In Saecula Saeculorum

Transhumanist Philosophy, Biogerontology, and the
Roman Catholic Magisterium on the Ethics of Radical Life Extension

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For my father, Andre Noel Labrecque,
whose love transcends the bonds of mortality

Contents

Abstract

The roots of the human desire for agelessness and the want to surpass the limitations of the human condition go deep into the reaches of history. The religious disposition for immortality is ancient. However, the concept of transcending human nature and ushering in a new kind of earthly existence is largely attributed to prominent evolutionary biologist Julian Huxley, who coined the term "transhumanism" in his 1957 publication Knowledge, Morality, and Destiny.

Contemporary transhumanism, which is both a philosophy and a movement, criticizes our apathy in having relinquished human evolutionary development to Nature; instead, it looks to assume proper control over our (re)design, through the responsible use of science and technology, in order to offset the shortcomings that are regrettable characteristics of our current human state. The inevitability of ageing and death, inadequate and fluctuating intellectual capacity, corporeal unreliability, and emotional fragility are but a sample of those features of the human condition which, according to transhumanists, encumber our flourishing, suspend us in stasis, and, therefore, necessitate biotechnological intervention.

This dissertation engages transhumanism, biogerontology, and the Roman Catholic Magisterium on the matter of radical life extension (RLE). No longer within the realm of simple speculation, the idea of increasing human life expectancy by decades (at least) has become a serious scientific pursuit. Even though the Roman Catholic Church has been, and continues to be, an active contributor to bioethical discourse, it has not yet ruled on the permissibility or desirability of this particular prospect. Over centuries, the Church has developed sophisticated doctrines on immortality, salvation, and transcendence that address human finitude, but these are described as being attainable only outside of, or beyond, the scope of this mortal, temporal human experience. The expectation of a growing number of scientists and philosophers is that, in due time, humans will know indefinite longevity (or "virtual immortality") in the here-and-now.

Here, I take up advances in biogerontology and a comparison of transhumanist and Roman Catholic approaches to RLE with special attention given to the ethical implications for personhood, the common good, the social order, and the environment. I also consider the possibility of classifying transhumanism as a secular religion.

Résumé

Le désir de l'homme de trouver la fontaine de Jouvence et de dépasser les limites de la condition humaine est profondément enraciné dans l'histoire. Les religions, pour leur part, parlent depuis toujours d'immortalité. Quoi qu'il en soit, le concept de transcendance de la nature humaine et d'ouverture à un nouveau type d'existence terrestre est largement attribuable à l'éminent biologiste de l'évolution Julian Huxley qui, en 1957, invente le terme « transhumanism » (transhumanisme) dans Knowledge, Morality, and Destiny.

Le transhumanisme contemporain, qui constitue à la fois une philosophie et un mouvement, nous blâme d'avoir baissé les bras et d'avoir abandonné à la nature le développement évolutif humain; il cherche plutôt une façon de reprendre la maîtrise de notre (re)développement en faisant un usage responsable de la science et de la technologie afin de compenser les lacunes qui sont des caractéristiques regrettables de l'être humain à l'heure actuelle. Le caractère inévitable du vieillissement et de la mort, une capacité intellectuelle inadéquate et fluctuante, le manque de fiabilité du corps, ainsi qu'une fragilité émotionnelle représentent des exemples de ces caractéristiques de la condition humaine qui, selon les transhumanistes, empêchent notre épanouissement, nous mettent en état d'arrêt, et nécessitent, par conséquent, une intervention biotechnologique.

