that the tampering has already well begun. As I write this, the biotechnology industry in America has been very active for over three decades, with the year 2009 seeing more than $22 billion invested by public biotech companies in research for new drugs, therapies, and products on a variety of fronts.[3] If the controversial Slovenian philosopher Slavoj Žižek is to be believed when he observes that countries like China are pressing on unbound by some of the so-called cultural constraints that have sometimes limited biotechnological research in the U.S., then it is most likely inevitable that the field of biotechnology will soon fully mature with or without the United States' blessing.[4] Like it or not, biotechnology is *the* science of the 21st century, and soon enough, it will come to dominate and define our human lives.

This thesis is a meditation on biotechnology, but biotechnology of a particular kind. Here, I am specifically referring to what is known as *human enhancement biotechnologies*. Apart from emotion-altering pills and reconstructive/transformative surgeries, radical enhancement consists of procedures and concepts such as:

- Genetic Engineering
- Cybernetic Organisms
- The Digital Preservation of the Conscious Mind
- Nanotechnology
- Neural Implants

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[3] This monetary figure is stated in Greenwood, James, "The American Research and Competitiveness Act: BIO supports the Research and Development Tax Credit" in the Biotechnology Industry Organization Website, published March 24th, 2011. Url: http://www.bio.org/node/194. (last accessed: November 24th, 2011). Greenwood is the President and CEO of the Biotechnology Industry Organization.

[4] Žižek, Slavoj, *Living in the End Times* (New York: Verso, 2011), p. 341. Furthermore, Žižek points out that recent increases in regulation and clampdowns by the American government is only going to provoke profit-seeking American businesses to invest in biotech research companies based out of places like Shanghai and Beijing. A specific example that Žižek refers to is the Beijing Genomics Institute (BGI), which has regional branches in America and Europe along with an unsettling tagline: "Decode Life, Explore the Future, Experience Brilliant Life" (see website: http://en.genomics.cn/navigation/index.action). This conceptualization of the industry as an international network of research can be further corroborated with writer Tom Wolfe's observation in his essay "Sorry, but Your Soul Just Died" that research of this nature is also being conducted even in places like Cuba.

- Sentient Artificial Intelligence
- Cryonics
- Technologically-Induced Immortality[5]

In other words, the focus of this thesis lies on scientific developments that blur the line between the human being's position as mortal and his potential as God.[6]

Have no doubt: despite their fantastical natures, human enhancement biotechnologies either do exist or are well on their way into the realm of existence. Take the case of Craig Venter, for example. Venter is a controversial scientist who was instrumental in pushing the Human Genome Project to be completed three years ahead of schedule. In doing so, he helped produce a dramatic leap forward in our collective capacity to figure out what fundamentally makes us tick, a breakthrough that has brought us much closer to a position in which we will be able to exert full control over our bodies.[7] In mid-2010, Venter and his team at the J. Craig Venter Institute reported successes in creating the first living organism with a completely synthetic genome.[8] This success unlocks the possibility of manipulating biological traits, further opening the door for the creation of truly man-made life – not just allowing for the prospect of designing your own baby, but of creating whole new forms of biological life as well. Consider also the "Strategies for Engineered Negligible Senescence" (SENS), an actual research initiative spearheaded by biogerontologist Aubrey de Grey

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[5] See Table 1 in the Appendix for specific information on each of these human enhancement biotechnologies.

[6] A quick note on artificial intelligence: I do understand that this form of technology is typically not considered a piece of "biotechnology" in the commonly accepted definition of the term. However, as we will soon see, it is often grouped together with usual human enhancement techs in the relevant literature. As such, this project will follow in this pattern.

[7] Douthat, Ross, "The God of Small Things," *The Atlantic Magazine* (January/February 2002). Url: http://www.theatlantic.com/magazine/archive/2007/01/the-god-of-small-things/5556/ (last accessed: November 25th, 2011).

[8] Fox, Stuart, "J. Craig Venter Institute creates first synthetic life form," Christian Science Monitor (May 21, 2010). Url: http://www.csmonitor.com/Science/2010/0521/J.-Craig-Venter-Institute-creates-first-synthetic-life-form (last accessed: November 25th, 2011).

who has been making progress in his life-extension research and in his efforts to increase public interest in the idea. His work has generated such a buzz that he has made numerous appearances in various popular news sources including *The New York Times, Fortune Magazine, The Colbert Report*, and *TED*, and has co-founded a research group known as the Methuselah Foundation in Springfield, Virginia, USA.[9] Finally, think also about the possibility of biology-nanotechnology fusion, which is a major research focus for renowned inventor Ray Kurzweil. Kurzweil is well known for his (often startlingly accurate) predictions on the evolutionary patterns of technology, the rise of artificial intelligence, and the ecosystem of the Internet as well as his more flighty biotechnological aspirations like technological immortality.[10] His 2005 book, *The Singularity Is Near: When Humans Transcend Biology*, is a best-selling survey of the current research terrain of this biotechnological frontier and a prediction of its next steps, and his views have been taken so seriously that he has even been called to testify before Congress as part of the Army Science Advisory Board on nanotechnology.[11]

There is an important question that lies in all this talk about biotechnology. The ascendance of human enhancement biotechnology as a very real possibility suggests a propulsion of societies and the world as we know it towards a fundamental moment of historical change. This moment will be known as a *biotechnological revolution*: a point of time somewhere down the line of human societal progression

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[9] Templeton, Tom, "Holding back the years," *The Guardian* (September 15, 2007). Url: http://www.guardian.co.uk/lifeandstyle/2007/sep/16/healthandwellbeing.genetics (last accessed: November 25th, 2011).

[10] Wolf, Gary, "Futurist Ray Kurzweil Pulls Out All the Stops (and Pills) to Live to Witness the Singularity," WIRED Magazine (March 2008). Url: http://www.wired.com/medtech/drugs/magazine/16-04/ff_kurzweil?currentPage=all (last accessed: November 25th, 2011).

[11] See Kurzweil, Ray, *The Singularity is Near: When Humans Transcend Biology* (London: Penguin Books, 2005), and Forbes/Wolfe Publication, "Nanotech Could Give Global Warming a Big Chill," No. 7 (July 2006). Url: http://www.qsinano.com/pdf/ForbesWolfe_NanotechReport_July2006.pdf (last accessed: November 25th, 2011).

where our ability to manipulate our biology will be as ubiquitous as our modern ability to manipulate our social relationships with telecommunications and information technology.[12] A full-blown biotechnological revolution of an absolute magnitude may not be on the cards in the immediate future – or perhaps even within the next two or three decades – but it *is* there in our trajectory. We are barreling towards it, and its shadow looms over us like the peak of a mountain we are scaling.[13]

The question, then, is straightforward: how should we respond to the prospect of this fundamental change, be it in the near or far future? However, what is not so straightforward is not only the answer, but how we conceive of the question as well. At this time, there is a dearth of academic work that asks how society will react to a biotechnological revolution in a compelling, objective, or holistic way.[14] The field of contemporary bioethics, which is probably where this sort of inquiry should initially take place, hardly confronts this question with any substance. Instead, it is dominated by two bodies of debate that speak to more typical, if not more banal, concerns.

The first and more common one involves the question of "biotechnology as means of treatment/therapy." This body of literature is very much *the* dominant discourse; the prototypical technology of concern here is something like LASIK

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[12] Another quick note, this time on my usage of the term *biotechnological revolution*: a biotechnological revolution could theoretically refer to the exploding ubiquity of any kind of biotechnology – crop enhancements, for example – that does not necessarily pertain to human enhancement biotechnologies. After all, the word "biotechnology," being a portmanteau of "biology" and "technology," can technically refer to any sort of technology that has to do with the biology of anything. However, in this thesis, as I am only concerned with human enhancement biotechnology, I will only equate the concept of a biotechnological revolution with a technological revolution that centrally involves human enhancement biotechnologies.

[13] The entire issue of feasibility, probability, and an estimated timeline of a biotechnological revolution will be visited in the opening sections of Chapter 1.

[14] It is important to note, though, that does not mean there was absolutely no work of any kind done on the issue. The President's Council on Bioethics (PCBE), a special commission put together by former President George W. Bush in late 2001, sought to engage in discussions and develop literature on precisely this subject. However, as thesis will later show in Chapter 3 to some depth, the PCBE – as well as the work that they produced - was fundamentally flawed in many ways.

surgery, a common corrective procedure that uses lasers to cure poor eyesight. Discussion here generally revolves around either a notion of the "normal" human body – a continually contested epistemological zone – or it primarily deals with practical policy concerns, bringing up questions about the role of health-care, socially constructions of health, and equitable distribution of funding by the state.

The second body, which is one that is marginally closer to the focus of this thesis, revolves around "biotechnology as a means of enhancement." Discussions here typically involve ethical explorations of technologies that allow human beings to *improve upon* their naturally endowed biological traits. This body similarly interacts with the "what is normal?" line of questioning common in the treatment debate, but its emphasis is more on things like steroids that improve upon the range of human capability commonly thought of as shared by a majority of a population.

In this thesis, I am going to firmly sidestep these two dominant bodies of debate. Instead, I will enter a third, alternate body of discourse – one that lies on the fringes of conventional bioethics but is slowly growing in pertinence and prominence. This is the body within which discussion of human enhancement biotechnology and the prospect of a biotechnological revolution are located, where the question of the "normal" human body is treated secondarily and where society at large is the main unit of analysis. It is *this* body to which I believe everyone should pay attention to.

Discussions in this alternate discourse often play themselves out as a conflict between two opposing sides. The conceptual pivot is usually some notion of sanctity, where one side is concerned about protecting an idea or a set of moral codes (such as a particular notion of humanity or some religious dictum) and where the other seeks to

vigorously deconstruct such ideas and codes. In almost all of these cases, the former side wishes that we would just leave the human body alone while the latter pushes for uninhibited biotechnological discovery and radical empowerment over biology. The tension present here is typically one between nostalgia or a reverence for nature, on the one hand, and a belief in progress, evolution, and change on the other. Some thinkers, like the Australian bioethicist Nicholas Agar (who will feature at points throughout this thesis), have attempted to forge a middle ground between these two sides. However, such midway efforts are unfortunately usually ignored in the conversation.

A loose consortium of thinkers, who have been pejoratively labeled "Bioconservatives" or "Bio-Luddites," embodies the nostalgic perspective skeptical of human enhancement. This consortium is composed of an eclectic mix of characters ranging from the former chairman of the President's Council for Bioethics Leon Kass to the famed environmentalist Bill McKibben to the economist Jeremy Rifkin. Eclectic as well is the wide spectrum of reasons offered by this Bioconservative camp. Kass argues from a subtly religious belief that "the finitude of human life is a blessing for every individual, whether he knows it or not."[15] McKibben fears that biotechnological advances will cause us to lose the meaning in living a human life.[16] Finally, Rifkin argues that human enhancement may lead to the trivializing of human identity – to the point that the human body will cease to be fact, and instead become an artifact.[17]

"Transhumanism," a technoprogressive movement with an unapologetically radical bend, personifies the deconstructivist side of this debate. Composed of a group

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[15] Kass, Leon, "L'Chaim and its Limits: Why not Immortality?" in *First Things* (May 2001). Url: http://www.firstthings.com/issue/2001/05/may (last accessed: March 11, 2012)

[16] McKibben, Bill, *Enough: Staying Human in an Engineered Age* (New York: Times Books, 2003).

[17] Rifkin, Jeremy, *Algeny: A New Word – A New World* (New York: Penguin Classics, 1984).

of scientists, thinkers, philosophers, and adherents, Transhumanism presents itself as the vanguard of revolutionary biotechnological change and is dedicated to the realization of a post-biological world. The following scenario written by Oxford philosopher Nick Bostrom exemplifies their views:

> You have just celebrated your 170th birthday and you feel stronger than ever. Each day is a joy. You have invented entirely new art forms, which exploit new kinds of cognitive capacities and sensibilities you have developed…You are communicating with your contemporaries using a language that has grown out of English over the past century and that has a vocabulary and expressive power that enables you to share and discuss thoughts and feelings that unaugmented humans could not even think or experience… Things are getting better, but already each day is fantastic.[18]

Imagine a life marked by a freedom from the cruel randomness of death and disease, by the experience of uninhibited pleasure once denied to us by our biological composition, and by the realization of a qualitatively better existence – in short, an end to the things that often give our existence both chaos and meaning. This is the vision, the central argument, of Transhumanism. One should be wary of these broad strokes, however. The movement as a whole has some unsettling qualities, like its unapologetic hyper-optimism and its affinity towards esotericism.[19] But this should not take away from the fact that there is much to benefit from Transhumanism with respect to the inquiry that this thesis will be making.

The rivalry between Bioconservatives and Transhumanism is certainly a fascinating one, and a whole thesis could very well be dedicated to a critical comparison of the two. But that is not what I will be doing here. As you will see, I am more interested in a holistic inquiry into the intersection of human enhancement

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[18] Bostrom, Nick, "Why I Want to be a Posthuman When I Grow Up" in *Medical Enhancement and Posthumanity*, eds. Bert Gordjin and Ruth Chadwick (New York: Springer, 2006), p. 112.

[19] This will all be revisited and fully explored in Chapter 1.

biotechnology, government, and society. As such, this thesis will involve discussions of subjects like regulation, conduct, governance, and societal stability. What you will find here will not be a study in theology, traditional philosophy, or some sort of post-modern anthropology. Instead, it will be a somewhat unconventional exercise in political philosophy, where the methodology of political theory will be wielded as a navigational tool to explore the terrain of revolutionary biotechnological change.

This thesis seeks to examine the question, the puzzle, that surfaced earlier: how should we as a society respond to the prospect of a biotechnological revolution? I believe that this is the most interesting and important question, as it most tangibly pertains to the current fabric of our lives. I will attempt to address it by breaking it down into the following multi-part inquiry:

(1) How will society change with a biotechnological revolution? That is to say, how should we conceive of a biotechnological society?

(2) What kinds of social and political difficulties will likely emerge from the birth of this biotechnological society? To put it more specifically, how is a society's ability to exist made more difficult when its citizens differ from each other not just in skin color and language - as it is in the multiculturalist challenge of contemporary societies - but in fundamental biological composition?

(3) And finally, how may we practically deal with the social and political problems occasioned by radical human enhancement biotechnology?

To address these questions, this thesis will turn to the thought and writings of two philosophical sources – one that embodies the technoprogressive side, and one that represents the very best of the Bioconservative side. The former are the Transhumanists themselves, who collectively provide a wealth of raw material from which we can begin to think about a biotechnological society in a systematic way. The latter is the American political philosopher Francis Fukuyama, who is notable

given his antagonistic relationship with biotechnology in general and Transhumanism in particular. A thinker emerging from a rich tradition of political theory, Fukuyama - who achieved fame and notoriety when he declared the "end of history" in the early 1990s - is perhaps the only noteworthy thinker who has seriously addressed the premise of a biotechnological society in recent times. In 2002, Fukuyama published *Our Posthuman Future*, a relatively short book that aggressively critiqued the prospect of a biotechnological revolution. He argues that the widespread changes wrought by biotechnology – particularly human enhancement technology – will undermine the foundations of our capacity to engage in and benefit from liberal democracy. As a result, the progress that we have managed to attain over the past few centuries with liberal democracy will give way to a new "posthuman" future that will be fragile, chaotic, and in all probability very dangerous. He concludes by arguing that we should seek to regulate and contain biotechnological progress, and to be extremely wary of a full-blown biotechnological revolution.

This thesis does not seek to take sides in the opposition between Transhumanism and Fukuyama, nor does it attempt to embody some synthetic middle ground that harmoniously unifies the two. Furthermore, this thesis absolutely does not seek to engage the normative argument of whether we should or should not embrace human enhancement biotechnology. Indeed, it will be the view here that the normative argument is one that will in the long run not matter at all. Instead, it hopes to utilize Transhumanism and Fukuyama *instrumentally* as starting points to build a more pragmatically-skewed argument that transcends the entrenched perspectives of the two. This argument will make the following two overarching assertions:

(1) A biotechnological revolution will result in what I will call the "species-plural society," which presents social and political problems both familiar and novel.

(2) A biotechnological revolution is largely inevitable; therefore, we should switch our focus from regulating it to managing its consequences.

This thesis will be divided into three chapters. Chapter 1 will attempt to visualize the contours of a biotechnological society. In order to do this, I will draw selectively from the ideas, aspirations, and history of the Transhumanist movement. It will begin by exploring the nature of a biotechnological revolution, and then speculate on the nature of its societal ramifications. I will argue that these ramifications culminate in the emergence of something I will call the "species-plural society." I will then examine the general nature of the problems that such a society might bring in its wake, as well as some Transhumanist responses to those problems.

Chapter 2 sees the entrance of Fukuyamaean thought. Here, the chapter's main goal is to provide a robust, holistic, and objective reinterpretation and additional clarification of the problems associated with the birth of the species-plural society described in the first chapter, and will use Fukuyama as a lens to do so. I will begin by exploring Fukuyama's biotechnological skepticism in its full philosophical depth, with a view to critically unpacking his fears in order to isolate what is useful in it and what is not in them. In my assessment, I will be taking *The End of History* as the guiding principle of Fukuyama's argumentation that undergirds *Our Posthuman Future*, and will conclude by going over his prescriptions for what is to be done.

Finally, in Chapter 3, I will begin to prescribe practical ways of confronting a biotechnological reality by critiquing Fukuyama's prescriptions, asserting that they are ultimately doomed to failure. I will balance out this critical stance with an

analysis of what he contributes to our mission of attending to the political and social problems engendered by a biotechnological revolution. At this point, I will bring Transhumanism back into the fray to explore how it can productively interact with Fukuyama, and to see how it can collectively contribute to our overall goal. The thesis will conclude by suggesting some practical steps that are informed by these two philosophical sources but that go beyond them.

Before beginning, I want to make very explicit that the thesis will be focusing specifically on the effects of an upcoming biotechnological revolution on *liberal democracy*. There are a few reasons for this: first, doing so will make it possible to engage directly with Fukuyama's theoretical constructions. Second, it seems reasonable to claim that any exploration of the interaction between a biotechnological revolution and an authoritarian regime (for example) depends intimately on the nature of those who are at the head of said regime. This leaves us with far too many loose, open variables for a productive framing and addressing of the problems wrought by radical enhancement biotechnology. Third, liberal democratic societies simply offer the most interesting space of consequences. To ask how they will sustain something as dramatically sweeping as a biotechnological revolution is equivalent to asking how an ordered system will react to a chaotic actor, and this is just the scenario best suited to unearthing the nature of such a system, its limitations and its potentialities.

Scores of science-fiction works have spent decades making the very same inquiries as this thesis. But as I noted already, this is not so with academia. This is perhaps not altogether surprising, given that academics are held to a different *type* of standard compared to science-fiction writers, filmmakers, and artists, so unfettered

from the restraints of objectivity, evidence, and rational argument. I find the gap between these two worlds quite regrettable. With this thesis, then, I hope to bring academic discussion up to speed by synthesizing a theoretically grounded academic exploration of this inquiry with a dynamism and a capacity for imagination – so present in fiction - that is often lacking in the peer-reviewed medium.

To reemphasize once more: this is not a work about or in bioethics. The concern here is not about issues like health care, the legality of assisted-suicide, or the Hippocratic Oath. Rather, this thesis project is a theoretical and experimental exploration that seeks to investigate the social and political implications of a revolution in biotechnology that will likely have profound import for those who will live through it. Moreover, the thesis seeks to do this by imagining a creative response to the problems this revolution will likely raise.

How should we categorize such a thesis? Perhaps it is best labeled as a futurist work in political theory, but even that is somewhat limiting. Nonetheless, it will have to do.

To begin by way of butchering T.S. Eliot: we begin now not with a bang, but with a mumble.

Chapter 1

Prometheus Overdrive: Transhumanism and the Birth of the Species-Plural Society

July 2005. Oxford, England.

A tall, lanky Scandinavian man is giving a lecture for TED, an international nonprofit dedicated to publicizing big ideas on science and culture. The lecture's title is generic, but provocative: "Humanity's biggest problems aren't what you think they are."[20] Speaking in a quiet, urgent voice, the man mumbles through introductions before opening with what is undoubtedly an arresting observation.

"Death," he punctuates, "is a *big* problem. If you look at the statistics, the odds are not very favorable to us." A pause, perhaps for effect. "So far, most people who have [ever] lived have also died. Roughly 90 percent."

The crowd politely laughs. But their laughter is soft, uneasy, and uncertain. Was he joking? It is hard to say. There was no inflection in his voice, no change in his facial expression that might suggest an ironic undertone. He waits for the tentative laughter to wrap up, before continuing: "Sometimes we don't see a problem because either it's too familiar, or it's too big. I think death is both too familiar and too big for most people to see it as a problem." Humor is no longer contemplated. The crowd realizes now that the man before them is an individual who absolutely believes what he is saying. They will find no irony here, only sincerity.

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[20] TED is an international non-profit that publicizes and proliferates advanced ideas in technology, entertainment, and design through highly accessible and extremely enjoyable bite-sized podcasts. You can find this lecture either on the TED website (http://www.ted.com) or on YouTube. The title of the video file for both websites should be the same: "Nick Bostrom: Humanity's biggest problems aren't what you think they are." In my research, I saw the lecture off a personal camera recording belonging to a Transhumanist who refuses to be named.

We have met this man before. He is Nick Bostrom, futurist and staunch member of the technoprogressive camp. A Swedish philosopher of some considerable renown, he has written extensively on existential risk and something known as the "anthropic principle" – the argument that observations of the universe must be compatible with the conscious life observing it. He operates out of Oxford University, where he teaches philosophy and heads both the Future for Humanity Institute as well as the Program on the Impacts of Future Technology at the James Martin 21st Century school. In 2009, he was honored with the Eugene R. Gannon Award for the Continued Pursuit of Human Advancement, beating out big names in intellectual life like Kwame Anthony Appiah and Michio Kaku.[21]

Bostrom is also a fine example of a high-flying Transhumanist, and his TED talk is a perfect encapsulation of what Transhumanism stands for in essence – a defiance of biological limitations, a deep skepticism of the "natural" and the "sacred," and a sincere belief in the view that the human body is a vessel to be refined, improved, and perfected. A group of scientists, philosophers, and adherents deeply committed to the most radical and charitable interpretation of biotechnology possible, Transhumanism is a movement that not only fashions itself as harbingers of coming biotechnological revolution, but as a force behind its realization as well.

This chapter has one crucial goal: to develop a robust understanding of a biotechnological revolution - how it might come into being and how it might develop – and how liberal democratic society will change beneath its emergence. In order to fulfill it, this chapter will rely heavily on Transhumanism, where it will use the

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[21] Eugene Gannon Award Website, "2009 Winner: Dr. Nick Bostrom," written in 2009. Url: http://www.gannonaward.org/The_Gannon_Award/The_2009_Winner.html (last accessed: January 8th, 2012)

movement's aspirations as defining outer limits to help us visualize how society would look like if all of its members have full autonomy over how they would want to engage with human enhancement biotechnology. However, before it can do this, it has to first give a brief, historically-based objective overview of the movement up to the present day – something that this thesis believes has not been adequately done before. The chapter will then segue into the next chapter by concluding with a list possible problems that may accompany the rise of this new society as well as various responses to them.

Two disclaimers are necessary before we continue. Firstly, it should be maintained that what follows will not include a comprehensive overview of Transhumanism, biotechnology, and their ramifications; it will instead be a selective exploration of all these components. Transhumanism is a highly esoteric perspective, so much so that those without proclivities towards deconstructionism or science fiction may find their views difficult and frustrating. For the sake of clarity and accessibility, then, we will not take them on their own terms, but on ours. Secondly, I would like to firmly assert that I am absolutely agnostic about the prospect of a biotechnological revolution, in that I personally hold neither a positive or negative view of it. As stated earlier, my preferred stance is one of pragmatism; there are untold possibilities to be had, but only if we think maturely about them.

Down the Rabbit Hole: Understanding Biotechnological Revolution through Transhumanism

It is important to note that Transhumanism is not one thing but many. A speculative philosophy and a dominating ideology; a unifying hub and a platform for

debate; a term of empowerment and a postmodern project championing transcendence. Because of its multiplicities, it performs many functions, including but not limited to organization and lobbying as well as research and development. But perhaps its most crucial function is to serve as philosopher and theory-creator – that is, to conceptualize and formalize a vision of what the world after a biotechnological revolution will (and should) look like, to justify it, and ultimately to popularize it.

Transhumanists dream of freedom from our mortal coil. According to *Humanity+*, the movement's organizing arm, Transhumanism

> …affirms the possibility and desirability of fundamentally improving the *human condition* through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, psychological capacities.[22]

Transhumanists believe that it is in our best interests to make "human-ness" a temporary quality as opposed to a permanent state of existence. However, what exactly "being human" means for them remains a point of ambiguity, but they seem to gravitate around the idea of the "human" as referring to the fact that we are born into this world and made to experience the full length of our existence bounded by the defining limitations of our biology.

The movement draws its name and initial inspiration from the evolutionary biologist Julian Huxley.[23] In 1957, after meditating on the normative potential of recognizing evolution as scientific fact, Huxley wrote:

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[22] Emphasis mine. Another way of articulating the Transhumanist vision, which is the one found in the majority of Transhumanist writings, is the phrase "to *transcend* the human condition." See The Transhumanist FAQ (written 2005, presumably by Nick Bostrom): http://web.archive.org/web/20071016194900/http://www.transhumanism.org/index.php/WTA/faq21/81/

[23] Julian Huxley, interestingly enough, is the brother of author Aldous Huxley, whose famed book *Brave New World* consistently finds itself cited as *the* cautionary tale about biotechnology.

> The human species can, if it wishes, transcend itself —not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this new belief. Perhaps *transhumanism* will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature.[24]

In its contemporary form, Transhumanism is an operationalization - and in some ways, a radicalization - of Huxley's idea. As a philosophy, it is best read as a subset or a variation on the postmodern strand of "posthumanism," the terrain of philosophy that deals with the question of what epistemologically and ontologically exists beyond what is delineated as the "human." As cultural theorist Andy Miah illustrates in his work "Posthumanism: A Critical History":

> Posthumanism is indicative of a struggle of perspectives, perhaps analogous to the struggle of humanity's shedding of biological limitations. It exhibits moments of concern about the fragility of biological decision making, which might be more broadly conceived as a postmodern anxiety. Yet, while posthumanism is struggling to be accepted, it is not a distinct perspective. It is the detritus of perspectives.[25]

However, Miah asserts that posthumanism and Transhumanism are not the same despite their overlaps. Unlike Transhumanism, posthumanism does not make specific claims about the ethics of emerging technologies.[26] Furthermore, where posthumanism is largely a *deconstructive* theoretical project, Transhumanism is a *constructive* practical operation. Predominantly interested in the contours of a biotechnological world, Transhumanists are aggressively committed to both understanding it and bringing it about for the benefit of the human species.

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[24] Huxley, Julian, *Religion without Revelation* (London: Chatto & Windus, 1932). Emphasis mine.

[25] Miah, Andy, "Posthumanism: A Critical History" in *Medical Enhancements and Posthumanity* ed. by B. Gordjin and R. Chadwick (New York, NY: Routledge, 2007), p. 23.

[26] Ibid., p. 10.

What kind of technologies interest these people? In a sense, Transhumanism is something like the mythological Hydra, whose defining quality is its many heads (numbering in the thousands) attached to a singular body. Each head represents a particular piece of biotechnology, and all of those heads are attached to the same body that in this context represents Transhumanism, the radical perspective of using biotechnology to radically enhance the human experience. Furthermore, just like the Hydra, the suppression or elimination of one head does not necessarily deter the growth of another. Transhumanism's pool of interested technologies is a wide, inclusive, and exponentially expanding circle that will continue to grow as long as there are novel developments in science and technology.

In its earlier years, Transhumanism appeared to mostly deal with technologies that have a distinctly science-fictional quality to them, such as cybernetic organisms ("cyborgs"), cryonics, so on and so forth. These days, however, the movement intentionally makes explicit in their mission statements a desire to include any and every piece of technology that could possibly contribute to their goal of realizing a biotechnological world. Cloning, life-extension therapies, nanotechnology, mind-enhancing pills, digital consciousness, designer babies, bionic appendages – in short, all shapes and sizes of biotechnological interventions that will likely result from a biotechnological revolution as discussed in the Introduction – these are all technologies that Transhumanists support to help us move beyond the "human."[27]

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[27] However, it is important to note that the movement is not solely bounded to biotechnology. As it is their intention to overcome human limitations in all its shapes and forms, they are also interested in things like mega-scale construction, space exploration, and artificial intelligence. Respectively, this represents a rebellion against our human dependence on Earth, our submission to gravity, and our isolation as being the only "self-aware" being on this planet. But considering the particular subject of this thesis – human enhancement biotechnology – we do not have to pay specific attention to these subsets of Transhumanist concerns. See Anissimov, Michael, "Top 10 Transhumanist Technologies" in *Accelerating Future* blog, published July 12, 2007.

Furthermore, among the fundamental imperatives for Transhumanism is the declaration that many of these technologies are not only feasible, but are already (or almost) here. As Bostrom writes,

> Virtual reality; preimplantation genetic diagnoses; genetic engineering; pharmaceuticals that improve memory, concentration, wakefulness… these technologies are already here or can be expected within the next few decades.[28]

Of course, this sense of grandiose confidence is often the target of criticism from many observers. Transhumanists and other similarly radical technoprogressives are consistently accused of untenable technological optimism, and in the wake of this criticism actual credible biotechnological prospects are also often dragged (quite unfairly, I might add) into skepticism along with them. For example, the sociologist Max Dublin calls these notions of technological teleology "Futurehype," doubting the impending reality of radical technologies like those advocated by Transhumanism.[29] But it is largely not the case that Transhumanism's perspective lacks the nuance to accommodate such skepticism. There is a tangible patina of doubt that lies beneath their self-confidence, as even the likes of life-extension expert Aubrey de Grey and futurist Ray Kurzweil agree that biotechnological research has its debilitating hurdles such as the natural burden of trial-and-error, funding, political acceptance, and bureaucratic iron cages like the process for FDA approval.[30] More importantly, it must be said that critiques from feasibility are generally shortsighted, failing as they

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Url: http://www.acceleratingfuture.com/michael/blog/2007/07/top-10-transhumanist-technologies/ (last accessed: January 9, 2012).

[28] Bostrom, Nick, "A History of Transhumanist Thought" in *Journal of Evolution and Technology*, Vol. 14, No. 1 (April, 2005), p. 12.

[29] Dublin, Max, *Futurehype: The Tyranny of Prophecy* (New York: Plume, 1992).

[30] You can see an exemplification of de Grey's take on this in de Grey, Aubrey, "SENS Foundation FAQ," SENS Foundation website (2010), url: http://www.sens.org/sens-research/faq (last accessed: November 25th, 2011).

do to consider not only the depth of biotechnology, but its sheer breadth as well. The biotechnological horizon is an ever-expanding one, and as a result the field as a whole cannot be easily disputed. We may well critique the feasibility of things like uploading your consciousness into your iPad, but we do not have such ground to be skeptical about designer babies and nanobot-enhanced MIT students, who are slowly arriving at our doorsteps as these words are being written. Therefore, disputes regarding the *possibility* of a biotechnological revolution can hardly be supported.

But there is always the question about its *probability*; that is, whether it *will* happen. This is where Transhumanism spins most of its material. Much of Transhumanism's thought and writing is premised on a perspective that sees technological progress as something accumulative, self-propelling, and fundamentally unstoppable. At the heart of this is a concept coined by one of its main apostles, Ray Kurzweil: this is the concept known as "The Law of Accelerating Returns." It asserts that technological change and advances in knowledge exponentially accelerates across time as supported by an informational positive feedback loop.[31] Think about it this way: the more information we have about Subject X, the more raw material we now have in our disposal to produce more information about Subject X. That is to say, learning more about Subject X increases our ability to know a lot more about Subject X. Translated into the context of actual technological innovation and production, consider that the temporal distance between the invention of the first telephone and the first cellphone was around a century (1870s to 1973), and the temporal distance between the first cellphone and the first iPhone was about 30 years (1973 to 2007).

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[31] It is an expansion of Moore's Law, a computer science concept observing that the number of transistors that can be placed inexpensively on an integrated circuit doubles approximately every two years.

Following on Kurzweil's logic, one can think that as time goes on in a linear fashion we progressively grow more capable in our ability to achieve a biotechnological world.[32] Therefore, given the expanding multiplicities of science's many current trajectories, a biotechnological revolution in some form or another appears to be inevitable. The only question is when, which according to Kurzweil is sooner than we might be predisposed to think.

Transcending humanity, eradicating mortality, biotechnological inevitability, the birth of a posthuman world – these are all admittedly strange notions. One cannot be blamed, then, if one is compelled to ask: how much of this strangeness can we reasonably accept? As with most predictions of bizarre and complex proportions, the answer is that some parts are more credible and believable than others. For example, it is fair enough to say that given a long enough time period anything and everything will probably happen; that being said, this time period may be egregiously lengthy indeed. Still, this does mean that, while the Transhumanists might not exactly be 100% correct in believing that a biotechnological revolution is due within the next two decades, we can still reliably say that we will experience it no matter what – that it is, indeed, inevitable. It may not be within the next twenty years, but it is certainly naïve to think that will not transpire within the next hundred.

But there are some Transhumanist predictions that require larger leaps of faith. For instance: Transhumanism devotes a good bit of its efforts to constructing positive accounts of what will come next beyond the human world. These accounts typically come in the form of wildly imaginative portraits of society's far future. In the

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[32] For more on the Law of Accelerating Returns, see Kurzweil, *The Singularity Is Near*, pp. 35-49.

Introduction, we saw Bostrom's sugar-coated textual illustration of an enhanced being celebrating its 170th birthday. In *Citizen Cyborg* (2004), a book written by bioethicist and Transhumanist James Hughes outlining his vision of a harmonious human-posthuman society, Hughes writes

> Future stem cell and neural regeneration techniques will allow people with spinal cord injuries to walk and control their bodies. Then it will soon be possible to give great apes and dolphins genetic and cybernetic enhancements of their intelligence and language skills to help them reason and communicate.[33]

Transhumanism's imaginative articulations of the future are not merely limited to simple explorations of biotechnological ramifications. In some cases, they even describe changes of theological proportions. Ray Kurzweil, whom we have met a few times before already, is famous for his writings on an eschatological event known as "the Singularity." An appropriation and expansion of an idea first proposed by computer scientist Vernor Vinge in 1993, Kurzweil's vision of the Singularity is an existence-transforming moment in which the rate of accumulating intelligence, propelled by continuously improving technology, hits a point of extreme returns whereby human intelligence is transcended and replaced by something called "superintelligence" – an abstract state in which intelligence itself breeds more intelligence to a point that intelligence itself develops, in a manner of speaking, consciousness. We live our lives through the lens of our intelligence and cognition, in that we articulate thoughts and emotions by drawing from our mental apparatus whose boundaries are defined by our human intelligence. Thus, life beyond the

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[33] Hughes, James, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future* (Cambridge, MA: Westview Press, 2004), p. 225.

Singularity – which is life lived in superintelligence – will be absolutely unlike anything that has ever been experienced before.

You will not be blamed if you find all of this wildly indigestible. In this you certainly are not alone. The widely implausible and overwrought picture of the future painted by many Transhumanist theoretical strands has caused the movement to attain a "cult-like" fringe status since its early years, to a point that it has been rendered a cultural punch line for much of its existence. Its poor initial reputation was further exacerbated by the fact that many of the technologies Transhumanism strongly advocates for are inherently controversial in nature. This particular burden remains true to this day, as we can see in the feverish religious/Christian debates about stem-cell research and the prospect of cloning.

If this is the case, then why should we pay attention to them? It is perfectly understandable to be concerned with biotechnology in general, but why waste our breath on an eccentric subculture like the Transhumanists as well? I would like to argue that this is due to a shift that has been taking place for some time now within the movement. In 1998, Nick Bostrom co-founded the WTA (now known as *Humanity+*) with British philosopher David Pearce. Their intention was to have the ideas of the movement be taken more seriously, and to concretely solidify the movement such that it can take *itself* more seriously as well. Prior to 1998, Transhumanism was less of a movement than a disparate spattering of various intellectual trends that were only very loosely connected to each other. This, together with its fringe status, was in all probability the primary reason its ideas often found great difficulty gaining traction, respect and legitimacy, and its initiatives to attain

funding or engage in public policy greatly undermined. As Bostrom writes, the WTA was brought into existence "to provide a general organizational basis for all transhumanist groups and interests" as well as "to develop a more mature and academically respectable form of transhumanism, freed from the 'cultishness' which, at least in the eyes of some critics, had afflicted some of its earlier convocations."[34] The movement has since embarked on a rigorous public relations campaign and has sought to develop and polish its historical narrative; this can be seen in Bostrom's attempt to develop a historiography for Transhumanism in an effort to increase its credibility. In it, he sought to justify the philosophical tenor of the movement, writing

> Big picture questions, including the ones about our place in the world and the long-term fate of intelligent life *are* part of transhumanism; however, these questions should be addressed in a sober, disinterested way, using critical reason and our best available scientific evidence.[35]

These days, the movement's efforts to promote human enhancement research and development through funding initiatives, engagement with public policy, and rigorous public campaigning are primarily conducted through *Humanity+* and a consortium of affiliated institutions, like the Extropy Institute, the SENS foundation, and the Institute for Ethics and Emerging Technologies.[36]

The years following Bostrom's organizational gambit have reaped considerable dividends. While it has not managed to completely shirk off its fringe status, Transhumanism has obtained significant cultural currency that has won it scores of international adherents as well as many sympathetic scientists and thinkers. In 2004, a magazine article claimed that the WTA boasted having 3000 members –

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[34] Bostrom, "A History of Transhumanist Thought," p. 15.

[35] Ibid., p. 10.

[36] See relevant websites: Extropy Institute at http://www.extropy.org, SENS Foundation at http://www.sens.org, and Institute for Ethics and Emerging Technologies (IEET) at http://ieet.org.

with two-thirds of them being in the USA and chiefly comprised of white male engineers, philosophers, and research scientists.[37] Today, *Humanity+*(the organizational successor of the WTA) claims to have over 6000 members and over two dozen chapters across the globe, with a prominent presence in Scandinavia, Israel, and even Kosovo.[38] Of course, it is difficult to ascertain the accuracy of such claims with neutral official documentation, but when these pronouncements are balanced against the fact that *Humanity+* has consistently been holding well-attended conferences around the world, with its first Asian conference held in Hong Kong in December 2011, we can reasonably infer that regardless of the specific numbers, the group has definitely been experiencing a rise in popularity and interest.[39]

To summarize: the past decade or so saw Transhumanism engaged in a focused enterprise to increase its profile, resulting in a few key developments. First, the movement managed to substantially raise its credibility as historiographer, interpreter, and theorizer of biotechnology. Second, it was able to develop momentum for raising the public image of both its aspirations and the technologies it supports. And finally, it was able to convert itself into an architectural and organizational force that can directly influence the realization of a biotechnological revolution. As such, in its current manifestation, Transhumanism not only serves as a strong inspiration for those with inclinations towards overcoming human limitations, but an actual determinant in the unfolding of biotechnological research, development, and

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[37] Daly, Bernard M., "Transhumanism" in *America: The National Catholic Weekly* online newspaper, published October 25, 2004. Url: http://www.americamagazine.org/content/article.cfm?article_id=3826. (last accessed: January 9, 2012).

[38] Humanity+ website, "Chapters of Humanity+" and "About." Url: http://humanityplus.org/about/ and http://humanityplus.org/get-involved-2/chapters-of-humanity/

[39] Humanity+ Hong Kong website, url: http://hk.humanityplus.org/. (Last accessed: January 9th, 2012).

distribution. Indeed, it might still be flying somewhat underneath the radar even today, as the word "Transhumanism" is not quite yet a household name. But it has gone to great lengths to evolve into a force to be reckoned with, and at its current rate of growth it will likely achieve some definite public prominence in due time.

However, even if you do not buy this assessment of Transhumanism and of our future, consider thinking along the lines of a biotechnological Pascal's Wager: where the Frenchman argued that a rational person should act as though God exists because living one's life accordingly has everything to gain and nothing to lose, it is comparatively preferable that we contemplate the complexity of a future with things like designer babies and pharmacologically-enabled psychological self-determination because even if it (somehow) does not come about, we will still benefit in terms of how we understand ourselves and our societies from the discussions that come out of assuming that it will be successful. This is, indeed, the premise of this thesis.

Having established the concept of an oncoming biotechnological revolution as illustrated by Transhumanism, we will now turn to the subject of a biotechnological society. Admittedly, what follows will be abstract, but that is simply in the nature of this project – an investigation of the potential effects of a hypothetical (but soon to be real) revolution. As such, the next section will borrow Transhumanism's imaginative streak, along with a few specific concepts in its deliberations, to perform this task.

The Species-Plural Society

The most obvious radical opportunity afforded to us by biotechnology is the prospect of "radical human enhancement," first highlighted earlier in the Introduction.

Nicholas Agar provides what is perhaps the most helpful definition to clearly think through the implications of the concept. In *Humanity's End*, Agar writes:

> Radical enhancement involves improving significant human attributes and abilities to levels that greatly exceed what is currently possible for human beings. The radical enhancers who are this book's subjects propose to enhance intellects well beyond that of the genius physicist Albert Einstein, boost athletic prowess to levels that *dramatically exceed* that of Usain Bolt, and extend life spans well beyond the 122 years and 164 days achieved by the French super-centenarian Jeanne Calment.[40]

"Radical human enhancement," then, is a situation in which an individual is biotechnologically reengineered to become far better by extreme degrees than any human beings in the history of our species– such that what comes out at the end of the process is simply cannot be called a human being any longer.[41]

This is the preferred vision espoused by Transhumanism. Radical human enhancement entails true transcendence from our mortal coil, and sees the emergence of the actual posthuman – possibilities it applauds. However, not everybody will necessarily buy into Transhumanist visions of the future, despite what its recent surges in popularity might imply. One might hesitate due to religious or spiritual beliefs, or think that the argumentation behind its belief that human enhancement is a moral obligation is shoddy, or feel that its ruminations are much too far-fetched to be comfortably internalized (a reaction Transhumanists like to label "future shock").[42] However, even if one chooses not to buy into Transhumanism, one can still be reasonably attracted to the allure of the opportunities given by biotechnology joyfully

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[40] Emphasis mine. See Agar, Nicholas, *Humanity's End: Why We Should Radical Enhancement* (Massachusetts: MIT Press, 2010), p. 1.

[41] "So different, in fact," Agar writes, "that they do not deserve to be called human." See Ibid., p. 17.

[42] A term first coined by science fiction novelist and futurist Alvin Toffler in 1970. It is defined as "a certain psychological state of individuals and entire societies that struggles with internalizing the perception of *too much change in too short a period of time*."

anticipated by the movement: freedom from physical and emotional suffering, liberation from death of oneself and one's loved ones, the ability to perform superhuman feats of strength and intelligence, so on and so forth.

The diversity of possible enhancement experiences requires that we be nuanced in our considerations of what may exist beyond the human. In this vein, Agar also provides a constructive typology that enables us to estimate what lies beyond the post-enhancement horizon. He contrasts radical human enhancement with an alternative he calls *moderate enhancement*, which he articulates as enhancement up to the maximum level attainable by any current or past human being.[43] This means that if I were to choose to modestly upgrade myself using a mix of neuropharmacological drugs and reconstructive tissue surgery in order to achieve the strategic and athletic ability of basketball legend Michael Jordan, I would do so only up to Mr. Jordan's level and nothing more. Of course, I could choose something that is *less than moderate enhancement*, where individuals augment themselves to levels slightly below that of great natural geniuses, as well as *less than radical enhancement*, which Agar considers "enhancements beyond human extremes but not greatly so."[44] Note, however, the common trait of all the categories that comes out of Agar's typology: in all these cases, the individual enhancing herself has the clear personal choice of how much she wants to transcend her biology, assuming she wants to in the first place.

Using this typology as a starting point, we can then extrapolate to arrive at the following range of outcomes:

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[43] Ibid., p. 17.

[44] Agar mentions the distinction of "slightly less than radical enhancement" in a footnote attached to his definition of moderate enhancement. The category of "less than moderate enhancement" is my own distinction. Of course, the specificities of categories like these are purposefully vague. Ibid., p. 201.

(1) *Not everybody will want to engage with biotechnological self-enhancement*. Some may choose to stay human due to some personal or spiritual attachment to the idea of natural law and meaning, while others may be bound to religious beliefs.[45]

(2) *Not everybody will want to enhance the same things*. Some might prefer to reengineer their physical capabilities, while others might be keener on the idea of greater mental ability and longer lifespans.

(3) *Not everybody will want to enhance at the same magnitudes*. This can be inferred from the wide spectrum of favorable responses towards enhancement technology (exemplified by the moderate-Agar and the extreme-Bostrom responses).

What we end up with, then, is a post-enhancement state of society where many societal participants are so drastically different from one another on such a variety of biological and interactive levels that the essential commonality necessary for these new entities to cooperatively coexist in harmony may be called into question. The likely consequence of this emergent spectrum of post-enhancement possibilities is a tinderbox situation that this thesis believes to be the fundamental problematic of human enhancement both radical and otherwise. For the sake of clarity, I will call this new form of society the *species-plural society*.

One thing to note before we continue: a particular reasoning went into my decision to give my version of a biotechnological future the name "species-plural society." Many of the current speculations over the societal effects of biotechnology seem to be chiefly (if not solely) concerned about relations between non-enhanced beings (humans) and enhanced beings (posthumans). We can see this, for example, when moderate enhancement advocate Nicholas Agar critiques the Transhumanist

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[45] Interestingly, different religions have different takes on the possibility of biotechnological human enhancement. As is popularly known, the Roman Catholic Church is very antagonistic towards the idea of infringing upon the natural body, even going so far as to take a hostile stance towards contraceptive devices. However, the Mormon strand of Christianity perceives radical human enhancement biotechnological as heavily compatible with their beliefs, going so far as to found the "Mormon Transhumanist Association." Transhumanism is an extremely pro-radical enhancement movement, and will be the center of discussions later on in this thesis. For more information about the Mormon Transhumanist Association, visit their website at: http://transfigurism.org/

James Hughes on the latter's proposed foundation of democratic post-human society. In this case, the conversation between the two focused only on possible antagonisms between those whose being is post-enhanced and those original humans whose being is not. As Agar writes, "Hughes reassurances about relations between posthumans and humans work better as a moral philosophy directing how we should treat nonhuman persons than they do as predictions about how posthumans will treat us."[46] While the human-posthuman relationship is an appropriate central focus (we *are* still human beings, after all), I argue that the conversation should be widened out to also include relations among differently enhanced beings. The name "species-plural society" is meant to capture this diversity in this thesis' discussions.

In a future liberal democratic society where human enhancement opportunities are ubiquitous and the species-plural society is the status quo, the main thing that will differentiate people from one another in relation to opportunities for enhancement is how a person chooses to act upon her or his inner existential longings, and how that person will opt to reconcile those choices with his or her rationale for existence. What emerges from this decision-making rubric will be a situation in which society will have broken into layers composed of original "pure" humans, human beings that are mildly enhanced, and the beings that emerge after undergoing radical enhancement. However, within each of these biotechnologically engaged layers will also exist further differentiating layers of differently enhanced groups.

This is reflected in the diversity that exists within Transhumanism in terms of how it envisions the future. For example, there is a sub-group known as *Immortalism*,

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[46] Agar, *Humanity's End*, p. 179.

a loose denotation of a network of scientists, thinkers, and institutions that seek to cultivate and spread technologies that allow for greater life-extension.[47] Its main goal is to revolutionize the experience of death – relegating it from a natural ending to a voluntary choice that individual themselves make. There is also a philosophical strand known as *Abolitionism*, not to be confused with the historical anti-slavery social movement, which endeavors to gear scientific research towards the elimination of all involuntary forms of suffering in life.[48] Finally, there is also a fairly young strand within Transhumanism that fashions itself as a derivative of *postgenderism* in which it aims to eliminate the gender binary through applied science.[49] There are, to be sure, many more variations, and we can expect their numbers to grow as time goes on.

The species-plural society, then, is a composite of participants that differ from each other both "vertically" (i.e., level of enhancement) and "horizontally" (i.e., type of enhancement). To illustrate: let us say that person A chose to infinitely lengthen her lifespan and increase her cognitive abilities by a thousand-fold, but opted to remain with her gender and her capacity to feel pain. Person A will be qualitatively different from Person B, who instead chose to feel no pain and have no gender, but

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[47] Gorman, James, "High Tech Daydreamers investing in Immortality," *New York Times*, November 1, 2003. For more information, see the SENS website (http://www.sens.org).