Le présent mémoire examine les positions du transhumanisme, de la biogérontologie et du Magistère catholique romain en matière d'extension radicale de la vie humaine. L'idée de prolonger l'espérance de vie de dizaines d'années (au moins), qui ne relève plus de la simple spéculation, constitue maintenant un sérieux champ d'investigation scientifique. Même si l'Église catholique romaine a contribué activement au discours bioéthique, et continue de le faire, elle n'a pas encore entériné le caractère recevable et désirable d'une telle perspective. Si, au cours des siècles, l'Église a élaboré des doctrines sophistiquées qui traitent de la finitude de l'humain, soit de son immortalité, de son salut, et de sa transcendance, elle décrit ces états comme n'étant atteignables qu'en dehors, ou au-delà, de la portée de cette expérience humaine temporelle et mortelle. Un nombre grandissant de scientifiques et de philosophes s'attendent à ce que, le temps venu, les humains connaissent une espérance de vie indéfinie (ou une « immortalité virtuelle »), une permanence dans l'instant présent.

Je prends en compte ici les avancées de la biogérontologie et une comparaison des approches du transhumanisme et de l'Église catholique en regard de l'extension radicale de la vie humaine en accordant une attention particulière aux répercussions sur le plan éthique pour la personne, le bien commun, l'ordre social, et l'environnement. Je considère également la possibilité de classifier le transhumanisme comme « religion séculière ».

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For my family, especially my mother, Lois, my sister, Tammy, and Lisa, whose love, I am convinced, is the single most compelling argument for the radical prolongation of life.

"Gratias ago Deo meo semper pro vobis."[1]

[1] 1 Cor. 1.4.

Introduction

An intricate mural is fixed along the contours of the Salle Louis-Fréchette in the Grand Théâtre de Québec in Quebec City.[1] With a surface area of over 3600 square metres, sculptor Jordi Bonet's famed triptych (called "Death, Space, and Freedom" or "The Past, the Present, and the Future") is something to behold. There was a great deal of excitement leading up to the unveiling of the piece at the Théâtre's inauguration in 1971 and the crème de la crème of Quebec society bustled in to be among the first to appreciate its beauty. As their eyes scanned the extensive work, delight turned to offence when the controversial words of revolutionary poet Claude Péloquin appeared, almost undetectably, from the rock: "Vous êtes pas écoeurés de mourir, bande de caves? C'est assez!" 'Aren't you sick of dying, you morons? Enough!'

The thought of so bold a statement in the high temple of culture that the Théâtre represented was nothing short of scandalous; art was to stir the senses, not boil the blood. The rage that ensued was not specifically rooted in an interpretation of the words as a lament for the injustice of mortality. Some read the inscription as an outcry against the people of Quebec who had become apathetic in their struggle for independence; others saw in it a political ploy to instigate, provoke, or infuriate the masses. Perhaps the urge was to awaken the people and rescue the fading initiative to preserve culture and identity from impending oblivion. Whatever the case, the allegation was not taken lightly.

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[1] See Grand Théâtre de Québec, "La murale de Jordi Bonet," 23 Sept. 2009 <http://www.grandtheatre.qc.ca/pages/la-murale-de-jordi-bonet-33.html>.

Transhumanism, a contemporary movement and philosophy, has taken up the charge of confronting deathism[2] (that is, the passive acceptance of death) with great enthusiasm, but in a sense that Péloquin could never have expected. Transhumanists encourage the responsible use of science and technology to improve the human condition and radically extend the human health span (that is, a life span free from disease and impairment of every kind) with the ultimate aim of eliminating ageing and making death voluntary.[3] Transhumanists are, to be sure, "écoeurés de mourir;" they regret the "deathist values" of society and "complacency in the face of a continual, massive loss of human life."[4] And there is no particular apprehension on their part about the possibility that exchanging our currently limited condition for a superior one – marked by enhanced cognitive, emotional, and physical capacities – may very well "enable us to move beyond what some would think of as 'human.'"[5]

However, Margaret Somerville, professor of law and medicine, and founding director of the Centre for Medicine, Ethics, and Law at McGill University, issues an important warning:

> In the past, because we couldn't change what 'human' meant, we had no need to articulate what constituted it exactly. That is no longer true, as we have seen. If we are to respond convincingly to propositions that we should change human nature, such as those

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[2] Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association, 2003, 16 July 2005 <http://www.transhumanism.org/ resources/ FAQv21.pdf> 37. It is important to note that many transhumanists would be satisfied with a significant increase in the human health span ("to be able to live as long as they want to live') and the reduction of "unnecessary death." Not all are equally adamant about the pursuit of immortality *per se*, but the goal is, nevertheless, to make death voluntary. See James H. Hughes, "An Epistle on H+ to the Italian Catholics," 9 Sept. 2009, 18 Oct. 2009 <http://humanityplus.org/category/ religion/> §3.