[48] The Hedonistic Imperative Website, presumably written by David Pearce. Url: http://www.hedweb.com

[49] Dvorsky, George, and James Hughes, "Postgenderism: Beyond the Gender Binary" in *IEET Monograph Series* (March 2008). Url: http://ieet.org/archive/IEET-03-PostGender.pdf. A note of clarification: postgender Transhumanists often attempt to appropriate the thought of postmodern theorist Donna Haraway of the "Cyborg Manifesto" fame into their meditations. However, despite the apparent overlap between her philosophy and Transhumanist thought, Haraway is known to be skeptical of the often utopian perceptions prevalent in many currents of Transhumanism. As Andy Miah notes of Haraway's 2006 interview for *Theory, Culture and Society*, "Haraway expresses her disdain for the future-talk of such authors as Hans Moravec [a robotics professor at Carnegie Mellon University and self-declared Transhumanist] whose work embodies a notion of posthumanism that is located in the prospect of radical futures rather than socio-cultural reform." See Miah, "Posthumanism: A Critical History," p. 8.

who decided to remain mortal. To go one step further, consider their differences with Person C, who chose immortality by uploading his mind into a machine.

But the situation gets even more complex than this. Transhumanism also compels us to consider another unique addition to the species-plural society: the emergence of new forms of life. Consider in this regard beings, mechanical and otherwise, that possess sentient artificial intelligence of the sort posited by Ray Kurzweil. So, not only will the species-plural society be composed of a wide variety of unenhanced and radically enhanced human beings, it will also include new forms of life that have no direct ontological connection to the human species in any way.

It is important to note that some key assumptions are being made in my conceptualization of the species-plural society so far. First, I assumed that all the participants in the species-plural society, no matter where they are on the wide spectrum and levels of enhancement, are similarly "conscious" such that they recognize what it means to participate in a society. Second, I also implicitly assumed that all post-biotechnological revolution beings will want to participate in a society. And third, we assumed that these beings are able to communicate with one other in society. However, there is no way that we can accurately tell whether these conditions will truly be the case in the species-plural society. To assume that they will is to commit the fallacy of projecting onto a hypothetical scenario a logic inherently indiscernible to us. In fact, there are a number of possible post-biotechnological-revolution beings that may experience society and the world in ways that we currently as human beings cannot articulate, relate to, or even imagine. Consider the post-enhanced condition of a being that is successful in uploading his or her sentience into

a virtual medium.[50] How can we, of flesh and blood, be able to comprehend the experiences, needs, and wants of a being who lives entirely within a computer world? That said, it is probably permissible to assume that some enhanced beings will be more relatable to us than others. For example, if the Transhuman Abolitionists get their way, they will be able to produce human beings that do not feel pain or suffering involuntarily. Such beings will probably have a set of wants and desires very different from a basic human being, but not as drastically different as that of a mind that has been uploaded into a computer.[51] A pain-free person will still need to participate in a society, as freedom from pain and suffering does not necessarily mean freedom from requiring food for sustenance and shelter from the elements or the warmth of companionship. The mind-uploaded being and the pain-free person are two examples of a wide array of possible post-biotechnological-revolution beings, with varying levels of connectivity among the many different beings that may emerge.

All of this prompts me to make some qualifications and stipulations explicit. In exploring the idea of liberal democratic society after a biotechnological revolution, my conceptualization of the species-plural society is meant to include only beings *that are able to recognize the idea of a society, are willing to take part in it with one another,* and *are able to communicate with each other*. Furthermore, as mentioned in the Introduction and has been emphasized throughout this thesis so far, the society being examined here is only that of a liberal capitalist democracy. There are two reasons for this: (1) only in a liberal capitalist democracy will we be able to see a

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[50] In other words, someone who has successfully become a literal "Ghost in the Machine."

[51] Furthermore, the experience of this type of enhanced being overlaps with an existing, medically-explored type of human being: individuals who suffer from "Congenital Insensitivity to Pain with Anhidrosis" (CIPA), which is a rare disease whereby the afflicted is unable to feel physical pain. Such a person, however, is still theoretically susceptible to experiences of emotional duress.

species-plural society in its purest form because, unlike authoritarian societies, the variety of enhanced beings that will emerge is truly based on individual choice; and (2) because assuming a liberal capitalist society will make it possible to engage directly with Francis Fukuyama's philosophical criticism of radical enhancement and its aftermath – the deepest and most telling such criticism available.

In sum, we have speculated that a biotechnologically-rich liberal democratic society will be one that is comprised of a multitude of different biological and quasi-biological beings in terms of *type* and *degree* of enhancement. We have also theorized that there may also be certain post-enhancement or new forms of beings that may not require or desire participation in a society, but we have now excluded them from our discussion. The hypothetical society we have built is one that raises an abundance of philosophical queries: what does it mean to be human? Is it morally right to augment a baby's genetic abilities before the child is conscious? What is consciousness? However, I believe that the most immediate and pressing question of all is the one involving the *moral community*. The term *moral community* has much rife debate over its particularities and nature, but when I employ it, I am specifically referring to the sociological, interpersonal context by which participants of a society acknowledge each other as a moral equal or a moral approximate. In a real-world environment, the concept is understandably amorphous and difficult to pin down; we might, in some abstract way, roughly think of each other as "equal," but to different degrees based on a multitude of factors like race, class, gender, and sexuality. The species-plural society introduces another factor, that of biology, which is comparatively more drastic and salient than these earlier factors. It provokes the question: will we, so

different in our biological composition, be able to live together in harmony? If the answer is no, our capacity to address these relatively benign philosophical nuggets will be swiftly eradicated. Therefore, it should arrest our attention fully.

The Species-Plural Society and its Discontents

Several things are called into question with the birth of the species-plural society, but I believe that at the root of it all is the problem of *identity politics*. Where previously identity politics has been racial politics, gender politics, and religious politics, in the species-plural society it will be a politics that plays out in terms of the fabric of our biology. One of the central concerns in this area is what has been loosely termed the "genetic divide" or, more colloquially, the "Gattaca problem," so named after the 1997 Ethan Hawke film that depicts a dystopian future where human enhancement technology is predominantly consumed by the financially capable. Bill McKibben briefly discusses this divide in his book *Enough: Staying Human in an Engineered Age*, evoking a classic Marxist line of argument that fears a world in which the shape of the species-plural society will be determined by entrenched wealth and not by the choices of free and equal individuals.[52] The key concept at stake here is *equality*; whether natural or perceived, the prevailing idea is always the sense that all participants in a liberal society are in some distinct and profound way equal to one another, and collective life in a liberal democracy carries itself forward with that sense firmly in mind. If the species-plural society is one that is infected with bio-socioeconomic inequality, the propensity to believe in such an ideal will be greatly

[52] McKibben, *Enough*, p. 8.

compromised. Of course, we do not know for sure if this will definitely be the case, but it behooves us to remember that the fight for equality even in our societies comprised entirely of humans still rages on to this day. The ramifications of this fight extending to the problem of biological composition should disturb us fully.

If there is anything one will definitely learn from a study of human history it is the fact that violence and "Othering" are permanent themes throughout the evolution of human civilization.[53] Things like slavery, colonialism, Orientalism, and imperialism, among so many other deplorable cases, mar human history. Thus, when we consider the species-plural society, we should be worried about a potential future where novel tensions will arise among beings who fit into newly formed definitions and social categorizations. It may be the case that the participants of the species-plural society will be so different from one another on such a variety of levels that the essential commonality necessary for these new entities to cooperatively coexist in harmony may be called into question. Some theorists even say that the new differences in genetic identity will likely cause highly devastating warfare. As bioethicist George Annas, legal scholar Lori Andrews, and human rights attorney Rosario Isasi argue:

> The new species, or "posthuman," will likely view the old 'normal' humans as inferior, even savages, and fit for slavery or slaughter. The normal, on the other hand, may see the posthumans as a threat and if they can, may engage in a preemptive strike by killing the posthumans before they themselves are killed or enslaved by them.[54]

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[53] "Othering" can be generally defined – in a simplified manner here - as the process by which societies and groups exclude a particular type of people whom they want to subordinate or whom they do not feel comfortable fitting into their society.

[54] Annas, George, Lori Andrews and Rosario Isasi, "Protecting the Endangered Human: Towards an International Treaty Prohibiting Cloning and Inheritable Alterations" in *American Journal of Law and Medicine* 28 (2002), p. 162.

With such a checkered moral history, an exceedingly horrific outcome may well be on the cards for us all.

It is here that biology as the medium for identity politics begins to diverge from the other forms like race, gender, and religion – it offers a scope and capacity for destruction of unprecedented levels. There is something uniquely different about the violence that may come about from the introduction of these new "Others." Annas, Andrews, and Isasi fear the possibility of violent warfare largely because it is a believable scenario that newly biologically enhanced beings will have the potential to possess new and fundamentally different violent capabilities. The Industrial Revolution and its subsequent augmentations of technical capacities gave humankind the tools and means that enabled them to rip the world open with the unprecedented horrors of the two World Wars. The latter half of the twentieth century saw the global community living beneath the shadows of a nuclear winter. These are examples of moments where a human species stuck with its natural biological capacities upgraded itself in its technical ability to shape the world – and this resulted in periods of untold destruction and existential fear of destruction. The prospect of biotechnologically enabled enhancements will further dramatically increase our technical abilities to commit violence. Biotechnological enhancement renders post-enhancement beings potentially far more catastrophically violent than we can ever imagine. But that is not all: the resulting species may also experience great increases in how they think about the world and how they formulate ways to express and elicit violence. As such, not only may the level of violence be much higher, but it may also be of a fundamentally different and far more absolute nature.

Of course, this may not necessarily be the case – as the Transhumanist James Hughes likes to think, some of the post-enhanced individuals may be turn out to be far more peaceful than the rest of us. However, the fact that any discussion about the psychology and motivations of post-enhancement individuals can be nothing more than skeptical speculation and hopeful ruminations is telling: we will never know truly know how the future will turn out, despite our best efforts at guessing. But in thinking about the merits and demerits of something as radical as biotechnological enhancement, theorists have to consider the possibility that such enhancement might radically undermine the foundations of the society within which they theorize.

One might argue, however, that not all is lost. Human civilization might have had a poor track record with cross-identity relations, but we are seeing work to overcome the history and reality of those poor relations very much in progress. As such, we might reasonably hope that though we may experience initial shocks and hostilities with the emergence of new forms of individuals in our societies, we will still be able to expand our moral circle to eventually include them as well. After all, we seem to have made strides in overcoming other historical problems of Othering. Slavery is now illegal in almost every corner of the globe, we have an international community that believes in human rights (at least in theory), and there is a distinct trend nowadays in which the ideal of tolerance is accepted almost as a categorical imperative. Perhaps even the biotechnological society would eventually learn to respect differences and to overcome the evils of not doing so?

Perhaps it will. However, some attention must be paid to the actual journey that would have to take place from the moment where such a society first experienced

those differences to the moment it managed to overcome it. Our ability to feel moral empathy with populations and people that are not like us is a labor-intensive product that emerges from a long, difficult process of expanding our moral community. The construction of this socially constructed community is undeniably tricky; as the historian Lynn Hunt submits, "empathy requires a leap of faith, of imagining that someone else is like you," and one can expect that it would be difficult to imagine being similar to somebody with a tenaciously augmented ability to live substantially longer than you.[55] Furthermore, it is easy to overestimate our ability to empathize, and it is similarly easy to forget that the Civil Rights movement was only forty years ago, that South African Apartheid was only dismantled about twenty years ago, and that LGBT rights are still being fought out. Much effort and, more importantly, much time is needed to produce a paradigm shift big enough to compel whole societies towards this leap of faith. Moreover, it is the unfortunate reality that the period of time required for this expansion to take place often is marked by violence. It is therefore in our interest to prepare for the worst while hoping for the best. So even if the species-plural world would eventually transcend the sorts of Othering that biotechnological innovation engendered, accompanied with its attendant violence, the path to achieve this state may be so horrific that undertaking it would be a bad idea.

Towards a Species-Plural World: Transhumanist Responses to the Possible Fallout

Transhumanist thinkers have spent a great deal of their time and effort addressing these issues, and they generally do so by framing the question in terms of

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[55] Hunt, Lynn, *Inventing Human Rights* (New York: W.W. Norton & Company, 2007), p. 32.

regulation, distribution, and order. However, like everything else within their body of thought, they are rife with differing opinions. Two cases that represent the polar ends of the Transhumanist perspective can be seen with the strand known as *Extropianism* and a perspective known as *Democratic Transhumanism*. Extropianism is one of the original strands of modern Transhumanism; led by British philosopher Max More, it encapsulates the dominant values of the Transhumanist movement and seeks to pragmatically reconcile the long-term aspirations of the Transhumanist movement with the existing landscape of science and technology.[56] With respect to regulation and rights, this strand originally had a distinctly libertarian, "spontaneous order" approach to biotechnological development and distribution in its earlier years. Now, it has refined its position towards the view of an "open society," which, according to the historiography prepared by Bostrom, "opposes authoritarian social control and promotes decentralization of power and responsibility."[57] This directly contrasts a vision set forward by bioethicist James Hughes. In Hughes' prescription, human enhancement technology and enhanced beings are to be regulated based on a societal framework he calls *democratic transhumanism*. An emulation of the social welfare states prominent in Scandinavian countries, this view sees the state playing a large role: on top of regulating the quality of the technologies, it is to ensure that equal opportunity exists for everybody to access human enhancement apparatus. Both sides, and most other formulations along the spectrum between the two, share the postmodern and liberal outlook on the cultural side of things, but they irreconcilably clash on the role and responsibility of the state.

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[56] For more information, see the Extropian Institute website: http://www.extropy.org.

[57] Bostrom, "A History of Transhumanist Thought," p. 12.

Hughes' democratic transhumanism is a particularly interesting one, as his discussion specifically brings attention to the notion of rights. He begins with the assertion that the concept of citizenship should be shifted away from biologically-based descriptors (such as our "humanity" or "the nature of our species") towards a criterion that connects both human beings and the wide spectrum of post-enhancement beings. For Hughes, this criterion is the idea of "personhood." He writes, "all self-aware beings with desires and plans for the future should be considered citizens with the right to life."[58] The threshold of personhood gives Hughes' citizenship a binary quality; despite differences in degrees of self-awareness, by virtue of possessing a sense of personhood one instantly qualifies for the existing pool of rights. To some extent, this means that rights can be theoretically shared among not only humans and enhanced beings but also animals as well, provided that sufficient empirical evidence of a given animal's self-awareness can be obtained. Democratic transhumanism as a societal configuration emerges from this starting point, and Hughes spends a good majority of the book fleshing out the responsibilities of the state and its participants according to this admitted hyper-optimistic view. [59]

There are, of course, considerable difficulties with Hughes' assertions. To begin with, the definition we use as our barometer for a being's self-awareness is subject to cognitive bias; self-awareness is understood by us as how we experience it as human beings, and this does nothing to disturb the fact that both animals and the wide variety of enhanced beings may possess a self-awareness that is of a

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[58] Ibid., p. 217.

[59] Hughes goes significant lengths to illustrate the nature of the world after a biotechnological revolution, an argumentative move that somewhat validates the tangible prescriptions that he is extremely eager to share with us.

fundamentally different type to which we human beings cannot relate.[60] Another crucial counterargument comes from the moderate enhancement advocate Nicholas Agar, who argues that democratic transhumanism is a good prescription for how humans should react to enhanced beings or posthumans, but it says nothing at all about how they will react to us.[61] The violent vision that was forward by Annas, Andrews, and Isasi, which sees the possible slavery of humans by posthumans, is a very real possibility given Agar's response: just because humans succeed in convincing themselves to extend the social welfare state to enhanced beings is no guarantee that those beings themselves will do so. Hughes does say something about how enhanced beings might react to us, but like most Transhumanists, it comes from a highly optimistic perspective. This can be seen when he appeals to the idea of "uplifting." Simultaneously a description and a prescription of the relationship between humans and posthumans, Hughes believes that posthumans have a moral obligation to help humans access enhancement opportunities should they so wish.[62] Again, this is all speculation - as no posthumans currently exist for us to evaluate this idea, we should read this as nothing more than Hughes' wishful thinking.

That being said, it is crucial to note that the uneasy bits in Hughes' reasoning do not necessarily undermine some of the important assertions that he makes. He is greatly concerned with classic problems that accompany the distribution of human

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[60] Hughes does provide some interesting studies on animal self-awareness, however. A particularly fascinating one involves the study that tests whether or not animals recognize themselves in a mirror. He cites an argument put forward by lawyer Steven Wise who, upon reviewing all the psychological testing that has been done on animals based on self-awareness, ranks them on a continuum with human-like reasoning on one other (denoted as 1.0) and mere "stimulus-response machines" on the other (denoted as 0.0). Wise' ultimately proposes that we treat any being that scores above 0.7 as legal persons. This would include elephants, parrots, dolphins, orangutans and great apes. See ibid., p. 94.

[61] Agar, Nicholas, *Humanity's End*, pp. 172, 180.

[62] Hughes, *Citizen Cyborg*, pp. 225-227.

enhancement biotechnology, like the genetic divide and the element of existential risk involved in the whole prospect. His picture of democratic transhumanism is a means to put into some sort of practical form the prescription that we should take care of one another, ensure equitable distribution of enhancement technologies, and maintain a stable and harmonious species-plural society. To be sure, we do not have to share Transhumanists' reasoning and belief systems in order to relate to their ambitions, worries, and prescriptions. But we do have to be skeptical about their proposed solutions, as they emerge from a vision of how the future will play out that does not necessarily have reliable grounding.

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Whether one believes in Transhumanism or not, it seems undeniable that we are poised for a biotechnological revolution. While it might not necessarily be around the corner, it seems reasonable to think that the dawn of our biological transcendence will inevitably come upon us – barring, of course a complete nuclear holocaust that would bring us back to the Stone Age. In this chapter, I have reflected upon and explored the idea of the species-plural society, or the society that I anticipate will emerge following the widespread use of human enhancement opportunities offered by this revolution. I have also outlined some contemporary conceptualizations of the problems that might come associated with this revolution, as well as some existing responses to them. Most of the responses have come from the Transhumanists, a theorizing force that I find to be somewhat unreliable and overly optimistic.

But whether they are unreliable or overly optimistic is ultimately less important - and less philosophically significant - than whether they rest on deep

misunderstandings of human society in general, and liberal democratic society in particular. It is precisely on this last point where Francis Fukuyama comes in. Playing the realist to Transhumanism's idealist, the American philosopher offers a trenchant corrective to the bromides offered by the Transhumanists, as well as a more systematic, philosophically grounded response to a biotechnological revolution and its dangers – especially its dangers for a liberal polity. Where Transhumanist thinkers typically stack their chips by envisioning possible problems from the position of *after* a biotechnological revolution, Fukuyama constructs his perspective from where we are now – well *before* a biotechnological revolution. Fukuyama seeks to protect all that we have achieved over the full length of human history, a narrative that has culminated in the creation of modern liberal democracy. In his eyes, a biotechnological revolution in the Transhumanist order will underwrite will destroy liberal democratic orders, sending us spiraling into a chaotic void from which we may never return. Therefore, he believes that we should do everything in our power to stop a biotechnological revolution (or if such a thing is not possible, we should at the very least try to manage, regulate, and control it). Prevention, as they say, is much better than cure. But what is Fukuyama's recipe for such prevention, why does he think we need it, and is it of real use? It is to these questions that the thesis will now turn.

Chapter 2

Twilight in the Garden of Eden: The End of History and the Threat of the Species-Plural Society

> Twenty years ago when Francis Fukuyama presented his thesis on the End of History, people were making fun of him: 'Oh, that guy who thinks History is over!' But most of the people today – even most of the Left – *are* Fukuyama-ists!
>
> - Slavoj Zizek[63]

A political economist by trade but a political philosopher by the public imagination, Francis Fukuyama is in many ways (but not all) the embodiment of Transhumanism's antithesis. Where Transhumanists refuse to believe in fundamental "truths," Fukuyama rigorously defends categorical beliefs in an ingrained humanity and human nature. Where Transhumanists think that a biotechnological revolution will provide us with the means to create better existential meaning, Fukuyama perceives it as an "end-times" event signaling the demise of meaning.

In April 2002, Fukuyama published *Our Posthuman Future*, a short book succinctly outlining his critique of biotechnology. While Transhumanism was not called upon by its name explicitly, the general target of the book's hostility closely resembles the movement's hyper-optimistic aspirations. This connection would be openly solidified later in 2004, when the American philosopher very aggressively singled out Transhumanism as the "World's Most Dangerous Idea" in a *Foreign Policy* magazine special.[64] This condemnation was probably the result of a series of interactions between Fukuyama and the movement that took place in the latter half of

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[63] As quoted in an "Riz Khan" Al-Jazeera interview with Zizek broadcasted in November 2010. Time duration: 2:10 – 2.26. Url: http://www.youtube.com/watch?v=YIpiXJW3dYE (last accessed: November 21, 2011)

[64] Fukuyama, Francis, "Transhumanism." *Foreign Policy*, no. 144 (October 2004): 42-43.

2002, which saw Fukuyama engaging in a combative lecture circuit with Transhumanist, biophysicist, and biotech entrepreneur Gregory Stock. The two publicly trade punches on a number of occasions during this period, appearing together on *Charlie Rose*, *Reason* magazine's website, and at the Cato Institute.[65]

Our Posthuman Future drew predictably polarizing responses, with support coming from those already in the skeptical camp and severe criticism from those already in the technoprogressive camp. The book's critics were largely unified in accusing Fukuyama's Bioconservative argumentation of being guilty of using notoriously ambiguous and theoretically fragile concepts as its technical centerpieces, most notably his subjective ideas of "Factor X" and "human nature."[66] Because of this malfeasance, Fukuyama is often brushed aside as a minor source of dissent. Although their critiques were often sharp and on point, such hasty dismissal of Fukuyama is ultimately unjustified: for it is the case that detractors have failed to see the larger picture of which the book is but one small piece.

This is because *Our Posthuman Future* should be understood as a "spin-off" of Fukuyama's famous controversial End of History thesis, which was first articulated in his 1989 essay "The End of History?" and later expanded into the 1992 book *The End of History and the Last Man*. A beautifully robust and complicated thesis, its fundamental assertion is that the victory of Western liberal capitalist democracy over the Soviet Union's socialism can be interpreted as an end point of humankind's sociocultural evolution, as it has proven itself uniquely fitting with human nature.

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[65] Stock, Gregory. "The great debates." Personal Website. 2012. http://www.gregorystock.net/thegreatdebates.asp (accessed: March 12, 2012)

[66] A fine example of a strong *Our Posthuman Future* critique can be found in Bostrom, Nick, "In Defense of Posthuman Dignity" in *Bioethics*, Vol. 19, No. 3 (2005), pp. 202-214.

While *Our Posthuman Future* is meant to be a stand-alone book that can be read and enjoyed as such, it is impossible to grasp the full strength and gravity of its argument without having a strong grasp of the End of History thesis. But even that alone is not enough, because similar grasp should be possessed of the relationship between the two works. Many of Fukuyama's technoprogressive detractors were indeed often able to identify that there exists a connection between *Our Posthuman Future* and *The End of History*, but unfortunately their analyses of that connection were often inadequate.

For example, Nicholas Agar misses all the nuances as he mischaracterizes the relationship between human beings and liberal democracy at the end of history: "Humans who have found liberal democracy are like shoppers for trousers who have found perfectly fitting Levis. They have no need to keep looking."[67] Similarly, James Hughes completely misunderstands Fukuyama and the nature of his philosophical system when he writes

> By the late 1990s, even Fukuyama had become convinced that his thesis was wrong, though not because he had discovered the joys of Swedish social democracy. Fukuyama had instead discovered human enhancement technologies and became convinced that they might inspire new, disastrous projects to improve human nature.[68]

This lack of understanding among Fukuyama's critics is not completely their fault, however. It has a lot to do with Fukuyama's conscious choice to write in a popular style. As Howard Williams, David Sullivan, and Gwynn Matthews observe,

> He writes in a very accessible and fluent manner, with dramatic and appealing chapter titles and frequent use of illustrative examples. This style has many advantages, but it does suffer from one serious drawback… in choosing to write in a more popular style Fukuyama has had to forgo some of his rigor and this has meant that a number of

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[67] Agar, *Humanity's End*, p. 153.

[68] Hughes, James, *Citizen Cyborg*, p. 113.

> central ideas and terms… are expressed more ambiguously than they ought to be.[69]

All of Fukuyama's books and articles are written in reader-friendly prose, and this decision to use simple language to articulate big ideas, then, often lends itself to being an easy target for misinterpretation and condescension. It just happens to be the fact that Fukuyama's critics simply took the easy bait.

We should not make the same mistake they did. Fukuyama's biotechnological skepticism adds a lot to the conversation, but in order for us to benefit from it we have to consider the larger universe of Fukuyama's thought. All of Fukuyama's works are best seen as part of a larger project, one that is still being refined and developed given the fact that Fukuyama himself is still a living thinker.[70] Understanding the depth of Fukuyama's biotechnological skepticism requires an interpretation of his writings as a single interconnected, cohesive unit - and the anchor of this unit is his End of History thesis.

A good way to think about Fukuyama's History is to see it as analogous to a mathematical model; just as sets of equations utilized in physics are not meant to be *literal* representations of the world but rather are meant to be mere abstract interpretations, so too is the End of History thesis. Fukuyama's thesis is a remarkably complex and nuanced philosophical construct, one armed with a highly synthetic structure that masterfully appropriates and manipulates the ideas of great Western thinkers such as Plato, Kant, Hegel, Nietzsche, and Marx into a system that transcends them. To quote Yang Chan-Young's succinct analysis of it in full:

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[69] Ibid., p. 69.

[70] Williams, Howard, David Sullivan, and Gwynn Matthews. *Francis Fukuyama and the End of History* (Cardiff: University of Wales Press, 1997), p. 70.

> Fukuyama subscribes to Hegel's philosophical idealism and Kant's moral philosophy, and argues that the End of History is above all *ideal* and *normative*. At the same time, Fukuyama adopts Marx's anti-metaphysical and materialist methodology into his theory. Taken together, the End of History is a normative idea that is *empirically demonstrable* – although *not conclusively*.[71]

However, despite his inspiration from classic political philosophers, Fukuyama's primary concern, especially in *The End of History*, is "not to create a museum of methodically well-preserved 'mummies' of dead philosophies; it is to selectively distill what is 'alive' in them in the twentieth-century political context."[72]

In that spirit, this chapter seeks to find what is alive in Fukuyama's argumentation, past and present, in the biotechnological context. As such, the analysis here will necessarily be selective, synthetic, and critical - the idea should be not so much to privilege what he thinks, but rather to pick out the useful bits of his argument. These bits will then be used to reinterpret the problems we suspect will rise from the species-plural society in a richer and more holistic manner, and in doing so provide a foundation upon which I can critique Transhumanism and constructively attend to the social and political problems of a biotechnological revolution.

Fukuyama's History: A Grand Project, A Fragile Hope

> "Rather than a thousand shoots blossoming into as many different flowering plants, mankind will come to seem like a long wagon train strung out along a road. Some wagons will be pulling into town, sharply and crisply, while others will be bivouacked back in the desert, or else stuck in ruts in the final pass over the mountains…"
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> - Fukuyama, *The End of History*[73]

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[71] Yang Chan-Young, "Revisiting Fukuyama: The End of History, the Clash of Civilizations, and the Age of Empire" (2010). *Honors Theses – All*. Paper 406. Url: http://wesscholar.wesleyan.edu/etd_hon_theses/406/ (Last accessed: March 12, 2012)

[72] Yang, "Revisiting Fukuyama," pp. 20-21.

[73] Fukuyama, Francis, *The End of History and the Last Man* (New York, NY: Free Press, 2006), p. 338.

According to Fukuyama, History ends with a particularly peculiar parable.

The American philosopher closes *The End of History and the Last Man* by envisioning a wagon train traveling through rough landscape, evoking the memory of the early American experience of Manifest Destiny. He depicts the wagons as boldly plowing through great danger and unforgiving terrain, vigorous in their search of a place to call home. They are on an expedition without a plan; when they began their voyage, they did not have among themselves the slightest idea which direction to pursue or what the final destination was supposed to look like. All they knew was that the places that they had inhabited previously were not viable, such that staying put would have proved too costly for them.

This landscape, with its many difficulties, metaphorically represents History with a Capital H, a concept with a rich history in Western philosophy that is defined in this context as the "coherent and directional transformation of human societies [affecting the whole] of mankind."[74] Readers are meant to equate the wagons' journey through History with our own collective journey through space, time, and culture. The wagons' extended and arduous quest, like the human experience through history, has up to this point been a series of draining and horrific ordeals checkered by violence, sufferings, and great bouts of sheer inhumanity. The wagon train has borne the misfortune of sustaining many losses through the expedition, with some of its ranks losing their way in the ruts over the mountains (at the mercy of its fauna and merciless climate) and others bivouacked back into the desert (where they will suffer starvation and dehydration to the point of insanity: the 20th century alone contained

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[74] Fukuyama, "Reflection on the End of History, Five Years On," in *World History: Ideologies, Structures, and Identities*, ed. Philip Pomper, Richard Elphick, and Richard T. Vann (Malden, Mass: Blackwell Publishers, 1998), p. 204.

two World Wars, the Holocaust, the horrors of the communist world, the tension of the Cold War, and the specter of nuclear annihilation, among so many others.[75]

According to Fukuyama, the wagons finally come to a stop when they enter a space that is so accommodating – an oasis, perhaps? – that it compels them to call an end to their journey. It is here that they find the satisfaction of their true needs and the stability that they have been looking for all their journey. Acknowledging this place as one suitable to consider as their final destination - their End of History - the families alight from the wagons and begin to build a community. They set up gated boundaries, irrigate the soil for agriculture, and begin to construct houses. Soon after, they create markets, churches, and spaces to socialize and to create art. A sphere of bounded freedom emerges, in which the wagon families are not merely free to live, but to flourish. After a long and painful journey, they have finally found a place to call home, and it is a good one. For us readers, this is meant to be the space that corresponds to modern liberal democracy.[76]

This is the narrative arc of human civilization, says Fukuyama. It is a story of strife, struggle, and eventual triumph; in some sense, it is the *bildungsroman* of our unique species. Phrased in this manner, Fukuyama's hostility to anything that threatens the integrity of the End of History is perfectly understandable. Liberal democracy is the redeeming product of an agonizing, often violent evolutionary process that took centuries – perhaps even millennia – to create. This state of affairs is

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[75] And who knows what suffering the peasants living under feudal lords, the Crusades, and the early tribes had to endure?

[76] The actual metaphor itself spans only a few paragraphs – what you find here is an extension and expansion of the ideas nested in it. That being said, I would contend that my representation of the wagon metaphor is perfectly compatible with Fukuyama as an extended representation. The parable can be found in Fukuyama, *The End of History and the Last Man*, pp. 338-339.

not to be taken lightly, and in Fukuyama's mind it is absolutely imperative that we stand up against anything that could possibly threaten what we have fought so hard to achieve. *Our Posthuman Future*, then, marks Fukuyama's identification of biotechnology and the prospect of radical human enhancement as that which comprise this formidable threat. However, before we can understand why Fukuyama receives biotechnology with such hostility, we first have to explore the depths of how liberal democracy is the fulfillment of his History.

Fukuyama declares modern liberal democracy to be the End of History for a very simple reason: it is the configuration of society and government that best - though not completely - satisfies our innermost human longings. The story of History has been the story of humankind's tumultuous but progressive exploration for an adequate manner in which to satisfy these fundamental yearnings.[77] We can conceptually flip this sentence around to attain a more telling axiom of Fukuyamaean thought: *key desires dictate the narrative of History.*[78] In *The End of History*, Fukuyama formulates these desires in two general forms:

(1) A desire for physical well-being along with the technological means to bring it about,
(2) What he calls the *thymos*, or more specifically, a desire for recognition.

The first desire is a fairly straightforward one to comprehend, though it serves Fukuyama as the primary narrative device that frames his wariness of human enhancement biotechnology. Fukuyama's theoretical construct represents the human being as an essentially utilitarian creature, whose existential plight forces him or her

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[77] Fukuyama, "Reflection on the End of History, Five Years On," p. 204.

[78] This flip-around is not merely a semantic alteration. The first form suggests that History is a singular - almost metaphysical – process. The second is clearer and more constructive: it evokes the possibility of a multiplicity of Histories. We will come more to that later on.

to struggle to avoid pain, suffering, and death while in constant pursuit of pleasure, comfort, and security. That human beings sort their priorities in this manner is seen by Fukuyama to be self-evident, and is clearly reflected in his acidic retort to the post-modernist critique that generally positions itself as diametrically opposite the cold, unglamorous utilitarian conceptualization of humankind:

> The postmodernist professor who asserts that there is no coherent direction to history would most likely never contemplate leaving his comfortable surroundings in Paris, New Haven, or Irvine and moving to Somalia; he would not raise his children under the hygienic conditions prevailing in Burundi, nor teach postmodernist philosophy in Tehran.[79]

We can, to large extent, empathize with Fukuyama's conceptualization of one aspect of the human being here, though it behooves us to be cognizant that there are many distinct nuances to the utilitarian calculation made by Fukuyama's human being. We will come to that in depth shortly with the discussion of the *thymos*.

Now, it is important to note that science and technology play a crucial role in the human pursuit of physical well-being. It is largely due to our instrumental human desires driving this pursuit that inventions like the wheel, explosives, printing, various forms of energy, and so on are discovered, produced, and improved upon.[80] But there is an infinite quality to this process – although Fukuyama does not seem to spell this out explicitly, it can perhaps be argued that the human want for physical well-being is something that can never really be truly achieved. Much like a mathematical infinite, each step forward is a step closer to a point that is by definition out of reach. This is

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[79] Fukuyama, Francis, "Reflections – Five Years Later" in *After History?: Francis Fukuyama and His Critics,* edited by Timothy Burns (Lanham, Md: Rowman & Littlefield, 1994), p. 246.

[80] War is also another major factor described by Fukuyama to drive the scientific thrust of discovery. I generally fold this into the category of the human desire for physical well-being (seeing as how being invaded by another country would certainly impair one's ability to be physically well), but the drive towards war in the first place is tied into Fukuyama's second fundamental human desire: *thymos*, or the struggle for recognition.

because the concept of well-being in and of itself is a product of a particular mental conceptualization. There is no set amount of "comfort units" to fill up, or a concrete number of things we need; what constitutes "comfort," I argue, is something relative. I know I am experiencing more well-being because I feel better than I did previously. Put in the context of want-satisfaction, we can see scientific progress as possessing a seemingly endless trajectory of development. To Fukuyama, scientific knowledge is indisputably cumulative and irreversible. The world may be pounded into nuclear winter in some future international conflict, but "even these extreme circumstances would appear unlikely to break the grip of technology over human civilization, and science's ability to replicate itself."[81] Short of the possibility that a given civilization can disappear entirely without leaving any imprint on those that follow, once we discovered how to make penicillin or split the atom, we will always have in our collective memory the means to understand it and do it again.[82]

Fukuyama has another important observation to make about scientific progress: it possesses a distinctly viral quality, such that it is extremely difficult to block it out or hide from it. In Fukuyama's narration, human societies across the globe first had to keep up with developments in science and technology in order to survive militarily (back when imperialism and warfare was perfectly acceptable in the international *zeitgeist*), and then when the international system grew increasingly integrated they had to do so in order to keep up with other countries economically. He

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[81] Fukuyama, *The End of History*, p. 87.

[82] The permanence of scientific knowledge is perhaps further substantiated by the rise of the Internet over the past few decades. As a semi-autonomous infrastructure and hub of information, the growing prominence and power of cyberspace is conducive to a new informational reality in which bodies of data are things that truly exist apart from human beings, things that we *tap into* rather than *possess*. Furthermore, if we accept Ray Kurzweil's Singularity thesis, that information will hit a point in which it is capable of generating more information by itself, then this is absolutely come to be the case.

cites the Japanese Meiji Reforms and the USSR *perestroika* initiatives, among others, as examples to illustrate this.[83] This precisely conveys how science and the quest for greater physical well-being dictates the path of societies throughout historical time. Fukuyama supplements this observation by noting the efforts at freezing scientific progress by some small communities, like the Amish and the Mennonites. Though relatively successful, he argues that such Luddite achievements are far more difficult to replicate in larger, more complex societies.[84]

As important as the economic impact of science and technology is, Fukuyama also points out that the homogenization of the societal arrangements in the countries that adopt them is every bit as important. This began when many societies adopted certain social and political arrangements (like centralized statehood, urbanization, and the existence of economic markets) in order to better facilitate the use of the tools of scientific warfare and economic production, and then gradually infiltrated the sphere of culture and values.

Here we see how economic liberalism – in the specific form of capitalism – plays into the story of material progress. It occupies a unique place in Fukuyama's philosophical construct and has a particular relationship with scientific development. Capitalism, according to Fukuyama, is a form that is "decidedly closer to one in which the market is largely free and unfettered than to anything approaching a managed or welfarist version."[85] Moreover, capitalism is a product of industrialization, which itself is driven by scientific progress. This is further reflected

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[83] Francis Fukuyama, "On the Possibility of Writing a Universal History," in *History and the Idea of Progress*, ed. Arthur M. Melzer, Jerry Weinberger, and M. Richard Zinman (Ithaca: Cornell University Press, 1995).

[84] Ibid., p. 86.

[85] Williams, Sullivan, and Matthews, *Francis Fukuyama and the End of History*, p. 85.

by contemporary developments and innovations in modern capitalism; the recent increase in prominence of the finance sector in today's economies would not have been possible were it not for the information revolution and the rise of the Internet. But a society that embraces capitalism in any form is also a space that arguably promotes scientific development – that is, if we believe Hayekian arguments of spontaneous order – and thus a feedback loop emerges: one between science and capitalism. A society that embraces economic liberalism, then, is extremely fertile ground that heavily supports scientific progress' viral and irreversible nature.

In *The End of History*, Fukuyama frames the tale of scientific progress as generally a good thing – it effectively satisfies one of the main components (that of material well-being) that engenders the stability that defines liberal democracy's claim to being the legitimate End of History. However, this motivating desire for material well-being has brought us to a new and very bold frontier of science, that of our bodies and of our biological lives. With scientific progress' viral quality, it may well be the case that we will soon find biotechnology a ubiquitous, perhaps even definitive, part of our future lives. With its irreversible nature, it appears to us as another apple in the Garden of Eden: once bitten, we can never be the same again.

From this vantage point, Fukuyama's problem with a biotechnological revolution and its promise of radical enhancement begins to take shape. But what is so bad about eating the Apple of Biotechnology? Indeed, what is the big deal with being expelled from the Garden of Humanity, if the world beyond its gates is one that promises untold possibilities? Before we answer this, we have to first understand the more abstract, and arguably the more fundamental, aspect of Fukuyama's End of

History thesis. Our desire for material well-being is only one half of the human story; as much as humankind is driven by its search for comfort and satisfaction, it is also driven by something far more grand: *thymos*, the desire for recognition.

What is the *thymos*, exactly? An Ancient Greek word conventionally used to express a psychological disposition known as "spiritedness," it exists in Fukuyama's vocabulary as a synthesis of two distinct philosophical concepts: Plato's description of a human being's internal emotional makeup and Hegel's conception of the transhistoric human need for recognition. Fukuyama's version of the *thymos*, then, is best interpreted as a human being's fundamental, passionate desire for others to acknowledge his or her existence and worth as a person – a desire that has been the prime motivator of his or her actions since the dawn of humankind. But what does it mean to recognize, or be recognized? Recognition, Fukuyama argues, is not a commodity to be consumed, but rather an abstract "inter-subjective state of mind by which one human being acknowledges the worth or status of another human being, or of that human being's gods, customs, and beliefs."[86] In *The Origins of Political Order*, Fukuyama notes that the desire for recognition has biological origins, and he asserts that animals possess this desire as much as human beings. However, he also adds the significant qualifier that the human version is far more complex due to humanity's more robust cognition. In other words, we are different because the threshold of our satisfaction for being recognized is considerably higher and also

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[86] Fukuyama, Francis. *The Origins of Political Order: From Prehuman Times to the French Revolution* (New York, NY: Farrar, Straus, and Giroux, 2011), p. 41.

because we are able to mentally produce abstractions (like God, rituals, traditions) that we also want recognized as expressions of who we are.[87]

The biological and subsequently socio-psychological nature of the *thymos* implies that it is in large part an activity of *perception*. That is to say, I am satisfactorily recognized only if I *feel* recognized – a sensation that arises from a specific way my mental apparatus is able to correspond to a particular reaction within a social interaction or environment. Thus, it is more accurate to suggest that the way my *thymos* is able to be satisfied is really dependent on the manner in which it is conceptualized in my mind.

Fukuyama connects our biology to the rise of our psychology in the experience of recognition, but he does not give the specifics of this. He does not say whether it is something hardwired in our biology or if it is contingent; that is, dependent on our "consciousness" or some assemblage of neurons that can be successfully conditioned out of existence. These ambiguities, however, do not seem to concern Fukuyama all that much; to him, it appears that what is important is not so much what it *is*, but how it *works*.[88]

And this is how it works: in Fukuyama's philosophical construct, the *thymos* is the element that supersedes the human being's original utilitarian mode with its driving desire for material advancement and comfort. Fukuyama adopts the Hegelian understanding that human beings' need for recognition can compel them to risk their

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[87] Ibid., pp. 41-42.

[88] Some words of clarification: while Fukuyama (and subsequently myself in this section) seems to employ the concepts of the *thymos* and the desire for recognition interchangeably, it is worth noting that the two are not identical concepts. As Yang points out, "*Thymos* is a Platonic, *objective* part of the soul that creates value to *oneself*, while desire for recognition is a Hegelian, *inter-subjective* desire that seeks other people's *agreement* in that self-estimation." However, as Williams, Sullivan, and Matthews observes, "the meanings are [nevertheless] very close and they ultimately refer to the same phenomenon." See Yang, "Revisiting Fukuyama," p. 16, and Williams, Sullivan, and Matthews, *Francis Fukuyama and the End of History*, p. 96.

lives for the sake of prestige, overriding the conventional utilitarian axiom that self-preservation is at the very top of human priorities. There are two manifestations of this struggle for recognition: the *megalothymos*, or the need for recognition as a superior being, and the *isothymos*, the need for recognition as an equal being. In the story laid out in *The End of History and the Last Man*, the *megalothymos* was the modus operandi for humankind throughout the earlier years of History. What happened was that a group of particularly spirited individuals managed to best their fear of death and physically impose their will upon less vehement or less "spirited" souls, creating a relationship of domination between lords and slaves and engendering what Hegel called the slave-master dialectic. However, in this relationship, the recognition received by the braver few (the "masters") by the meeker mass (the "slaves") was in the end unsatisfactory, as the former did not perceive the latter's validation as worthy or sufficient, and the latter did not perceive the former as a source of recognition at all. Because of its failure to satisfy the thymotic needs of either side of the relationship, each side was prompted to seek an alternative. What follows from this state of affairs is a series of major conflicts and path-breaking developments grounded in these dissatisfactions, developments that comprise the general narrative of modern Western history (developments such as the French Revolution, the Revolutions of 1848, the end of monarchy as the status quo, and the birth of liberal democracy as we know it).

This arc culminates in the evolutionary emergence of a societal configuration that satisfies the human need for *thymos* in a manner fuller than any conceivable alternative that has been thought up or that has existed in human history. As has been

mentioned, this configuration is that of liberal democracy. It does so (at least in theory) by promoting a universal experience of mutual recognition, or *isothymos*. How is this recognition achieved? It is incorporated and formalized in the egalitarian principles of the rule of law and in the institutions of popular sovereignty, seen by Fukuyama to be the fundamental attributes of liberalism and democracy respectively.[89] As he writes, "the state that emerges at the end of history is liberal insofar as it recognizes and protects through a system of law man's universal right to freedom, and democratic insofar as it exists only with the consent of the governed."[90]

But there remains a catch: even though we are satisfied on the *isothymotic* front, a primordial part of us still strongly yearns for *megalothymotic* unequal recognition on top of our desire for equal recognition. Rightist critics of Fukuyama have drawn attention to this, citing the possibility that liberal democracy offers nothing more than a temporary respite; in time, the better angels of our nature will eventually be quelled, and our darker selves will once again rise to the surf. This tension between the *megalothymos* and the *isothymos* is acknowledged by Fukuyama, who considers this the Nietzschean problematic of the "Last Man."[91] That being said, he believes that liberal democracy – especially when situated within a complex, modern society – is very accommodating to the human being's need for the two forms of the *thymos*. He describes "outlets" for discharging the desire for unequal recognition, outlets like capitalist entrepreneurship, athletic competitions, so on and

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[89] Both of which are, obviously, constitutive elements of liberal democracy. Yang, "Revisiting Fukuyama," p. 16.

[90] Francis Fukuyama, "The End of History?", *The National Interest* (Summer 1989), p. 5; also quoted in Williams, Sullivan, and Matthews, *Francis Fukuyama and the End of History*, pp. 77-78.

[91] This is known as the "Rightist critique" of the End of History, and it is one that Fukuyama takes seriously, according to Yang. Fukuyama, *The End of History*, p. 314.

so forth.[92] Liberal democracy coupled with capitalism, then, is an arrangement that best caters to and balances out our *thymotic* needs on almost all fronts, engendering an unprecedented stability that qualifies it as the premium form of life that does (and should) lie at the End of History.

Still, the fact that a tension within the liberal democratic system still exists highlights a crucial aspect of Fukuyama's History: it is a *work in progress*. That is to say, Fukuyama's History is not Fate or Destiny. To quote Yang: "hence the ultimate paradox of Fukuyama's thesis: The End of History is not *really* the end of history."[93] It is the End insofar as its participants recognize it as the end - though the existence of History, which is a description of our journey through time and space in search of a way to satisfy our deepest yearnings. In this way, it is both an *empirically provable* thing as well as an *normative idea*. So, that liberal democracy is a dominant concept in our cognitive vocabulary – despite the fact that it still has many kinks to work out – does not at all mean that there is nothing left to be done, or that there is nothing else that lies beyond this achievement. Indeed, there is always something more to do, something else to work on in order to perfect our implementation of liberal democracy. And indeed, it can be derailed.

This is because History is *anti-metaphysical*, as noted earlier in the extended quotation by Yang. That is to say, it is closer to Darwin's evolutionary paradigm than Hegel's journey of the Spirit in the sense that liberal democracy is a product of trial-and-error as opposed to the emergence of a perfect form guaranteed by some sort of transcendental necessity. This necessarily renders it nothing more than a collective

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[92] Ibid., pp. 314, 315.

[93] Yang, "Revisiting Fukuyama," p. 28.

human project, one that can be rerouted, undermined, or even deemed no longer worthy under the right circumstances. This can be clarified with quick return to Fukuyama's wagon parable as analyzed by Fukuyama himself:

> Alexandre Kojève believed that ultimately history itself would vindicate its own rationality. That is, enough wagons would pull into town such that any reasonable person looking at the situation would be forced to agree that there had been only one journey and one destination. It is doubtful that we are at that point now, for despite the recent worldwide liberal revolution, the evidence available to us now concerning the directions of the wagons' wanderings must remain *provisionally inconclusive*. Nor can we in the final analysis know, provided a majority of the wagons eventually reach the same town, whether their occupants, having looked around a bit at their new surroundings, will not find them inadequate and *set their eyes on a new and more distant journey*.[94]

As Yang notes, "Fukuyama's usage of the qualifiers, such as 'provisionally inconclusive' and 'a new and more distant journey,' suggests the possibility of a "posthuman' politics."[95] However, suggesting this as a possibility does not necessarily indicate positive enthusiasm for it. Indeed, the possibility of posthuman politics and the anti-metaphysical nature of History underwrite Fukuyama's skepticism about biotechnology in general and Transhumanism in particular.

And so we return once again to the question: what is so bad about biting the apple of biotechnology? What is the big deal about expulsion from the Garden of Humanity, and life in the Posthuman World beyond its gates? Having familiarized ourselves with the key elements of Fukuyama's vision – the pursuit of well-being and the *thymotic* drive, both satisfied by liberal democratic capitalism – we are now in a position to explore his Bioconservatism in depth. As we will see, Fukuyama thinks

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[94] Francis Fukuyama, "A Reply to My Critics" in *The National Interest*, no. 18 (Winter 1998), p. 28; also quoted in Yang, "Revisiting Fukuyama," p. 35. Italics belong to Yang, not Fukuyama; Also quoted by Williams, Sullivan, and Matthews, *Francis Fukuyama and the End of History*, pp. 105-106.

[95] Ibid., p. 36.

that there are three main problems with a biotechnological revolution and the radical enhancement it promises.

Problem One: Progression into Oblivion

In *Our Posthuman Future*, Fukuyama's mines the ideas of a diverse range of bioconservative sources, from the theological ruminations of bioethicist Leon Kass to the cynicism of British philosopher John Gray and even to the writings of Transhumanists themselves. At one point, Fukuyama worries that attempts to perfect the technology will be unsuccessful and that the consequences will be destructively detrimental.[96] At another, he expresses his concerns about the distributional problems of biotechnology – that only the rich will be able to afford and benefit from human enhancement, and that a new form of genetically-based class warfare will emerge due to the growing divergence of genetic inequality.[97] But these are all textbook concerns – worries about negative biotechnological consequences that are more or less obvious and that have been consistently been brought up in relevant literature. Furthermore, these are *external* threats to the End of History – in these cases, and in most scenarios, the fundamental *logic* of the End of History is not compromised. Our innermost human desires would remain the same, the narrative of our actions across History would still conform to it, and the ability of liberal democracy in theory to best meet those desires would still be intact.

Fukuyama's most novel, illuminating, and fascinating bioconservative contribution comes to light when he cites a problematic that is *internal* to his End of

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[96] Fukuyama, *Our Posthuman Future*, p. 15.
[97] Ibid., p. 9.

History system. Here, History appears more like a sensitive chemical reaction as opposed to a physical system, a reaction that cannot accommodate the sort of changes that biotechnology can bring about. Fukuyama's central worry is that if certain fundamental elements of the liberal democratic system are altered or undermined, the effective and subsequent validity of liberal democracy as the End of History would be eliminated. Once the apple is bitten, the comfort and recognition afforded by the Garden of Humanity would no longer be guaranteed – not because we are expelled from it, but because our internal composition would have so changed that its satisfactions would no longer satisfy us.

As I mentioned earlier, the scientific thrust is a crucial engine of History's unfolding in Fukuyama's construct. Given this, it appears that the thing that drives the system forward is the very thing that might undermine its ability to successfully maintain itself. In the opening pages of *Our Posthuman Future*, Fukuyama cites Aldous Huxley's novel *Brave New World* as a suitable representation of the danger: "the evil is not so obvious because no one is hurt; indeed, this is a world in which everyone gets what they want."[98] The many varied products of biotechnological industries would provide humankind with shortcuts to satisfying their thymos: "instead of striving for recognition by the painful building of a just social order, instead of seeking to overcome the self with all its anxieties and limitations, as every previous generation of human beings has done, we can now just pop a pill!"[99] In the biotechnological world, the need for physical well-being and recognition would easily be met. Given the biological origin of the *thymos*, and given the fact that physical

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[98] Ibid., p. 5.

[99] Fukuyama, Francis, "Second Thoughts: The Last Man in a Bottle" in *The National Interest* (Summer 1999), p. 17.

well-being is a mental phenomenon, all that is needed is an alteration of certain brain chemicals – or perhaps a reconstitution of the human body's anatomical makeup – in order for us to fulfill the desires that drive us. Now we can jump higher, read faster, think quicker, and live longer such that the concept of mere "physical well-being" is almost no longer relevant. On reflection, if one sees the journey of human History as a search for satisfaction and desire a puzzle to be solved, biotechnology is quite obviously the most logical solution. Depending on how you look at it, you can even say that biotechnology and human enhancement is a better End of History than liberal democracy ever was. It works well – all too well. So what is the problem of getting what we want, or what we think we want?

The answer is deceptively simple: the price of getting what we want is getting what we once wanted. What transpires beyond the edge of human history? Where do we go next? What do we do from now on, especially when we got to where we are now merely by popping a pill? The transition from the human reality to a posthuman reality is one that requires a fundamental loss of a certain self-conception and self-identity. A good portion of Fukuyama's fears stem from this, the worry that once we are ejected from human history and into posthuman history, it may take us a very long to find our bearings and our new destination.

Here we see Fukuyama's staunch subscription to a particularly Hegelian idea, that of "self-consciousness" in history.[100] That we are able to recognize ourselves to be on the track of human history (and that our propulsions forward is towards the end of liberal democracy) is in itself a triumphant event. We know now more than ever

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[100] As presented in Hegel's seminal work, *The Phenomenology of the Spirit* (1807).

what drives us, why we did what did and do what we do, and why we seem to be heading in a certain direction. In his meditation on *The End of History*, Peter Fenves pondered aloud on the significance of publicly declaring the End of History when it is something that has already played itself out. "Why not remain speechless," he writes, "when, after all, the end has come?"[101] Fukuyama's answer to this question illuminates his secondary role as a political actor – a role that is tied to this Hegelian understanding. By raising the level of self-consciousness about our behavioral trends, he is encouraging us to take appropriate actions in the direction of bringing about what he perceives to be a positive outcome. But if we were to leave the track of human history behind, we would lose this sense of self-awareness and a clear forward direction that we have struggled so hard for centuries to gain. We would have returned again to the beginning, but we would no longer be the same.

Now, Fukuyama's warnings do not destroy the appeal of human enhancement and the fruitful prospects of a posthuman, biotechnological reality. What they really do is clarify the true nature of the stakes. Yes, an intimate engagement with biotechnology may open up endless new worlds of possibilities. But that comes at the risk of losing the current world of possibilities, with all its sense of direction and purpose. The decision to take the biotechnological leap into a posthuman reality is one that will be easier for some and harder for others. The choice is clear and two-fold: either we experience the current End of History where we enjoy it as human beings, or we begin the search for a biotechnological End of History where we enjoy

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[101] Fenves, Peter, "The Tower of Babel Rebuilt: Some Remarks on the End of History" in *After History?: Francis Fukuyama and His Critics*, eds. Timothy Burns (Lanham, Md.: Rowman & Littlefield, 1994), p. 217.

it as enhanced beings. If we choose to take up the posthuman life, we should recognize that we will be losing our humanity.

Problem Two: Antagonistic Overcrowding

In Chapter 1, I articulated the concept of the "species-plural society," and proceeded to list a number of its possible societal dysfunctions: the potential for inter-species violence, the loss of an equality that is fundamental for effective democracy, the difficulties of "Othering" and expanding the moral circle. Fukuyama's conceptual paintings allow us to add more nuance to these problems. The species-plural society is an interpretation of the post-biotechnological reality that is premised on the idea that different people will have different reactions to biotechnology and therefore will become a host of different post-enhancement beings. But Fukuyama focuses his attention on the most obvious victim of a biotechnological revolution and what lies at heart of his History: human nature.

"Human nature exists," writes Fukuyama in the opening pages of *Our Posthuman Future*; "[it] is a meaningful concept, and has provided a stable continuity to our experience as a species."[102] He argues that it is "what gives us *moral sense*, provides us with the social skills to live in society, and serves as a ground for more sophisticated philosophical discussions of rights, justice, and morality."[103] Fukuyama's treatment of human nature is one of the many ways Fukuyama positions himself directly against postmodernism, and is a key pillar in the construction of his philosophy. However, as central as the concept is in Fukuyama's theoretical

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[102] Fukuyama, *Our Posthuman Future*, p. 7.
[103] Ibid., pp. 101-102. Emphasis mine.

excursions, the exact nature of his understanding of human nature is formidably ambiguous – even after taking into consideration his later works. As political philosopher Victor Gourevitch accurately observes

> The appeal to (human) nature, the attempt to restore (human) nature as *the* standard for political judgment and conduct… is without a doubt the most distinctive, the most ambitious, and the most difficult-to-understand feature of Fukuyama's argument.[104]

To be sure, the concept in and of itself has a remarkably long and conflicted history, perceived as different things by different theorists at different times. The natural sciences have spent decades (perhaps even centuries) searching for this elusive abstraction. As Tom Wolfe notes in his 1996 essay "Sorry, but Your Soul Just Died," recent biologistic thinking places our humanity in our genetic coding; at this writing the search is still well on for a more precise understanding of this coding, with no foreseeable end in sight.[105] This, of course, contrasts with the conventional Judeo-Christian perception that our natures come from our being modeled in the image of the Lord. And on top of all that there is always the postmodern/anti-humanist assertion that human nature does not exist at all and is rather a constructed concept often employed in imperialistic enterprises.

Fukuyama appears to settle on what is largely a secular definition of human nature, one that originates in natural science and bioethics literature. In his mind, it is "the sum of the behavior and characteristics that are typical of the human species, arising from genetic rather than environmental factors."[106] However, he argues that this by no means implies rigid genetic determination: our genetic makeup yields a

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[104] Gourevitch, Victor, "The End of History?" in *After History: Francis Fukuyama and his Critics*, ed. by Timothy Burns (Lanham, Md.: Rowman & Littlefield, 1994), p. 121.

[105] Tom Wolfe, "Sorry, but Your Soul Just Died" in *Forbes ASAP*, December 2, 1996.

[106] Fukuyama, *Our Posthuman Future*, p. 130.

relatively plastic creature that requires it to learn and adapt itself over time; indeed it even allows for human nature itself to change over time.[107] Nevertheless, any alterations to the sum of typical traits would be incremental on very small accumulative margins, such that human nature to Fukuyama therefore appears to be something approximately constant during the course of human history.

Fukuyama asserts that human nature defines our most basic values as well as determines the possible kinds of political regimes we as human beings can construct and experience.[108] This statement might seem a little surprising, given that Fukuyama's End of History was distinctly presented as a narrative that saw our experience through many incarnations of government and society across time as a journey to meet our *fundamental desires* (the implication being that they preexist somehow). However, these two lines of reasoning are not necessarily contradictory. If we combine them, we are able to carve out the following story:

1) Our fundamental desires drive the progression of History.
2) Human Nature gives rise to our fundamental desires.
3) The End of History occurs when our fundamental desires are satisfied.
4) Therefore, human nature determines the evolutionary narrative of History and the shape of the End of History.

In other words, human nature defines our desires and therefore determines the unfolding of History. Put in this manner, we can now contrast Fukuyama's End of History paradigm with the concept of the species-plural society.

If human nature determines our innermost wants and therefore the contours of our journey through history, then we should be able to say the same for whatever "natures" emerge among the many different types of individual post-enhancement

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[107] Ibid.

[108] Ibid., p. 7.

beings that come out of a successful application of transformative biotechnology. Now, the species-plural society is one that is comprised of beings with different natures that therefore have different sets of innermost desires. This will, in turn, give rise to something that might be known as the "Birth of New Histories" that sees the emergence of a multitude of new narratives, with each posthuman species-type group paving its own individual way to satisfy its new wants. Those who chose not to undergo any enhancement will still remain within the original paradigm of History, but it will be in a completely new environment where it has to coexist with the many newly formed groups that are spread out across a host of new tracks: some will be on "post-human history 1," others on "posthuman history 2," and so on.

But out this arises a very pressing threat: in their pursuit of their new Ends, and in the unenhanced humans' efforts to preserve their End of History, conflicts may arise between groups that may ultimately prove fatal. The needs of one group might encroach on the needs of others, and it may well be the case that the conflicts among them can never be reconciled.

A brief return to the parable of the wagon train will help to illustrate this problem. In the species-plural society, the post-enhancement families of the Wagons are no longer essentially the same beings. Since they are no longer looking for the same things, they would get back on the wagons and vacate the town that they had once built in search for an end they commonly shared. But this means that they will embark upon a new expedition without a plan yet again – all they know is that the community that they had been inhabiting is no longer worthy. But having changed in different ways, the different groups of settlers now look for considerably different

things. They no longer travel with the same intentions, and while some choose to travel together most would undoubtedly decide to split up and head their own separate ways. Along the journey, they will inevitably bump into each other – but how will they interact when this happens? Violence, perhaps, or at the very least competition for resources. History, now as a world of Histories, begins once again.[109]

Problem Three: Unattainable Recognition, Incomplete End

Aside from History, human nature, and the *thymos*, Fukuyama invokes another concept that plays a vital role in his philosophical system. This is the element he calls "Factor X." Though it was first introduced in *Our Posthuman Future*, it links up comfortably with the rest of his theory-building enterprises. It is tied intimately to the struggle for recognition as Fukuyama conceives it. In his words:

> What the demand for equality of recognition implies is that when we strip all of a person's contingent and accidental characteristics away, there remains some essential human quality underneath that is worthy of a certain minimal level of respect – call it Factor X. Skin, color, looks, social class and wealth, gender, cultural background, and even one's natural talents are all accidents of birth relegated to the class of nonessential characteristics…. But in the political realm we are required to respect people equally on the basis of their possession of Factor X. [110]

Consider it this way: think about the act of recognition as the very same act of establishing a moral relationship. That is to say, when I recognize you for what you are, I am in my own way empathizing with you on a moral level. According to

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[109] A quick word on the point about religion: Fukuyama very subtly adds that religion also contributes to the formulation of our most basic values, though he does not really explain how this is so. Fukuyama is understood to be fairly secular, perceiving religion anthropologically. As noted in the observation he makes in *The Origins of Political Order*, it is a distinctive trait of human nature that we are capable of producing abstractions, like God, rituals, tradition, and so forth. Thus, we have a set of causal relationships: human nature gives rise to religion, which in turn impacts our moral sense, which in turns impacts our desires and therefore the unfolding of History. Religion is therefore not a variable that lies outside the system that has been illustrated thus far.

[110] Fukuyama, *Our Posthuman Future*, pp. 149-150.

Fukuyama's system, the Factor X in two beings acts like the base construction points where a moral bridge or a bridge of empathy can be built between the two beings. For me to recognize you and thus include you in my moral community, I have to *perceive* you as having this Factor X.

As mentioned earlier, Fukuyama argues in *The Origins of Political Order* that humans *as well as* animals possess the desire for recognition. We can therefore posit that he considers every (or at least most) living beings as having this desire to varying extents. As such, we can suspect that post-enhancement beings may also have this relationship with recognition. But we do not recognize animals in the same way that we recognize other human beings; that is to say, we typically do not see dogs or anteaters as having the Factor X that would allow us to easily build an equal moral relationship with them. Fukuyama's point about Factor X, then, suggests the possibility of a great danger in the species-plural society: what if posthuman beings do not see normal humans as equals? What if Factor X for the latter is not the same as that of the former? Furthermore, what if posthumans do not see other posthumans as equals? Nicholas Agar calls this *species-relativism*, in which "certain experiences and ways of existing properly valued by members of one species may lack value for the member of another species."[111] What transpires from a situation like this might resemble the dark scenario described in Chapter 1 by bioethicist George Annas, legal scholar Lori Andrews, and human rights attorney Rosario Isasi when they argued:

> The new species, or "posthuman," will likely view the old 'normal' humans as inferior, even savages, and fit for slavery or slaughter. The normal, on the other hand, may see the posthumans as a threat and if

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[111] Agar, *Humanity's End*, p. 12.

> they can, may engage in a preemptive strike by killing the posthumans before they themselves are killed or enslaved by them.[112]

This antagonism could also occur between different forms of posthumans. It behooves us not to be so skeptical about such possible violent antagonism, as we have seen it all before - and are currently seeing it in many areas around the globe - with other issues. The enslavement of those who are thought to be slaves "by nature," the non-human status of blacks, the identification of Jews as "vermin" by the Nazis, the alienation of Others in newly multicultural societies that were previously ethnically homogenous, the demonization of Muslims as "evil" and of non-believers as kaffirs by Muslims in return - in all of these cases and countless others, Factor X is being not perceived as a shared thing.

There are two levels of concern with respect to this problem of recognition and Factor X. On the one hand, there is the worry about the construction of an expanded moral community, one where each individual is allowed to pursue his or her own end within an environment of stability and – if possible – harmony. The big danger here is a situation in which the new species groups, following through on their own individual paths to their own End of History, do not respect other groups and engage violently with them. This was suggested in the previous section. But on the other hand, there is a more internal worry: according to Fukuyama's philosophical construct, one of the main components of human nature is the need for recognition. We do not know if the entire range of post-enhancement beings will have a need for recognition, but it reasonable to assume that some will. Even if they do not, those who choose not to be enhanced would still have it. Even if only a few choose not to

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[112] Annas, Andrews, and Isasi, "Protecting the Endangered Human: Towards an International Treaty Prohibiting Cloning and Inheritable Alterations," p. 162.

be enhanced – thus rendering the original humans into a minority group – then we would still have a situation somewhat akin to the multiculturalist challenge of today. Either way, the community as a whole will find itself in a situation in which recognition is not equally and entirely spread out. It may not necessarily be a renewed state of the master-slave configuration, but it is one where a notable part of a population is denied the possibility of satisfying its innermost existential need.

Control the Revolution? Fukuyama's Biotechnological Prescriptions

Prevention is better than cure. This is the mantra that underlines Fukuyama's recommendation for how we are supposed to deal with the surging biotechnology industry and the expanding horizon of human enhancement technology. Of course, he is sufficiently cognizant of biotechnology's potential for good as much as its capacity for destructive consequences. "The real threat of biotechnology," he writes, "is far more subtle, and therefore harder to weigh in any utilitarian calculus."[113] The main practical thrust of *Our Posthuman Future*, then, revolves around his call to develop the necessary political institutions that would allow us to regulate biotechnology before it is too late. As he puts it,

> Countries must regulate the development and use of technology politically, setting up institutions that will discriminate between those technological advances that promote human flourishing, and those that pose a threat to human dignity and well-being. These regulatory institutions must first be empowered to enforce these discriminations on a national level, and must ultimately extend their reach internationally.[114]

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[113] Fukuyama, *Our Posthuman Future*, p. 182.
[114] Ibid.

There are thus two practical components to Fukuyama's prescription: (1) the creation and development of institutions that are capable of differentiating between good and bad uses of biotechnology, and (2) the establishment of executive bodies that can enforce regulatory rules both nationally and internationally. Though both components are structurally and politically demanding, Fukuyama optimistically believes that if we act appropriately now we will be able to properly regulate biotechnology.[115]

How do his recommendations fit with his earlier claim that in liberal democratic capitalism science is a self-enhancing enterprise? When writing about the End of History, Fukuyama portrays science as a powerful and compelling force, one that is cumulative, irreversibly progressive, homogenizing, and viral. However, when calling for biotechnological regulation, Fukuyama puts forward the belief that "the biotechnological march is *not* an unstoppable juggernaut," and that the idea of the inevitability of technological progress is actually a self-fulfilling prophecy.[116]

To construct a case for controlling scientific progress, Fukuyama points towards the recent successes of biotechnology regulation like that of genetically modified organisms (GMOs), citing that they have "stopped dead in its tracks in Europe, with American farmers walking away from transgenic crops that they had only recently embraced."[117] He also refers to the fact that information flow through the Internet – thought conventionally to be unstoppable – can, in fact, be managed, as in the case of China. He also highlights the international community's check and

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[115] This stance stands in stark contrast to the pessimism that underlines the later sections of *The End of History and the Last Man*. As Susan Shell notes, *The End of History* is the most pessimistic of optimistic books, mostly due to the pre-biotechnological fear Fukuyama had about the birth of the Last Man in liberal democracy – a kind of person that threatens to infect the moral fiber of a liberal democratic society.

[116] Fukuyama, *Our Posthuman Future*, p. 188. Italics mine.

[117] Ibid.

balancing of nuclear technology, writing that it has been successful in "slowing down their spread" and keeping them away from potentially violent entities.[118]

Of course, Fukuyama recognizes that what works for one technology may not work for another. Moreover, he also recognizes that "no regulatory regime is ever fully leak-proof, and if one selects a sufficiently long time frame, most technologies end up being developed eventually."[119] And it is in reaction to these facts that he insists biotechnological regulation must be made an urgent matter of social regulation. As he notes: "Every country makes murder a crime and attaches severe penalties to homicide, and yet murders nonetheless occur. The fact that they do has never been a reason for giving up on the law or on attempts to enforce it."[120]

With this, one can begin to see where the perspective of this thesis diverges from that of Fukuyama's. This thesis is concerned about the problem of *identity politics* that it anticipates will follow a biotechnological revolution, a revolution that it perceives to be inevitable and for the most part difficult to contain. Fukuyama is concerned with preserving the End of History as characterized in his system, of which our current structure of morals and way of life – identified by him as our "human nature" - are crystalized and exemplified within. In other words, not only does Fukuyama think that a biotechnological revolution can be prevented or regulated, but the main issue for him is what might be called *moral politics* as opposed to *identity politics*.

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[118] Ibid., p. 190.
[119] Ibid., p. 189.
[120] Ibid.

In my view, a biotechnological revolution is not something that can successfully be regulated over the long haul, and it is certainly not something can be stopped. This should color whatever response we make to this coming revolution. Moreover, the species-plural society that will likely emerge from the radical enhancements made possible by biotechnology will be marked by problems that call into question the very basis for the society claimed by Fukuyama to be the End of History. Such a society will be riven by conflicts among creatures who no longer share a common nature, and who therefore will most likely not possess the basis for an ongoing, shared society. In light of these realities, Fukuyama's prescriptions seem either unrealistic or inadequate. Something more is required to address the problems thrown up by revolutionary biotechnological developments.

But what in detail is the main political problem that a species-plural society will face, and what is the "something more" that is required to address this problem? Answering these questions is what I shall attempt to do in the next chapter.

Chapter 3

Pandora's Wasteland?: The Species-Plural Society and the Moral Community

These days, the phrase "to open a Pandora's Box" is a mere reduction of grammar – an oversimplification of an idea that depicts a particular kind of unfortunate event. It is often used to characterize a situation in which an action or the beginning of a thing instigates the emergence of many new, typically unexpected, problems.[121] Extra emphasis is given to the quality of unpredictability: we do not know exactly what is going to happen, but we do know that whatever it is, it will be very, very bad. Biotechnology as a topical subject has consistently found itself subjected to the pejorative weight of this idiom. For example, a 1985 journal article written by then-US senator Al Gore entitled "The Challenge of Biotechnology" states: "Indeed, not since the discovery of atomic fission have we been presented with such a Pandora's Box of issues."[122] In another instance, a 1997 editorial by biologists Kamaljit S. Bawa, Shaily Manon, and Leah R. Gorman for the journal *Conservation Biology* came with the title "Cloning and Conservation of Biological Diversity: Paradox, Panacea, or Pandora's Box?"[123] Whenever the term is evoked, the fear underlying it is always the same. It asks, what are we truly dealing with here? Will biotechnology unleash untold horrors that we simply cannot conceive?

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[121] This specific definition was lifted off the Free Dictionary website. Url: http://www.thefreedictionary.com/pandora's+box (Last accessed: February 2, 2012).

[122] Gore, Albert, and Steve Owens, "The Challenge of Biotechnology" in *Yale Law and Policy Review,* Vol. 3, No. 2 (Spring, 1985), p. 336.

[123] Bawa, Kamaljit S., Shaily Manon, and Leah R. Gorman, "Cloning and Conservation of Biological Diversity: Paradox, Panacea, or Pandora's Box?" in *Conservation Biology* Vol. 11, No. 4 (August, 1997), pp. 829-830.

However, a certain nuance is lost with this careless use of the phrase. In the actual Greek myth from which it originates, Pandora's Box was said to contain all evil known to man.[124] Along with Pandora (the first woman) herself, the box was a gift given to Epimetheus by Zeus. Epimetheus was the brother of Prometheus, the Titan (a lowly God, despised by the mighty Olympians) who gave fire to all humankind in a bold defiance of Zeus, the supreme ruler of the Gods. In most interpretations of the myth, the giving of Pandora's Box was an act of vengeance by Zeus – an act of retaliation against Prometheus' humanistic dissent. Pandora was an innocent, and her innocence imbued her with a strong curiosity. This curiosity, this desire to *know*, was ultimately the root of all evil; the myth reaches its climax when Pandora finally opens the box – infecting the world with all the evils that held within.

The metaphorical connection between Pandora's Box and biotechnology is not perfect, however. The box of biotechnology does not only contain evil; it contains both good *and* bad things in forms that we both can and cannot anticipate. Fukuyama is well aware of this, and clearly states so in *Our Posthuman Future*. However, he fears that the magnitude of the bad that our biotechnological curiosity will unleash will ultimately overwhelm whatever good we can possibly derive from it, such that we will fall so far from grace we can never find our way back again. Because of this, he implores us to be very careful when opening the box; that is, to only let the constructive out while keeping the destructive in. This selectivity demands two things: first, the ability to identify what is good and what is bad, and second, the ability to firmly control the outward flow of the box's contents.

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[124] In some retellings of the myth, Pandora's Box was in fact actually a jar. For our purposes, however, this little piece of detail is ultimately irrelevant.

Where the first two chapters largely addressed the question "what are the societal and political consequences of a biotechnological revolution?", this final chapter will finally address the question "what should we do about it?" To do so effectively, it will submit its argument in two halves. The first half will begin by arguing that Fukuyama's prescriptions are largely incompatible with who we are as human beings. The most likely outcome is that no matter what safeguards or barriers we put in place, we are bound to experience a biotechnological revolution in all its mixed glory. All is not lost, however. In the second half of this chapter, I will attempt to provide a more appropriate set of prescriptions to deal with rapid biotechnological change. I will do so by returning not just to Fukuyama, but to Transhumanism as well. As we will see, some of their concepts resonate well with Fukuyama's ideas, while others are able to fill in holes that elude him.

Human Error: A Critical Assessment of Fukuyama's Prescriptions

The way we conceive of a solution depends on the way we perceive the problem. Our perceptual construction of that problem, however, intimately depends on our personal value systems – the constellation of morals, beliefs, and understandings of how the world is and should be. To state the painfully obvious, the world around us is a world of differences, whether we like it or not. As you can probably guess, this severely complicates things.

Despite the prevailing rhetoric that sees words like "natural law" pervade the language of rights and justice, a universally shared value system simply does not exist

in any meaningful manner.[125] Take the debates on the biological start of life, for example. Religions tend to differ on this particular fact with notoriously wide-reaching ramifications. Judaism fixes it at about a month after conception, while Islam sets it somewhere between one and three months.[126] For Christianity, it is a rich battleground for theological and political conflict that has yet to see any possible way towards resolution (especially in Christian America). This single detail, which seems so very small to some, has lead to tremendously different forms, understandings, and qualities of life. At this writing, the United States sees itself currently entrenched in a bitter internal duel over the right to abortions, resulting in considerable strife for an untold number of women.

It is somewhat unfashionable in most circles in this day and age to attack other people's beliefs, despite the unsettling consequences those other views might bring. We are made to live in the pretense that regardless of conflicting differences in belief and worldview, we can all somehow productively coexist. But these differences do sometimes evolve into raw, visceral conflicts with devastating consequences. Indeed, some differences are tensions that can never be resolved. My fundamental point here is pretty simple: a moral argument is an argument that often cannot ever be meaningfully won. Such arguments can sometimes be resolved temporarily, but there is no guarantee about its permanence in the uncertain flow of time. As the Transhumanist Gregory Stock observes:

> A philosophical debate among theologians, ethicists, and scientists about the morality of embryo selection and manipulation is unlikely to

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[125] This is best expressed in MacDonald, Margaret, "Natural Rights" in *Theory of Rights,* ed. by Jeremy Waldron (New York, NY: Oxford University Press, 1984), pp. 21-22.

[126] Stock, Gregory, *Redesigning Humans: Our Inevitable Genetic Future* (Boston, MA: Houghton Mifflin Harcourt, 2002), p. 134.

> change many minds. When the words die away, people usually find themselves pretty much where they started, especially if the arguments are abstract.[127]

So long as there is a plurality of opinions and worldviews, there will always be disagreement and deadlock, and there will always be uncertainty. Thus, it is absolutely in our interest to shift the frame of the conversation away from moral terms. But this, of course, is not as easy as it seems. Stock continues:

> We typically find moral and religious compromise more difficult than compromise about technical oversight. Sometimes, in our unwillingness to acknowledge fundamental disagreements over values, we infuse these beliefs into other areas, disguising them.[128]

Moreover, while morally-laced debates on the biotechnological issue rages on in feverish heat, the industries pertaining to human enhancement biotechnology will continue to labor away – bringing us closer and closer to the brink of a biotechnological revolution.

Given this situation in which moral consensus eludes us even as biotechnological progress continues apace, we need not be wary of Fukuyama's considerably problematic attempts in *Our Posthuman Future* to appeal to some sort of morally-transcendent universality. This is the case despite the fact that Fukuyama means to ground his prescriptions in a secularity so as to make them more appealing to a wider audience and thereby to generate more clout to them. He writes, "I believe that it is important to be wary of certain innovations in biotechnology for reasons that have nothing to do with religion."[129] However, the foundation of the argument that he makes is still inherently exclusive to begin with, as the heart of his worldview in *Our*

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[127] Ibid., p. 133.

[128] Ibid., p. 129.

[129] Fukuyama, *Our Posthuman Future*, p. 12.

Posthuman Future lies in a fundamental belief in the existence of human nature – a belief that is far from universally shared. In his introduction, he firmly and clearly brandishes this understanding:

> The aim of this book is to argue that… the most significant threat posed by contemporary biotechnology is the possibility that it will alter human nature and thereby move us into a "posthuman" stage in history. This is important, I will argue, because *human nature exists*, is a meaningful concept, and has provided a stable continuity to our experience as a species.[130]

Beyond Fukuyama, the existence and concept of "human nature" is still very much up for grabs and remains yet another vibrant battleground of theologians, ideologues, philosophers, academics, and the like. Fukuyama does not transcend this conflict in any way, and instead (perhaps inadvertently) goes to lengths to promote it.

However, we should not discredit a particular prescription simply because we can find fault with the moral perspective that undergirds it. Instead, I argue that we should seek to divorce the weight of moral arguments from the practical prescriptions that emerge from them. In other words, we should only disapprove of a particular prescription if it appears impractical and objectively detrimental to the fabric of society at large, and not because we disagree with the reasoning behind their creation. So, while important as a piece of contextualizing information, that Fukuyama's prescriptions are grounded in a perspective that is controversial should not render them irrelevant just on this basis. Instead, we should turn focus on the *feasibility* of Fukuyama's prescriptions, because there is much that we can learn from addressing this aspect of them.

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[130] Ibid., p. 7. Emphasis mine.

Before we continue, I should provide an actual recap of Fukuyama's prescriptions. He calls for:

(1) The creation and development of institutions that are capable of differentiating between good and bad uses of biotechnology, and

(2) The establishment of executive bodies that can enforce regulatory rules both nationally and internationally.

In a sense, these prescriptions have already been implemented (or, at least, steps have already been taken to implement them) some time before Fukuyama published *Our Posthuman Future*. The book was released in April 2002, a few months after the Bush administration convened the President's Council for Bioethics (PCBE) in November 2001. This council was the successor to the Clinton administration's National Bioethics Advisory Commission (NBAC), and where its predecessor focused more on issues concerning scientific experimentation – as Executive Order 12975 states, "as a first priority, NBAC shall direct its attention to consideration of: protection of the rights and welfare of human research subjects; and issues in the management and use of genetic information, including but not limited to, human gene patenting" – the PCBE adopted a form that more conformed with Fukuyama's ideal.[131] Its establishing directive, Executive Order 13237, lists the following two objectives among its many responsibilities:

1. To undertake fundamental inquiry into the human and moral significance of developments in biomedical and behavioral science and technology;

2. To explore specific ethical and policy questions related to these developments.

Furthermore, it states:

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[131] "Presidential Documents: Executive Order 12975 of October 3, 1995." Federal Register: October 5, 1995 (Volume 60, Number 193). Found on Georgetown University website: http://bioethics.georgetown.edu/nbac/about/eo12975.htm (Accessed: March 12, 2012).

> In support of its mission, the Council may study ethical issues connected with specific technological activities, such as embryo and stem cell research, assisted reproduction, cloning, uses of knowledge and techniques derived from human genetics or the neurosciences, and end of life issues. The Council may also study broader ethical and social issues not tied to a specific technology, such as questions regarding the protection of human subjects in research, the appropriate uses of biomedical technologies, the moral implications of biomedical technologies, and the consequences of limiting scientific research.[132]

Fukuyama himself was a member of this council from 2002 to 2005, suggesting that *Our Posthuman Future* can conceivably be read in part as a marketing tactic as much as a philosophical call against skeptical discussion about biotechnology.

The PCBE did not fare very well, however, often suffering from episodes of controversy and discontent, and it was ultimately scrapped in June 2009 by current US president Barack Obama. According to Reid Cherlin, a White House press officer, the Council was disbanded because it was designed by the Bush administration to be a "philosophically leaning advisory group" that favored discussion over developing a shared consensus.[133] Obama would replace the council with an altogether new body, the Presidential Commission for the Study of Bioethical Issues, stating that this incarnation would focus more on "practical policy options" as opposed to "philosophical suggestions."[134]

In a number of ways, the PCBE embodies many of the problems that naturally emerge from Fukuyama's prescription of establishing a body to evaluate biotechnology. Examining this will prove constructive for our purposes here; inspired

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[132] The President's Council on Bioethics website, "Executive Order 13237." Url: http://web.archive.org/web/20051123061302/http://www.bioethics.gov/about/executive.html (last accessed: February 3, 2012).

[133] Wade, Nicholas. "Obama Plans to Replace Bush's Bioethics Panel," *The New York Times*, published June 17, 2009. Url: http://www.nytimes.com/2009/06/18/us/politics/18ethics.html (last accessed: February 3, 2012).

[134] What this actually means is anybody's guess.

by the technical difficulties of the PCBE, I will outline some of the basic fundamental problems with Fukuyama's prescriptions as a whole. In the following subsections, I will argue that there are four main points of concern.

Critique 1: The Boundaries of Our Cognition

Consider, for a moment, what an evaluative committee according to Fukuyama's specifications is supposed to do. It has to speculate on how a specific biotechnology will affect society, and then make a normative judgment on whether it should be allowed to exist or not. The decisions its members are expected to make are absolutely stunning in the reach of its influence, at times bordering on the realm of the existential. Such decisions require mature and focused examinations of the multitude of intersecting systems that make up a living, breathing society.

There is an obvious critique to be made here: what kind of person would be appropriate to make such decisions? That is to say, what kind of intelligence and skills – or combination of intelligences and skills – is most applicable to conduct the required analyses, whatever they may be? Over the course of its existence, the PCBE saw 22 different members going in and out of its ranks. This pool was predominantly comprised of doctors, biomedical researchers, and legal scholars, with the occasional political scientist, theologian, and academic.[135] From here we can ask:

(1) What is the best way for the Council to conduct its discussions?
(2) What are the best methods for the Council to sketch its projections?
(3) Is this the best team to undertake (1) and (2), and thus to staff the Council?

The third concern ultimately grounds the first two, as it is the one that lies at the heart of the problem: who is *able* to effectively evaluate biotechnology's effects?

[135] Refer to Table B in the Appendix for a full list of these individuals and their occupations.

Note the language that Fukuyama uses to conceptualize this evaluative body:

> Countries must regulate the development and use of technology politically, setting up institutions that will discriminate between those technological advances that promote human flourishing, and those that pose a threat to human dignity and well-being.[136]

He employs many contestable terms to anchor this prescription, notably "human flourishing," "human dignity," and "well-being." These concepts are notorious for their ambiguity, as they are subject to cultural appropriations as well as changes (both subtle and overt) across time. Fukuyama goes to great lengths to articulate with some level of precision what these terms entail, dedicating a full chapter each in *Our Posthuman Future* to "human dignity" and "human nature" as well as some exploratory paragraphs on concepts like "well-being" and "flourishing." But the underlying commonality connecting all these analyses is the very plain fact that they are nothing more than *speculative* (again, that word).

Consider Fukuyama's discussion about the "Factor X" concept, an idea so vital to the thrust of *Our Posthuman Future*'s argument. A core section of the book puts forward the view that our human dignity and moral status is related to our complexity, and Fukuyama specifically emphasizes that we cannot quite put our finger on it in exact and specific terms. In other words, what we are is a *gestalt*, and the very nature of things that are *gestalt* lies somewhat in its ineffability. And, Fukuyama says, it is this complexity, this unknown quantity or capacity, that we are to defend with these evaluative committees. He writes,

> … there is no simple answer to the question, What is Factor X? That is, Factor X cannot be reduced to the possession of moral choice, or reason, or language, or sociability, or sentience, or emotions, or

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[136] Fukuyama, *Our Posthuman Future*, p. 182.

> consciousness, or any other quality that has been put forth as a ground for human dignity. It is all these qualities coming together in a human whole that make up Factor X.[137]

The ambiguity of what we are to privilege suggests difficulty coming from the opposite direction. In the very same way that we cannot put our finger on what this Factor X is, how are we supposed to know how a specific piece of biotechnology is going to affect it? To bring it a step further, how are we supposed to figure out its effects on society's large collection of Factor X's in general?

We can get a taste of this problem of consequence-exploration from a contemporary example. Consider the recent spate of political battles over copyright piracy currently taking place in the United States. Since mid-2011, American legislators have been attempting to develop laws that are meant to effectively deal with the illegal duplication of intellectual property over the Internet. These proposed laws have emerged in the form of the Stop Online Piracy Act (SOPA), first introduced on October 26, 2011, and the Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act (PIPA), first introduced on May 12, 2011.[138] However, much public analysis has suggested that these bills are catastrophically flawed. As *Forbes* magazine journalist Derek Broes writes, "If passed, SOPA and/or PIPA will give the Justice Department the ability to shut down almost any blog or website at will [and] it will also do nothing to stop those that

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[137] Ibid., p. 171

[138] The Library of Congress website, "Bill Summary & Status: H.R. 3261" url: http://thomas.loc.gov/cgi-bin/bdquery/z?d112:h.r.3261 (last accessed: February 5, 2012) and "Bill Summary & Status: S.968" url: http://thomas.loc.gov/cgi-bin/bdquery/z?d112:s.968 (last accessed February 5, 2012).

pirate movies or music."[139] It is greatly feared that the consequences of this unchecked governmental power towards cyberspace could significantly disrupt and debilitate the complex and intricate inner-ecosystem of the Internet. While some in the anti-SOPA/PIPA camp have used moral grounds to assert that the bills will undermine Internet freedom, others – like a coalition of 108 law professors from 31 American states – argue that these laws would "break the Internet" due to its debilitating effects on its infrastructure that are yet to be completely and properly understood.[140] Further evidence of this fear of cyberspace destruction can be seen in legislator Rep. Jason Chaffetz's (R-Utah) remarks on December 15, 2011:

> I was trying to think of a way to try to describe my concerns with this bill [SOPA], but basically we are going to do surgery on the Internet, and we haven't had a doctor in the room tell us how we [are] going to change these organs. We are basically going to reconfigure the Internet and how it is going to work without bringing in the nerds, without bringing in the doctors.

Whether or not these fears are valid is not the concern here. Rather, the question that is relevant here is: who are Rep. Chaffetz's "nerds"? He is clearly referring to communications and computer experts, people who are well versed in the internal universe of cyberspace. But are they the appropriate people to make a judgment not just on how these laws would affect the Internet, but also on how it would affect the multitude of subtle, underlying, and complex processes that comprise idea innovation, content creation, and the social effects of cyberspace networking?

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[139] Broes, Derek, "Why Should You Fear SOPA and PIPA?" in *Forbes* Online Website, published January 20, 2012. Url: http://www.forbes.com/sites/derekbroes/2012/01/20/why-should-you-fear-sopa-and-pipa/ (last accessed: February 5, 2012).

[140] Carter, Zach, and Ryan Grim, "SOPA Blackout Aims to Block Internet Censorship Bill" in *The Huffington Post*, published January 18, 2012. Url: http://www.huffingtonpost.com/2012/01/18/sopa-blackout-internet-censorship_n_1211905.html (last accessed: February 5, 2012) and "Professors' Letter in Opposition to 'Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act of 2011," published July 5, 2011. Url: http://blogs.law.stanford.edu/newsfeed/files/2011/07/PROTECT-IP-letter-final.pdf (last accessed: February 5, 2012).

Of course, the SOPA/PIPA situation and the issue of biotechnology have many fundamental differences – for example, SOPA/PIPA is an instance of a threat approaching the Internet from without *after* it has achieved ubiquity since the late '90s, while the task of Fukuyama's idealized PCBE with biotechnology is to approach it *before* a revolution in order to prevent its anticipated negative effects. But the key lesson in the SOPA/PIPA episode is particularly pertinent to biotechnology: who are the "nerds" that we need, the "doctors" that are supposed to inoculate us?

There are just so many questions like these that we have to answer in earnest in order for us to be effective in any way. It behooves us to be brutally realistic in evaluating whether the abilities of even our best, brightest, and most benevolent will allow comprehensively good decisions to be made. I believe that human beings – so limited in our biological coil – are cognitively and intellectually bound far beneath the capabilities to provide truly workable solutions. Theoretically speaking, the premise of the PCBE's activities is to develop some sort of foundation for philosophical guidance that is supposed to overview a wide range of specific, particularized actions. But the disparity between abstract principles and the minutiae of each specific biotechnological tool and its ramifications suggest that the efforts of regulating biotechnology will always be in vain. This is best articulated by economist Friedrich Hayek in his speech, "The Pretense of Knowledge." He asserts,

> If man is not to do more harm than good in his efforts to improve the social order, he will have to learn that in this, as in all other fields where essential complexity of an organized kind prevails, he cannot acquire the full knowledge which would make mastery of the events possible. [141]

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[141] von Hayek, Friedrich, "The Pretense of Knowledge" in *The American Economic Review* Vol. 79, No. 6 (Dec 1989), p. 7.

On what measure do we evaluate the "added value" or "added cost" of a certain biotechnology? How can we estimate the precise nature of the cause and effect of a particular biotechnology? Furthermore, how do ascertain the quality and degree of the effects? Do we examine a specific target to gauge consequences, or do we examine a constellation of targets? The lines of questioning are infinitesimally complex, and the process of figuring things out requires a significant amount of time for trial and error.

Given that the issue of a biotechnological revolution is time sensitive, it is highly unlikely that we can be sufficiently intelligent or prescient enough to effectively anticipate the full effects of specific biotechnologies before it actually hits us. Questions of appropriate metrics, intricately complex layers of morality and practicality, and so on come into play, and are extremely difficult to deal with. To be clear: I am *not* implying that effective evaluation is impossible. I am asserting simply that such a thing is typically lies beyond our boundaries of intelligence and cognition. Furthermore, I am not saying that we should not try – I am merely suggesting that we will fail. There is a big difference between the two, and we have to plan for the worst.

Critique 2: Our Moral Failures

Rarely are we moral saints. Can we not agree that the very notion of giving so much gravitational responsibility to a small number of people – who are subject to every temptation and aberration that any other human being has in his or her lifetime – compels us to shudder at least a little bit? The efficacy of Fukuyama's evaluative body and the benefits it is meant to bring to society are intimately dependent on its ability to be objective, rational, and committed to the interest of the people as a whole and not the few.

The eminent political scientist Samuel P. Huntington once made a valuable observation about a political phenomenon known as *regulatory capture*. He writes,

> The independence of a regulatory commission is based upon the premise that this independence will aid it in being objective and impartial. *When such a commission loses its objectivity and impartiality by becoming dependent upon the support of a single narrow interest group*, obviously the rationale for maintaining its independence has ceased to exist.[142]

The legal scholar William Novak deepens this point when he makes a meta-observation about capture theory, stating that "capture theory was meant to demonstrate the imperfections in government behavior that called into question the general government regulatory impulse as a whole."[143] Our modern liberal democratic societies have not experienced much success in being "capture-free" – *especially* with emerging technologies. Take nuclear energy, for example, a subject that many scholars and experts cite as the textbook example of regulatory capture.[144] A 2011 report prepared by the Brookings Institution shows that the United States' Nuclear Regulatory Commission, an independent government agency that is meant to overview nuclear safety and security, gets approximately 90 percent of its funding from industry fees, and the report further remarks that this "potentially compromises its independence."[145] It further observes:

> One report suggests that the NRC has acted in some cases more to safeguard the interest of the nuclear power industry than the public. Nearly half of the NRC employees surveyed by the agency in 2002

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[142] Novak, William, "A Revisionist History of Regulatory Capture Theory." Draft chapter (as of 10.28.11) in *Preventing Capture: Special Interest Influence in Regulation, and How to Limit It,* ed. by Daniel Carpenter and David Moss (forthcoming), p. 3-4.

[143] Ibid., p. 10.

[144] This, of course, directly contradicts Fukuyama's assertion on nuclear regulation as listed on pg. 82.

[145] Kaufmann, Daniel, "Preventing Nuclear Meltdown: Assessing Regulatory Failure in Japan and the United States" in The Brookings Institute website, published April 1, 2011. url: http://www.brookings.edu/opinions/2011/0401_nuclear_meltdown_kaufmann.aspx (last accessed: February 16, 2012).

> said that they feared raising safety concerns might undermine their career. Also, as is common in other regulatory agencies in the United States, NRC employees often pass through the revolving door. There have been some isolated cases when regulators have accepted gifts from and made decisions in favor of future employees prior to leaving the NRC. In one recent case, a commissioner voted on a matter that benefitted three nuclear companies, two of which he was negotiating an employment contract with at the time.[146]

There is much evidence suggesting that the Bush administration's PCBE was subject to this deleterious phenomenon as well. The existence of the committee proved a highly controversial episode, with the main accusation being that standing members did not represent a good enough diversity of viewpoints and was lopsidedly composed chiefly of conservative thinkers. One notable incident was the firing of prominent cancer researcher Elizabeth Blackburn from the Council, which she claimed was due to her support for human embryonic stem cell research (a research field greatly opposed by Christian conservatives and by former President Bush personally).[147] Blackburn, who received significant support from the scientific community in response to her termination, further accused the Council of being a puppet body set up in order to publicly justify former president Bush's positions on abortion and stem cell research. The entire episode raises the question: can we ever separate the act of government from the act of ideological/opportunistic politicking to deal with the oncoming biotechnological revolution in the rational and public-interest-centered manner that Fukuyama envisions?

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146 Ibid.

147 "Scientists rally around stem cell advocate fired by Bush," *USA Today*, published March 19th, 2004. url: http://www.usatoday.com/news/science/2004-03-19-fired-bioethicist_x.htm (last accessed: December 28th, 2010).

Critique 3: The Problem of State Legitimacy

Let us, for analysis' sake, assume for a moment the premise that we are able, one way or another, to be both technically capable and morally tenuous enough to conduct evaluations of biotechnology in precisely the way that Fukuyama would like us to. These evaluations are then passed up the ladder of authority to spheres that are in charge of implementing relevant regulatory policies and ensuring that they are followed. In a liberal democratic environment, in order for a state apparatus to impose its regulatory demands upon society, it must first achieve consent from the society in question. My reservations here are primarily derived from the thought of the eminent German philosopher Jürgen Habermas, who would call this sort of issue *the problem of legitimacy*.[148]

This problem would be especially urgent in the arena of regulating biotechnological advances. How can we imagine that people would allow the state to make such deeply personal, existential choices offered by these advances for them? If I wanted to live a longer and better life by technological means, and if I can afford it, shouldn't that choice be mine and mine alone? If I wanted my child to have the option of becoming more intelligent, or stronger, or indeed, to have an existence in which death was nothing more than a voluntary choice, what right does the state (or anybody else, for that matter) have to deny me that possibility?

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[148] Do note that again here I will be merely instrumentally adapting Habermas' theories for my own purposes. Interestingly enough, Habermas is considerably wary of human enhancement biotechnology, and is quite hostile (though in a bemused manner) towards Transhumanism and its members. In his 2001 book *The Future of Human Nature*, he refers to the movement at one point as a bunch of mad intellectuals who luckily have not managed to establish support for their elitist views (at the time) from a bigger group of supporters. Of course, as I contended in Chapter 1, this situation is slowly shifting, but his viewpoint remains an interesting if not entertaining one. See Habermas, Jürgen, *Die Zukunft der menschlichen Natur. Auf dem Weg zu einer liberalen Eugenik?* (Frankfurt, Germany: Suhrkamp, 2001), p. 43.

If a state endeavors to comprehensively regulate biotechnology, it has to first greatly expand its power, control, and reach very deeply into the lives of its citizens in order to do so. However, as Habermas argues, the expansion of state capacity in a liberal democracy necessarily produces a disproportionate increase in the need for state legitimation.[149] This is especially so if the state seeks to exert its authority on issues pertaining to very personal choices, as would be the case with the question of human enhancement biotechnology. For citizens to accept any sort of state-imposed restriction or decision-making rubric upon their lives, they have to possess - or at least perceive - an adequate enough justification to give up to the state a part of their autonomy and freedom of choice. What emerges from a situation like this is a socio-political cost-benefit analysis where two questions are raised: do I recognize the state as something that legitimately warrants my allegiance, and does the benefit I get from the state outweigh the benefit I get from following through on my own choices?

A state seeking to expand its regulatory capabilities has to recognize that it is, in a manner of speaking, running against an incumbent – it has to deal with what Habermas calls society's "cultural tradition," a key organic element in the fabric of societies that can be understood as its *gestalt* set of norms, values, and practices that naturally forms the backdrop in virtue of which the modern state operates.[150] Now, as Habermas argues, cultural tradition is not something that simply can be manipulated

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[149] Habermas, Jürgen, *The Legitimation Crisis* (Boston, MA: Beacon Press, 1973), p. 71.

[150] The "cultural tradition," like Fukuyama's human nature and Factor X, has a decidedly abstract and pervasive quality to it. (Perhaps we can see "cultural traditions" as societies' "Factor X's"?) As Habermas observes, they "have their own, vulnerable, conditions of reproduction. They remain 'living' as long as they take shape in an unplanned, nature-like manner, or are shaped with hermeneutic consciousness." Another parallel: it appears to be something that, if tampered directly with too much, may very well disappear. A notable question, then, would be whether or not a "cultural tradition" is something that should be preserved, which is the very same thing we can ask of human nature. See Habermas, *The Legitimation Crisis*, p. 70.

by the state.[151] It is a highly complex and abstract system, and any attempts by the state to destabilize or manipulate this complex, socially-constructed norm-structures in order to leave a lasting impact that accords with its intentions will generally provoke at least some resistance from its society, especially when there is no precedent for the state's initiative or if it runs against the fundamental terrain of its cultural tradition. What ensues, then, is typically a conversation of norm-reconstruction: through various pushes and pulls, the state finds itself having to find ways to culturally solidify the legitimacy of its new policies and regulations, and the society finds itself having to justify the foundations of its values. Examples of this interaction in Habermas' mind include state attempts to implement family planning programs, marriage laws, educational curriculum restructuring, and, most notably, changes in the health system.[152]

In these situations, the ball is, and always will be, in the state's court. If it wants to tell citizens not to undergo enhancement X as opposed to enhancement Y, or indeed not to undergo certain enhancements altogether, the state has to make the first moves to overcome a few big burdens of justification. It has to first appear to the citizen as a legitimate source of authority. Second, the state must convey that its interests are really in the best interests of the citizenry, and are in fact free of elements that might be antagonistic to the citizens. Third, the state has to convince the citizen that its choices will actually prove to be better than his or her own personal choice. This will probably be more difficult in some societies compared to others – for example, this would be almost impossible in the context of contemporary America,

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[151] Ibid., p. 73.
[152] Ibid., p. 71.

but more possible in more homogenous and close-knit democratic societies like the Scandinavian states. And finally, the state also has to prove that its regulatory actions are resonant with or even superior to the cultural tradition of the citizens' society.

To be sure, that is a lot to ask from a state. In essence, it comes down to an establishment of trust between (the members of) society and the state, a reliance on an abstract sociological commodity that is more subject to chance and chaos than to calculated outreaches. Once again, I would like to emphasize that it is not *impossible* for states to achieve the level of legitimacy that would warrant it making choices for its individual citizens. All I am arguing is that success in doing so is likely for some more so than others, and even at that, it is tremendously difficult.

Critique 4: Integrative Concerns

We can perceive this particular problem as having two layers: the national and the international. On the national level, we have to ask whether, even if there were an evaluative body that had both the cognitive and moral capability to adhere to Fukuyama's prescriptions, and furthermore managed to cultivate the necessary trust in its society, one can expect that such an evaluative body would be able to reach consensus sufficient enough to yield coherent policy decisions and whether such a decision would enlist the loyalty of those affected by such a decision.

Let us return to the question of what Fukuyama's evaluative body is required to do. To simplify things a bit, we can say that it requires a necessary analytical and judgment-inducing phase in which many individuals from different backgrounds come together to work out a collaborative solution for a wide-reaching problem. Now, not everybody will come in with the same values, and not everybody is going to

agree with the outcome. But it is in this point that a fundamental contradiction comes to light.

The essential purpose of a committee is to make singular decisions, choices that will be uniformly impacted on a wide range of people of diverse and often opposing views. The decision-making process is expected to be fair, in the sense that everybody's interests are supposed to be looked out for. This would involve the committee to consist of a wide range of different people with a myriad of views. However, this is predicated on a belief that a middle ground among all the deliberators can possibly be achieved. If this is indeed true, then the decision-making process is one of exploration and refinement, in that the process will be drawn out to ensure that the decisions accommodate the wants and needs and beliefs of a maximum number of those affected by it. But given that a biotechnological revolution is a time sensitive issue, adequate timely success in this decision-making model does not seem very feasible. However, if the prospect of a true middle ground is simply impossible, then the sheer act of building an evaluative committee that incorporate a diverse set of views is really all just a show – some views will lose out, other views will prevail, and in the end not everybody will be happy as idealized. At the end of the day, decisions will be drawn out and will ultimately be substantially unsatisfying to society *as a whole*. This lack of satisfaction ties back to issues stated earlier: it might cause the legitimacy of the state to be diminished in the eyes of the public as a whole, and this in turn might affect the efficacy of the evaluative body *and* the state in extending its regulatory capabilities and enforcing its will.

The problem on the international level is technically very similar. Even if a given society is able to internalize and abide by the set of evaluative decisions by this body, it is all for nothing unless considerable cooperation can be forged on a multilateral, international level. This is due to the very practical and human problem of defection. As bioethicist William Gardner speculates,

> Both nations and parents [will] have strong incentives to defect from a ban on human genetic enhancement, because enhancements would help them in competition with other parents and nations. The ban on enhancement, moreover, is vulnerable to even small defections because the disadvantages of defecting late will increase incentives for non-defectors to follow suit, causing defections to cascade.[153]

The potential for substantial cooperation is deeply hindered by the difficulty of establishing a clearly defined, truly universal value system that can be recognized by every group and country. In the very same way that different individuals of an evaluative committee come together and draw the decision-making process out due to differences in values and opinions, so too will different states clash in trying to come together beneath an international agreement or convention. And this is only *if* the international resolution is being done in the spirit of equity – a not very realistic assumption given that such deliberations would almost certainly be subject to political gamesmanship and hegemonic coercion. If one of the underlying goals is to maintain the "free spaces" afforded by a liberal democratic system and way of life, then this is clearly a deplorable situation on the international level.

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Fukuyama claims that any perspective presupposing the inevitability of science and technology is, in and of itself, a self-fulfilling prophecy. There is

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[153] Gardner was quoted in Stock, *Redesigning Humans*, p. 127.

something poetic to the fear that he articulates: the sheer act of believing in the fact, it appears, will prompt it to come into existence. It is this state of affairs that he sought to invert (as opposed to subvert): by fostering confidence in the idea that we can resist the march of science, Fukuyama is laboring to increase that idea's tenacity as truth. However, in the end, the only thing we can say for certain is that this is all speculative optimism. We do not know for sure whether the American philosopher is correct in his analyses and recommendations, and within the context of an issue as pervasive as a biotechnological revolution, this is a troubling situation because in this area trust (in an idea or in an action) is mercurial currency.

So far, I have provided a few critiques on Fukuyama's prescriptions – by referencing, as it were, our human fallibilities. But it would be inaccurate to characterize the tone of this thesis as absolutely negative or pessimistic. Rather, the goal here is to err on the side of caution; that is, to accept the situation as it is and to be prepared to deal with it accordingly. Who knows? Perhaps if we worked hard enough, or if we were granted just the right amount of luck, we would be able to successfully pull an evaluative committee and regulatory body off. However, even if we were to stick with charitable estimates of our own abilities, I firmly believe in all likelihood that we will surely lose this fight. For all the defenses that we can come up with, for all our twisting and writhing in resistance to the instrumentalization of the human body, it is only a matter of time. The steady stream of science, now in the form of biotechnology, will continue to flow inexorably, bringing with it all the good and all the bad that is contained therein.

It behooves us, then, to recalibrate and refocus of our concerns and efforts. Despite his protestations that his argument is not religion-based, Fukuyama's deliberations emerge from a similar place: it is essentially of a moral nature. In reaction to this, I argue that what we have with the oncoming birth of the species-plural society is *not* a moral problem. It is instead a practical problem, in which the fundamental question is not "how are we *supposed* to live?" (a normative query) but "how can we live together?" (a positive query). Instead of thinking in terms of preventing a full-scale biotechnological revolution from occurring or regulating it as it unfolds in accordance to our abstract will, I argue that it is more constructive to consider the problem in terms of how we are to deal with the *consequences* of this revolution. That is to say, rather than carefully opening Pandora's biotechnological box to let only a select few things out (which is, in effect, what Fukuyama recommends), we should come to terms with the fact that cracking open the box will unleash an outflow of contents far stronger than our capacity to control it. Given this, it is in our interest to switch our focus from questions about whether it is good to open this box to questions about how to deal with the effects of doing so. In short, it is better to deal with the world *as it is*, not as we would wish it to be, with all the good *and* all the bad that this involves.

We will now turn to the second half of this chapter, which will contain the most vital component of this thesis' original contribution – its own practical prescriptions. However, before it goes into that, it will first restate the problems that those prescriptions are meant to address in a way that has been informed by all that has been discussed so far.

Back to the Beginning, but No Longer the Same: The Problem(s) Restated

Our core concern is to figure out a way that we can accommodate the species-plural society, whose birth will be destabilizing. This requires a paradigmatic shift away from the Fukuyamaean yearning for unity in the cosmos and conformity to a singularizing narrative towards a perspective that sees collective life as an unfolding of multiple (occasionally overlapping, occasionally conflicting) horizons. This world will be, in a manner of speaking, a multi-world world, each with its own socio-evolutionary arc, but each in part dependent on the others, each necessarily interacting with one another, and each gradually being changed in the process. Ours is a dynamic, fluid world of conflict and cooperation among entities often deeply different in what they hold dear.

We have identified three general types of problems consistently associated with a biotechnological revolution. The first is the problem of *effective distribution*. The key here is to figure out how to avoid a bio-Marxist situation where the rich fully exploit their material wealth to prosper biologically beyond equitable proportion, thus incurring a division of society based not only on class but also on biological composition. As I mentioned in Chapter 2, this is a fairly conventional and obvious concern, such that numerous books have already been published on the subject with varying degrees of impact. Fukuyama himself is cognizant of this problem, writing:

> There are very few domestic political issues today in our rich, self-satisfied liberal democracies that can cause people to get terribly upset, but the specter of rising genetic inequality may well get people off their couches and into the streets.[154]

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[154] Fukuyama, *Our Posthuman Future*, p. 158

Indeed, I myself have no doubt that this will undoubtedly be the dominant focus of discourse in the future with respect to biotechnology.

The second problem is similarly conventional and self-evident. However, due to the far more grave nature of its potential ramifications, it should concern us to a much higher degree. This is the problem of *the fear of inter-species violence*, as articulated in Chapter 1 by bioethicist George Annas, legal scholar Lori Andrews, and human rights attorney Rosario Isasi. They wrote:

> The new species, or "posthuman," will likely view the old 'normal' humans as inferior, even savages, and fit for slavery or slaughter. The normal, on the other hand, may see the posthumans as a threat and if they can, may engage in a preemptive strike by killing the posthumans before they themselves are killed or enslaved by them.[155]

Indeed, this issue has also concerned Fukuyama as well, as he writes:

> Indeed, this is one of the few things in a politics of the future that people are likely to rouse themselves to fight over. By this I mean not just fighting metaphorically, in a sense of shouting matches among talking heads on TV and debates in Congress, but actually picking up guns and bombs and using them on other people. [156]

Of course, in contrast to the problem of distribution where we can draw on contemporary studies and observations on inequality to be somewhat confident about its likelihood, we cannot know for sure if there will actually be violent post-enhancement beings. Once again, pure speculation fully propels the fear of inter-species violence. Indeed, as I wrote in Chapter 1,

> Any discussion about the psychology and motivations of post-enhancement individuals can be nothing more than skeptical speculation and hopeful ruminations is telling: we will never know

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[155] Annas, Andrews and Isasi, "Protecting the Endangered Human: Towards an International Treaty Prohibiting Cloning and Inheritable Alterations," p. 162.

[156] Fukuyama, *Our Posthuman Future*, p. 158

> truly know how the future will turn out, despite our best efforts at guessing.[157]

However, we do know that there will always be the potential for this sort of violence. And if it actually occurs, we can rest assured that its emergence will be very obvious (to say the least) such that the likelihood for drastic, uprooting state action of a focused and concerted nature against it will be tremendously high.

The third problem is a very different one, and from a particular perspective, it is exponentially more terrifying than the other two. It is the very one that provoked Fukuyama to write *Our Posthuman Future* in the first place, and it is the one that I would like to call focused attention to in the tail end of this thesis. I am referring to specifically to the problem of *the banality of the species-plural society.* Unlike the first two problems, this one is internal to such a society in the sense that it arises from the society being exactly what it is. This problem, aside from being more interesting, is also comparatively more horrifying, given its subtle and seemingly innocuous nature. The consequences of this problem are less apocalyptic than they are purgatorial, but it is no less threatening for this: the fear is not that we will end up in a doomsday scenario, but that we will end up with a state of utter existential tension and worthlessness.

Even though Fukuyama's analysis of and prescriptions for a biotechnological revolution are not ultimately persuasive, we should not engage in a wholesale rejection of his meditations nor his methodologies. In particular, his thesis about the "End of History," for all its controversies, is still valuable as a paradigm by which to explore this upcoming revolution. Through its logic, it gives us an analytically rich

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[157] See page 48.

tool by which to unpack and identity the range and complexities of the species-plural society's subtle problems. In Chapter 2, I categorized these problems into three distinct thematic categories:

(1) *Progression into Oblivion*

In Fukuyama's view, the birth of the species-plural society signals a massive reset: where human beings have found their End of History with liberal democracy following a long history of trial and error, they are now condemned to restart that journey. Furthermore, this new journey through History is not conducted by one "type" of people – it is a journey that breaks into multiplicities, each with their different needs and therefore different visions of the End. This translates into a situation where different types of enhancement beings would be clumped together in bunches of similar "types" with each having to figure out new configurations of society that suit their new existential forms the best. For some, it might still be liberal capitalist democracies. For others, it might be something completely different. But the point is that they now have to feel they way through time, space, and culture again. The fundamental problem here is whether there is an End that can satisfy the deepest needs of these different types of beings and that can result in a relatively stable social order. This leads into the second category of problem, namely

(2) Antagonistic Overcrowding

In this situation, will these new groups recognize, respect, or tolerate each other enough not to fall back into new forms of master-slave relationships or Othering? This translates to a context in which the goal is to avoid not just the violent scenario sketched out by Andrews, Isasi, and Annas, but also new forms of

oppression that can come into being. The ideal is not to have one species society exist on the backs of another, but instead to have each society coexist (either in collaboration or tolerance) towards others with their own respective ends. The fundamental problem here is coexistence – finding a way to allow for multiple narratives to play out harmoniously and without violence or new forms of prejudice and oppression. This correlates with the third category of problem, namely,

(3) Unattainable Recognition, Incomplete End

Fukuyama, backed with considerable evidence, asserts that a fundamental human need is the need to be recognized – both to be recognized as a subject and also to be seen as better, or excellent, at what a given person is doing. (Fukuyama makes references to political showmanship, entrepreneurship, and scientific achievements as instances of this need, and alternatively outlets through which this need can be acted upon.)[158] In the species-plural society, it might be the case that not everybody possesses this yearning, but it is still prudent to assume that some, or a good portion of the new society might. The fundamental maxim in liberal democracy is that we should always attempt to cultivate a society in which every group has an equal opportunity to fulfill the innermost desires of its members. However, if those in some of these new groups do not need recognition, they might not recognize the need for it. This means, to put it bluntly, that they would not be able to know how to recognize others. Therefore, the enhanced beings that need recognition along with original humans will be in a state of resource deficiency; they crave recognition, but they will not be able to receive it everywhere. The fundamental problem here is one

[158] Fukuyama, *The End of History and the Last Man*, pp. 315-317.

of supply - providing a sufficient network of recognition in order for it to be established.

Rights, Perception, Community: A Composite Fukuyama-Transhumanist Contribution

At this point, in the wake of discussing the species-plural society's many tensions and causes for concern, it is perhaps valuable to remind ourselves of the revolutionizing benefits of human enhancement biotechnology that will drive the creation of this society in the first place. A life of significantly better living, of radically new forms of consciousness and experience, of ways of going through existence in the world that are different in kind from the way we do now – these are the things that we are promised, these are the things that may move us about the Transhumanist dream. How can we move forward in a way that recognizes both the power and the appeal of human enhancement biotechnology and that at the same time acknowledges the problems it brings in its wake? In this last section, I want to use Transhumanism as a jumping-off point to argue that our focus should be directed to practical ways to *expand the moral community*.

How can we expand our sense of community to include all forms of conscious, society-participating species, such that we can live in harmonious coexistence? In some ways, the impetus for this question echoes the normative call made by many postmodernist thinkers calling for race, gender, feminist, and postcolonial equality. Consider the feminist theologian Anne Joh's essay "*Race, Class, Gender, Sexuality*," for example. In her discussion of how the humanistic spirit of theology should be expanded, she writes

> We must be mindful of just how interdependent our lives are even when we live a 'world' apart from one another… A continuous and sustained effort must be generated to move away from unilateral global feminist theologies and toward the building of coalitions and solidarities across differences – even those that seem insurmountable to some. By doing so, we will generate a worldview that embraces heterogeneity, multiplicity, and differences among and within us, and moves toward our recognition that all life is worthy of dignity and respect.[159]

Of course, it is all so very easy to proclaim this in theory, but the question of how to actually bring about such a worldview is far more complex and problematic to figure out. In this section, I will make an attempt to articulate a program that contains a number of practical initiatives that aim at cultivating Joh's vision in the context of the species-plural society. I will do so by drawing from both James Hughes' political theory of democratic transhumanism and also Francis Fukuyama's "Factor X" concept, along with its connections to the ideas of recognition, perception, and rights.

Democratic Transhumanism

In his book *Citizen Cyborg*, the Transhumanist-bioethicist James Hughes sought to promote the idea that once we encounter a biotechnological revolution, we should adopt a political stance that champions the holy trinity of liberty, equality, and solidarity. He calls this stance *democratic transhumanism*, and its closest pre-biotechnological model is that of social democracy – particularly the kind practiced in Scandinavian Europe and Canada.[160] He writes,

> Canadians and Europeans have personal liberties, such as gay marriage and drug decriminalization… and at the same time more egalitarian

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[159] Joh, Anne, "Race, Class, Gender, Sexuality: Integrating Diverse Politics of Identity into Our Theology" in *New Feminist Christianity: Many Lives, Many Voices*, eds. Mary E. Hunt and Diann L. Neu (Woodstock, VT: SkyLight Paths Publishing, 2010), pp. 62-63.

[160] Hughes, *Citizen Cyborg*, p. 190.

> distributions of wealth, more leisure time, and more generous social welfare systems.[161]

Implicit in his exaltation of the social democratic system is a privileging of the role of the state; Hughes seems to place it in the very center of his normative vision. He sees the state as playing a mediating role that manages the interactions among a multitude of groups. By conceiving politics in this way, Hughes seems to support the idea that the cultivation of an expanded community chiefly comes from a top-down direction.

Hughes also gives particular emphasis to the principles of egalitarianism. In a long section, he directly invokes the American philosopher Ronald Dworkin:

> Dworkin start with two principles. First, he argues that a person's life, once begun, should succeed rather than fail, 'that the potential of that life be realized rather than wasted.' Second, he argues that each person has the right to define for themselves what a successful life is, which is a restatement of John Stuart Mill's rationale for liberty – we know our own needs better than anybody else does.[162]

He further points out Dworkin's own position on biotechnology, noting that in his book *Sovereign Virtue* these two principles ultimately lead to a society that would provide universal access to germinal choices and human enhancement technology.[163]

Hughes' entire argument is anchored to what is possibly his most practical prescription, one that I already touched upon in Chapter 1. This is his call to shift the source of citizenship and rights from one that bases them on one's "humanity" (as enshrined in the term "human rights" commonly used today) to one that bases them on one's "personhood." Of course, as I have said before, the criterion that Hughes provides is somewhat problematic – for the most part, it is too subjective to be

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[161] Ibid.

[162] Ibid., p. 197.

[163] Ibid.

effective.[164] But his focus on citizenship and rights, a key source of recognition as highlighted by Fukuyama in *The End of History*, is the biggest thing that we should take away from this part of his analysis.

At this point, there are three main things that Hughes gives us: the idea that the state will be very important in handling the species-plural society; the notion that in the face of great disruption we should strive for egalitarianism; and finally the tactic of focusing on issues of rights and citizenship.[165]

So, what exactly should the responsibility of the state be in the species-plural society? Before we can answer that, we have to first revisit Fukuyama's concept of "Factor X," and see how it augments Hughes triple-pronged contribution here.

Fukuyama and Factor X

How does Fukuyama's Factor X play into all of this? We know that Factor X is an essential component of Fukuyama's understanding, especially in his discussions of human nature and the act of recognition. He equates Factor X with the "essence" of human nature, and further submits that our ability to recognize another is dependent on us being able to see this Factor X in that other. He states in *Our Posthuman Future*

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164 He writes: "all self-aware beings with desires and plans for the future should be considered citizens with the right to life," and practically bases his entire idea of personhood on this sparse definition. Ibid., p. 217.

165 Hughes has his chilling moments, however - little episodes that should cause us some concern. For example, he caps his discussion of Dworkin (and later, of famed utilitarian ethicist Peter Singer) with the following statement: "We may all need genetic and cybernetic enhancement to finally satisfy the demands of an engaged citizenship." An implicit belief is at play here – Hughes seems to be operating beneath the assumption that one needs a certain level of intelligence (or as he would put it, "capability of reason") in order to make good, engaged contributions as a citizen. If we stick closely to his vision here, there appears to be little room for people who – by their own existential will and values – choose not to undergo any genetic or cybernetic enhancements. Therefore, this particular way of looking at things, of conceiving the nature of "effective citizenship," is not all that compatible with the species-plural society in specific and with the concept of freedom to choose in general. Consider, by way of another example, Hughes perspective that one of the biggest hurdles to implement democratic transhumanism is the fact that most people probably do not realize its benefits. "The challenge," he writes, "is to find issues and struggles that coalesce (with the) *latent* majority." This, at the very least, violates the Benthamite mantra that we know our own needs better than anybody else does. See Hughes, *Citizen Cyborg*, pp. 201, 219-220.

that human nature "is what gives us *moral sense*, provides us with the social skills to live in society, and serves as a ground for more sophisticated philosophical discussions of rights, justice, and morality."[166] If Factor X is the "essence" of human nature, then it is both what gives us the ability to enter into an empathic, moral relationships with others as well as what others need from us in order to enter into a moral relationship with us. But it is important to note that entrance into a moral relationship does not necessarily entail a relationship of mutual recognition.

As I noted in Chapter 2, there is a crucial element of *perception* that plays heavily in the act of the recognition. This can be extended to help us further understand the exact relationship between human nature and Factor X. I see it in the following manner:

(1) Human nature is that which describes our cognitive abilities to engage in the act of recognizing others, as well as everything that comes as a result of this recognition, and
(2) Factor X is a *perceived thing* we see in other beings that allows us to cognitively build an empathetic relationship with them.

A good way to understand what I mean here this is to riff off Slovenian philosopher Slavoj Zizek's amusing and provocative "Kinder egg" analogy, which itself is a riff on Fukuyama's discussion of Factor X.[167] Zizek writes about an egg-shaped chocolate candy popular in Central Europe that contains a small plastic toy in its center; he employs it as an analogy to evoke the humanist-universalist mantra that Fukuyama seems to propound: a Kinder egg is still a Kinder egg no matter whether the chocolate is dark, white, milk-based, or contains nut and raisins or not. This is

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[166] Francis Fukuyama, *Our Posthuman Future*, pp. 101-102. Italics mine.

[167] To see the full analogy, see Zizek, Slavoj, "The Ideology of Empire and its Traps" in *Empire's New Clothes: Reading Hardt and Negri* (New York, NY: Routledge, 2004), pp. 254-256.

because a Kinder egg is defined by the toy that it contains within, just as human beings are defined by the Factor X that they contain within. He writes:

> As humanist ideologists would have put it: we may be indefinitely different, some of us are black, others white, some tall, others small, some women, others men, some rich, others poor, and so on – yet deep inside us there is the same moral equivalent of the plastic toy, the same *je ne sais quoi*, an elusive X that somehow accounts for the dignity shared by all humans.[168]

While this is certainly an interesting manner of reading Fukuyama's Factor X, I think the Kinder Egg analogy can help enlighten us from a different direction.

In my view, the Kinder Egg as object is subject to two layers of identification. We can understand it on one level to be an egg, and we can understand it on another level to specifically be a Kinder egg. To identify it as an egg is relatively straightforward – we draw from a general heuristic of what eggs are supposed to look like and be (thus taking into consideration its shape, color, and so on), and observe how much a given egg conforms to the criteria of this heuristic. But to understand it specifically as a Kinder egg, we first have to delineate what the concept "Kinder egg" means. Now, "Kinder" is an identity-tag that is not necessarily tied to egg-shaped chocolate candies with a toy in their center. It is, rather, a certain *brand* of candy. Kinder eggs are produced by a company called Ferrero, which also produces many other types of candy in the Kinder line - there is one shaped like a hippo, one shaped as a traditional chocolate bar, and so on – but they all possess the distinct identity, perhaps the distinct privilege, of possessing the Kinder name. Now, consider the origin of a given candy's legitimacy as a Kinder product: it is all in the packaging, marketing, and brand presentation. It is nothing more than a socially perceived

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[168] Ibid., p. 255.

identity. Consider how you would feel if you were given an egg-shaped candy with a toy in the middle that was *not* produced by Ferrero, an egg that was not a Kinder. If you already knew what a Kinder egg was (and perhaps had developed a fondness for it), how would you feel? You would probably feel cheated, a little violated maybe, as what you have before you is a counterfeit, a fake, an imitation of something that is special. There is, indeed, nothing necessarily "special" about the Kinder egg in a fully intrinsic manner – the specialness comes from your end.

To analogize: the "egg-ness" of an egg is equivalent to human nature, while the Kinder brand name is equivalent to Fukuyama's Factor X. What I am arguing here is that Factor X – the very thing that allows us to recognize another and build an empathetic bridge between each other – is not something that exists inherently in another, but something that *we choose to acknowledge* in the other. The act of recognition is an act that we personally make, and the responsibility of all that lies *in us and not in the entities* that we comprehend in a particular way.

Further support for this interpretation can be found in the following hypothetical scenario: suppose that we have a fully functioning humanoid robot with working artificial intelligence. Suppose further that this robot has been given synthetic flesh, such that if it were to stand next to a real human being it would be difficult to visually differentiate between the two. Assume that this robot is placed in a room standing next to an actual person, and an external party is brought into the room and is told that one is a robot and one is a real person. Some time is allowed to pass, and the external party is then fed the inaccurate information that the real person is actually a robot. How would said external party react to this information? Would

said external party agree, and if so, with what degree of enthusiasm? Put yourself in the external party's shoes: when you entered the room you could not tell the difference between the two, and now you're being told which is which. Of course, you are being misled, but you don't know that. I am willing to wager that you would probably follow the instructed misperception, and begin to see this Factor X is whatever you have just been told.

To recap: I submit that there is no such thing as an "inherent" Factor X. Rather, it is a product of perceptual inter-personal processes that take place in the space between us. There are significant ramifications to this claim, the most notable of which is the notion that Factor X - along with the act of recognition and community that come associated with it – is something that can be directly *cultivated*.

Having established this, together with the points made by Hughes about the role of the state, about egalitarianism, and about rights and citizenship, we can now begin to formulate a practical program for appropriate steps forward with respect to the species-plural society.

A Composite Fukuyama-Transhumanist Program

Time – this is main thing the emergent species-plural society needs. Two of the three fundamental problems caused by a biotechnological revolution discussed above – whether there is an End that can satisfy the different members of a species-plural world and that is stable, and coexistence – require a significant period of time to emerge organically if they are to emerge at all. The post-biological society needs time to figure itself out, and time to learn figure out how it members can live together.

Hughes is very helpful when he highlights the role of the state in this; it is imperative that it assume a mediating role to manage the (possibly hostile, possibly tense) relations among the new, various post-human "worlds." Indeed, this role would also require it to substantially regulate ownership to the means of biotechnological production, and it would be up to the state to ensure that biotechnological opportunities are not only available to the rich (a proposition that would probably not find difficulty generating the required legitimacy from its society).

However, the state should not limit itself to a relatively passive role, but should also assume a more proactive stance. In particular, besides ensuring stability, it should make the effort to lay foundations that would promote the growth of the sense of community. Put briefly: the state's primary responsibility is to *provide the basis for an organic sense of community to grow*.

Consider the "imagined communities" concept as articulated by anthropologist and historian Benedict Anderson to nationalism. It refers to the phenomenon that an American born in Southern California is able to feel more connected to an American born in Vermont (which is on the opposite side of the country) compared to somebody born in Mexico only a hundred miles away. The Americans in this case belong to an "imagined community." Such a community is completely a social construction: it involves continuous processes of identity creation. The historian Lynn Hunt takes Anderson's theoretical construct and adapts it in a very interesting way. In her book *Inventing Human Rights*, Hunt argues that a community of rights possesses an internal fabric and dynamic that is akin to Benedict Anderson's "imagined community." She writes, "what might be termed 'imagined

empathy' serves as the foundation of human rights rather than of nationalism."[169] Understood in this way, the phenomena of nationalism and of rights-communities can be appropriated to shed light on the possibility of expanding the sense of community among the new species in the species-plural society.

But what specifically would such an appropriation yield, and in particular what are the practical measures that a state could undertake to foster the sense of moral community in a species-plural world? Anderson wrote that "what, in a positive sense, made the new communities imaginable was a half-fortuitous, but explosive, interaction between a system of production and productive relations (capitalism), technology of communications (print), and the fatality of human linguistic diversity."[170] These things prompted disconnected individuals to experience a transcendent sense of connection with one another. If we take a step back, we can see that these things are structural – the capitalist system forced people of different origins to communicate with each other, and in doing so undermined the existence of linguistic diversity and promoted ongoing communication in a common language. Contemporaneous to this arc is the gradual shrinking of the world – Anderson also cites the value of things like museums, maps, and the census – that adds to the sense that the members of a group are bound to each other even if they are not physically contiguous. The state can very much foster the growth of a sense of community by using the social structures of society to enhance a sense of belonging, and it can also develop and run tangible things like "community-building" exercises to this end.

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[169] Hunt, Lynn, *Inventing Human Rights*, p. 32.

[170] Anderson, Benedict, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* Revised Edition (New York: Verso, 1991), pp. 42-43.

The state can also involve itself directly in another manner. The third fundamental problem is that of recognition – that is, some post-enhancement beings might not receive the necessary recognition and some might not even be able to recognize, and this would cause a situation of uneven recognition. The state can take away the burden of recognition from these new beings by taking it on itself; as a unit, the state could recognize the new beings by giving them rights (perhaps based on a refined version of Hughes' "personhood" criterion) and could mitigate the lack of recognition felt by others by overtly affirming it.

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Despite our human fallibilities, we should not despair. This chapter has found that, even though we will be unable to effectively impede a biotechnological revolution or carry out Fukuyama's prescriptions as he would like us to, there are still clear and definite ways that we can move forward with respect to preserving stability and satisfaction in the wake of a brave but disruptive new world. Neither Fukuyama nor the Transhumanists might be completely correct in their observations or their assertions, but they are nonetheless indispensable to our capacity to understand how we may navigate a world that has departed to strange new places. To be sure, a lot of work is ahead of us, and it will take a long time to reach the sort of apex that Fukuyama's believes we once hit with *The End of* (Human) *History*. But we will get there, at some point – we just have to have broad sense of what we need and then to fight for it.

Conclusion

"We knew the world would not be the same."[171]

Julius Robert Oppenheimer, the "father of the atomic bomb" (so known for his role in the Manhattan Project), speaks in a cold and disconnected voice. He is describing the moment when the first atomic bomb detonated on July 16th, 1945 in the Trinity Tests in New Mexico. He takes his time with his words, clearly exhibiting a measure of restraint. There is an oddness to his face; one cannot entirely be sure whether his eyes are gazing off to the side or directly into the camera (into the viewer?). The YouTube video is black and white, and grainy – it projects a ghostly white glow. A grave majesty permeates its otherworldly luminescence.

"A few people laughed, a few people cried, most people were silent." Oppenheimer's head, previously still, suddenly cocks to the left for a brief second. He continues, "I remembered the line from the Hindu scripture, the *Bhagavad Gita*." He pronounces it perfectly, displaying stunning diction. "Vishnu was trying to persuade" - he pauses for a quick moment, rubbing something out of his right eye – "the prince that he should do his duty, and to impress him takes on his multi-armed form, and says, 'Now, I am become Death, Destroyer of Worlds.'"

Another pause. This time much, much longer.

"I suppose we all thought that one way or another."

There are, to be sure, many ways in which the birth of the atomic age and the birth of a biotechnological future are simply incomparable. The former was a clearly defined event evident in its physical unfolding, and was in and of itself a profoundly

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[171] "Atomic Age – J. Robert Oppenheimer Quote." *YouTube*. Web. September 26, 2006. Url: http://www.youtube.com/watch?v=n8H7Jibx-c0 (last accessed: March 20, 2012).

violent thing. On the other hand, biotechnology is something much more subtle and overtly ambiguous. But the general ramifications of both are more or less the same: in both instances, we broke a particular boundary. In both cases, we know that the world will never be the same.

With biotechnology, we can say:

We have become Life, Creator of Worlds.

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This thesis hoped to accomplish a number of things. It endeavored to be a meditation, an exploration, a critical analysis and a response to something that is almost impossible to address systematically with any tangibility. How do we begin to think about a biotechnological revolution? What will be the consequences of such epochal change? Most importantly, what can we do about it? Unfortunately, pre-existing academic literature has very little that allows us to adequately work our way through these questions. Thus, it had been the overarching objective of this thesis to alleviate this problem – above all things, this project has sought to develop a language and a space for something that is nearly indescribable in the academic sphere. In order to do this, this thesis draws from two very different authorities in order to prompt a fruitful interaction:

(1) the works of Transhumanism, a nascent sub-strand of postmodern thought that has tried to expand into political theory, and
(2) the works of Francis Fukuyama, a political theorist who has tried to expand into the postmodern-rich subject of science studies

This thesis starts by using Transhumanist writings as a prism through which it could reveal the immediacy of issues regarding human enhancement biotechnology and portray its fundamental effects on a liberal democratic society. In this vein, it

posits the emergence of the "species-plural society," a refined postmodern conceptualization of post-human communities comprised of a multitude of different life forms. This possible future will involve the shared existence of many enhanced beings of different magnitudes and types, beings that are completely new (like artificial intelligence and cybernetic organisms), as well as original human beings who have chosen not to undergo any form of enhancement whatsoever. The thesis argues that the birth of these new society-participating life-forms and their new existential trajectories have emerged out of an inner rebellion against the natural constraints of our bodies and the world around us. Thus, a biotechnological revolution is in many respects the effects of a very good thing – an impulse to control and thereby to better our bodies and our worlds a little more than we were originally allowed by nature. But there are worrying consequences of this: with the birth of the new society comes a host of dangers and possible sources of instability. These include worries of identity politics, biological disparities that follow along the lines of wealth inequality, and possible inter-species violence. The first chapter concludes with a discussion of a few Transhumanist responses to these issues, and ultimately declares them to be woefully inadequate.

The next chapter brings Francis Fukuyama into the fray. Its main intention with Fukuyama is to use him – a distinct (and at times, hostile) outsider to the postmodern and posthuman community – as a way to fill in the blanks that Transhumanism was unable to address. Where Transhumanists proved unwilling or deficient in their efforts to visualize the fallouts from the species-plural society, Fukuyama's multi-faceted History paradigm provides the basis for a focused

imagining of a precise set of problems lying beyond the biotechnological horizon about which we should be particularly cognizant and alarmed. In particular, three main points of concern emerge:

(1) the loss of a "historical sense" that could afford us a direction towards which we should apply ourselves in order to refine our communities,
(2) the possibility of violence among the separate communities of new species as each pursues their new societal goals,
(3) the possibility of no longer being able to experience "recognition" – a crucial element in Fukuyama's understanding of the world - in the way that we want and in the way that pre-biotechnological liberal democratic societies allowed us to.

The focus of the chapter then shifted onto Fukuyama's practical prescriptions on what we should do about our biotechnological future in light of these concerns. In particular, he asserts that it is imperative that we regulate biotechnology before it hits critical mass, and to do this by forming an evaluative committee to decide on whether a piece of technology is good or bad and then enforcing its decisions using the power of the state on a national and international level.

Skeptical of Fukuyama's suggestions, the thesis starts its third and final chapter with a four-point critique of their feasibility and ethical logic. First, it argues that in our current biological and societal composition, we are incapable of effectively judging a particular piece of biotechnology as good or bad: it is cognitively impossible (in the sense that we simply lack adequate data and brainpower to make solid decisions), and it is theoretically contradictory to the ideals of democracy (in the sense that the idea of letting a small number of people make judgments for a large number of people runs counter to the liberal democratic ethos that Fukuyama – and ourselves by extension – are trying to preserve). Second, it asserts that the moral failures we so often see in contemporary politics – notably, that of regulatory capture,

and corruption more generally – would probably resurface in the politics of biotechnology, which in turn would ultimately lead to the failure of Fukuyama's prescriptions to control a biotechnological revolution. Third, it revisited and expanded upon the contradiction between the idea of controlling biotechnology and the idea of a liberal democratic society by bringing up the Habermasian concern of state legitimacy. Drawing from the German philosopher's arguments in his book *Legitimation Crisis*, it argues that the state has many hurdles to jump over in terms of developing the level of trust needed in order to fulfill its regulatory responsibilities on a subject so personal as the individual use of biotechnology (the exemplary questions to ask with respect to this are: How can we possibly allow the state to make such deeply personal, existential choices for us? If I wanted to live a longer and better life by technological means, and if I could afford it, shouldn't that choice be mine and mine alone?). Finally, it discusses what it calls integrative concerns, and suggests that the difficulties of the decision-making processes both within any evaluative committee of the sort envisioned by Fukuyama and among evaluative committees of different countries will ultimately be insurmountable, and that at the end of the day politics will (rightfully) undermine the process.

At this point, it might seem that the thesis is a largely pessimistic one, decrying the inability of humankind to meet the challenges that its own cognitive successes have engendered. But the thesis has always sought to be more pragmatic than anything else, and indeed it might actually be more optimistic than one might be inclined at first to think. The second half of chapter three began by contending that the problem we face with a species-plural society is not a *moral* one, but a practical

social and *political* one. It then outlines the beginnings of a way in which we can attend to the biotechnology question productively. Ironically, to do this the thesis draws again on the thought it has heretofore criticized, Transhumanism and Fukuyama. But one of the main things the thesis shows is that methodology should sometimes be separated from conclusion. Even if we do not agree with the views of a writer (or a set of writers), we can still greatly benefit from them. Both Fukuyama and Transhumanism, for instance, hold highly controversial views – the former for his seemingly reductionist understanding of human history and political interactions, and the latter for its unrepentant optimism and fantastical visions of our future. But the parts of the sum should not necessarily be condemned by the *gestalt* of its whole, in the same way that one can still enjoy particular elements of a film (its cinematography, background music, particular performances) without actually enjoying the entire package. We can, in fact, co-opt the working parts of a variety of paradigms, theories, or arguments to assemble not a *synthetic* but a *composite* construct, one that collects only the good qualities of its ancestors to help us push forward and navigate its focused problem. Thus, the latter half of the final chapter seeks to take certain elements from both parties – and eventually particular ideas in addition to these two (namely, from Benedict Anderson and Lynn Hunt) – in order to construct a very brief and simple string of prescriptions. These prescriptions – the original creations of the thesis – are not meant to be comprehensive and unwavering in their self-belief. Instead, they are meant to be a starting point for potential political theorists to begin asking their own questions and making their own intellectual expeditions into this posthuman horizon. There are many things that it regrettably

could not touch upon or expand with any depth, and it invites any interested researchers to follow it down the rabbit hole.

For example, one way to move forward would be to flesh out the rough, practical program that was put forward at the end of Chapter 3. Sticking very closely to the Benedict Anderson-Lynn Hunt composite paradigm that it constructs, potential researchers could explore other ways to cultivate a more cohesive species-plural society. The element of perception is crucial, the chapter argues, in the interactional space between two beings that differ biologically. The thesis is hopeful that there are ways that we can grow and accept these differences, and the process of learning can come either from within or it can be compelled or nurtured. With its infrastructural and coercive capacities, the state is in the perfect position to cultivate and aid this humanistic development.

More work should also be done on the question of the distribution and the possible inequalities with respect to the means of biotechnological production. This will perhaps be the issue that will come to dominate the conversation, since it is the most familiar to us living in the industrial and post-industrial world. In some countries, we *may* fight over ethics, theology, and the nostalgia that we feel for the natural world, but in all countries, we *will* surely fight over who gets what, and how to mitigate the fallout of a species-plural society that follows along class lines. Here, there is room for a host of other scholars from other disciplines to have a say in the proceedings: political economists, sociologists, and empirical political scientists all have much to contribute to the deliberations over this issue.

Of course, much important work of properly theorizing the species-plural society remains to be done. How will such a society function? What is the socio-political space that will emerge from it, and how can we begin to think about identities, groups, and social movements within it? Where can we have find spaces for beauty, culture, art, and living in this new post-human society?

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There are many myths, fables, and stories that can be employed to help weave a coherent narrative about a biotechnological revolution for the benefit of our comprehension. During the time I spent researching for this thesis, I consistently came across three in particular that were often used as metaphorical turns by writers meditating on the subject of biotechnology: the Greek myth of Prometheus, the Biblical tale of Adam and Eve, and finally, another Greek myth, that of Pandora's Box. All three were used as ways of proscribing a distinct moral viewpoint, but a running theme behind all three was a sense of permanent loss - what has been done cannot be undone ever again. Moreover, though truly regrettable things happen in all three episodes, the aftermath of their fallout always hint at the traces of something good and the possibility of realizing it.

A champion of mankind and a lowly Titan, Prometheus stole the first and most important instance of technology, the sacred fire, from Zeus, supreme ruler of the Greek pantheon, in order to give it to humanity. This, of course, angered Zeus immensely, and Prometheus was punished for his transgression by being bound to a rock while a great eagle eats his liver only to have it grow back in order to restart the torturous process all over again. From this tale, one can learn that when one attempts

to rebel against the Gods or indeed the natural way of things, so divine and compelling is their power, we will be condemned to an eternity of struggle and pain. But despite Prometheus' suffering, humanity was given fire – an instrument that has undoubtedly led to a better quality of life for our species.

The story of Adam and Eve shows that we – in the figures of the first humans – were once insulated within the realm of that which is natural, but that we then deviated from the will of our Creator to seek Knowledge and Power on our own terms. To bring the myth up to modern times: we bit the Apple of Biotechnology, and we have come to learn the true Knowledge of our inner worlds. For this, we are being expelled from the Garden of Eden, a condition in which we, lacking the requisite knowledge, did not have to ask what about ourselves and our bodies we wished to change and so could take them to be God-given and under the love and protection of our Creator. But now that we have learned the secrets of our bodies and how to manipulate and augment them, we must suffer the anguish of deciding what to do on our own without His divine guidance expressed in the so-called "laws of nature," and we must suffer the dislocations that whatever decisions we make will inevitably bring in their wake. But all is not lost: we now possess true self-determination; free from the confines of a rigid Divine Will or its surrogate, Natural Law, we are now at our own liberty to locate ourselves firmly at the center of our own choices.

And finally, there is Pandora's Box. When Pandora's curiosity got the better of her and she opened the box, she released all evil known to humankind into the world. Out flew every kind of disease and sickness, hate and envy, and all the bad things humankind had never experienced before. For us in the biotechnological

context, humanity now becomes the species-plural society, and the disruption of our lives will be so intense, so complete, that we know in our very bones that we can no longer be the same. The world will now be filled with new forms of evil and pain, new struggles and new dangers, despite the great benefits that we can extract. The original myth, fascinating as it is, speaks nothing of potential benefits from the evil that we face. But it has a wonderfully beautiful twist at the end. When Pandora realized what she had done, she hastened to close the box. Her efforts proved to be in vain – she could not stop the flow of evil, and the world would never be the same. However, despite the immense outpour, the box was not completely empty. When Pandora looked back in, she saw that one last thing remained at the bottom.

It was Hope.

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Appendix

Table 1: Examples of Human Enhancement Technologies

Genetic Engineering	Refers to the direct manipulation of an organism's genome sequence. We have seen cases of this procedure being used with the advent of Genetically Modified Food, which of course is currently the subject of much controversy in the West. But the humanistic potentials for this technology is immense – if done safely and properly, it can theoretically address food shortage issues, food interruption problems due to climate change, and shrinking agricultural sectors in food-producing countries that are shifting from an agriculture economy to a manufacturing or service economy. It can also lead to the rise of "designer babies" – the prospect of directly selecting the traits of your offspring. This, of course, has many ethical, economic, and sociological issues packed into it, and some of the focuses of this thesis speaks to these problems.
Cybernetic Organisms	Colloquially known as "cyborgs," cybernetic organisms refer to beings that are composed of both biological and artificial (be it mechanical, robotic, electric, or bio-synthetic) parts. This example of biotechnology is quite commonly used as a trope in the science-fiction medium (the *Terminator* series particularly comes to mind). But it is also growing increasingly prevalent in modern paraplegic treatment. Conceptually, a cyborg can come into existence from two general directions: (1) a biological human being that is given artificial parts, or (2) a computer with synthetic artificial intelligence given biological parts. Again, there are many issues packed into this biotechnological possibility, and this thesis will tangentially speak to some of these issues.
Digital Preservation of Human Consciousness ("mind-uploading")	Refers to the hypothetical process of "uploading" a conscious human mind into a computer system. This is one of the more radical possible frontiers, but it remains a particularly popular research focus for many

	Transhumanists and biotechnology-engineers with a more radical bend. The basic premise comes from the idea that a computer system can someday replicate the infrastructure and processes of a brain's neuron-information generation and transfer system. One of the more radical products of this would be the prospect of being able to preserve your mind and consciousness, which would theoretically allow a certain kind of immortality. Obviously, there are many philosophical and practical problems to this. But strong hope is held out for this possibility by many Transhumanist thinkers.
Nanotechnology	Refers to the field of study that involves technology of a molecular scale. "Nanotechnology" refers more to a particular practical scope of research interests, and the concept serves as a niche hub for a number of scientific disciplines like robotics, engineering, and chemistry. The current public imagination and conversation typically revolve around its applications to medicine and the military. An example of the former would be something like the prospect of tiny little robots coursing up and down your bloodstream unclogging your arteries. An example of the latter would be something like having tiny little robots coursing through the bloodstream of soldiers regulating their heartbeat, adrenaline levels, and emotional states based on real-time decisions made by a team commander in a remote, removed location.
Neural Implants	Refers to very small technological apparatuses attached to the folds of the brain with purpose of providing targeted electrical stimuli. Theoretically, this could lead to things like increased memory function and sensory capabilities. On an extreme level, it could lead to the prospect of direct manipulation of mental processes – the mind in this hypothetical would be very much like a computer, and a measure of objective distance would open up between a neural-implant-using person and his/her mind.
Sentient Artificial Intelligence	A classic trope in science-fiction, this refers to the possibility of computers – with a sufficiently strong autonomous capacity to generate, manage, and interpret its information – to develop a sense of "self-hood" and

	consciousness. This is, of course, on the more extreme end of scientific imagination, but its ubiquity as a possibility in studies of artificial intelligence suggests its status as the teleological end point for many research initiatives in this field.
Cryonics	This particular procedure is not really an example of human enhancement technology; rather, it is something like a supplementary method. It refers to the process of freezing a biological being who can no longer be kept alive by modern medicine in the hopes that it can be reanimated at a time when the state of medicine can accommodate its existence. There are, in fact, a good number of cryonic labs in existence to day, often with startlingly long lists of clientele. The most famous of these labs is probably Alcor Life Extension Foundation, based in Scottsdale, Arizona.
Technologically-Induced Immortality	Standing somewhat apart from the idea of mind-uploading, this research prospect refers to the general goal of using a myriad of biotechnological instruments, therapies, and techniques to slow down (or perhaps even stop) cellular deterioration to a point where death becomes voluntary. Currently, the best example of a research initiative in this direction is biogerontologist Aubrey de Grey's "Strategies for Engineered Negligible Senescence" (SENS).

Table 2: Members of the President's Council for Bioethics (PCBE)

Chairmen	
Edmund D. Pellegrino, M.D. (2005-2008)	Physician, Academic
Leon R. Kass, M.D., Ph.D. (2001-2005)	Physician, Scientist, Academic

* Members served throughout the entirety of the PCBE's existence unless stated.

Members	
Ben Carson, M.D.	Neurosurgeon
Rebecca Dresser, J.D., M.S.	Academic, Ethicist, Legal Scholar
Daniel W. Foster, M.D.	Physician
Michael Gazzaniga, Ph.D.	Academic, Psychologist
Robert P. George, J.D., D. Phil	Academic, Legal Scholar
Alfonso Gomez-Lobo, D. Phil	Academic, Philosopher
William B. Hurlbut, M.D.	Physician, Theologian, Ethicist
Charles Krauthammer, M.D.	Physician, Journalist
Peter Augustine Lawler, Ph.D.	Academic, Political Philosopher
Paul McHugh, M.D.	Psychiatrist, Neurologist
Gilbert C. Meilaender, Ph.D.	Academic, Theologian
Janet D. Rowley, M.D.	Geneticist
Diana J. Schaub, Ph.D.	Political Scientist, Political Philosopher
Elizabeth H. Blackburn, Ph.D. (2002-2004)	Molecular Biologist
Stephen L. Carter, J.D. (2002)	Academic, Legal Scholar

Francis Fukuyama, Ph.D. (2002-2005)	Political Scientist, Political Philosopher
Mary Ann Glendon, J.D., M.Comp.L. (2002-2005)	Ethicist, Legal Scholar, Academic
William F. May, Ph.D. (2002-2004)	Theologian, Ethicist
Michael J. Sandel, D.Phil. (2002-2005)	Academic, Philosopher
James Q. Wilson (2002-2005)	Political Scientist, Sociologist

Former Council Staff	
F. Daniel Davis, Ph.D. (Executive Director, 2005-2009)	Academic, Philosopher, Ethicist
Dean Frazier Clancy (Executive Director, 2001-2004)	Policy-maker, Policy-analyst
Yuval Levin (Executive Director, 2004-2005)	Political analyst, Academic, Journalist
Richard Roblin, Ph.D. (Scientific Director, 2001-2005) (Acting Executive Director, 2005)	Ethicist
O. Carter Snead (General Counsel, 2003-2005)	Ethicist, Legal Scholar