[3] Bostrom, "Transhumanism FAQ" 4; 37.

[4] Bostrom, "Transhumanism FAQ" 16.

[5] Bostrom, "Transhumanism FAQ" 4.

> the transhumanists are putting forward, we must understand what is valuable in that nature and decide what must be preserved at all costs.[6]

Michael Clisham points to the "near boundless opportunities" that will result "from the convergence of NBIC technologies [that is, nanotechnology, biotechnology, information technology, and cognitive science], increasing human potential at a speed that may eclipse the scientific and technological developments of the last millennium in a fraction of that time."[7] According to Nick Bostrom, director of the Future of Humanity Institute and professor of philosophy at Oxford University, "transhumanism is entering the mainstream culture today, as increasing numbers of scientists, scientifically literate philosophers, and social thinkers are beginning to take seriously the range of possibilities that transhumanism encompasses."[8] Given the call for radical life extension and the emergent science that will make this possible, there is a certain sense of urgency that implores serious interdisciplinary reflection on the ethics of this project.

This dissertation is a response to that call. In view of the prediction that over one fifth of the Canadian population will be aged sixty-five and over by 2026,[9] I am especially interested here in the radical prolongation of human life, which is not simply a transhumanist enterprise, but an important – though much

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[6] Margaret Somerville, The Ethical Imagination: Journeys of the Human Spirit (Toronto: Anansi, 2006) 191-192.

[7] Michael Clisham, "Refining Humanity: A Review of *The Coevolution of Human Potential and Converging Technologies*," Journal of Law, Medicine & Ethics 33.2 (2005) 381. See also Somerville, Ethical Imagination 172.

[8] Nick Bostrom, "Transhumanism FAQ" 5.

[9] See Statistics Canada, "Projected Population by Age Group According to Three Projection Scenarios for 2006, 2011, 2016, 2021, 2026, 2031 and 2036," 26 May 2010, 12 Aug. 2010 <http://www40.statcan.gc.ca/ l01/cst01/demo08c-eng.htm>.

debated – pursuit in the sciences. The "accelerating advances" in technology[10] not only have a bearing on our conceptualization of ageing and personhood, they also bring into question the nature, purpose, and trajectory of human existence itself.[11] The world's religions have much to say about the merits of technology and the ramifications of its use. As such, this study explores the ethics of radical life extension by crossing the boundaries between transhumanism, biogerontology, and the Roman Catholic tradition.

In the first chapter, I provide an overview of transhumanist anthropology, relying heavily on Bostrom's writings given that he continues to be one of the major proponents of transhumanism. Here, I describe major theoretical and pragmatic themes in the literature on transhumanism, identifying important antecedents in Dante's *Paradiso* (that are frequently overlooked) and Julian Huxley's Knowledge, Morality, and Destiny and Essays of a Humanist in anticipation of the conversation with religion that follows suit.

The second chapter introduces the study of ageing and prolongevity, underscoring the challenge for both disciplines to gain credibility as legitimate subjects for scientific research. I refer primarily to the extensive contributions of Leonard Hayflick, a well respected biogerontologist whose publications on ageing and anti-ageing have shaped much of the conversation in the field. His denunciation of scientific attempts to slow or arrest the ageing process is countered by Aubrey de Grey, a more enthusiastic biogerontologist who, like

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[10] See Gregory E. Jordan, "Apologia for Transhumanist Religion," Journal of Evolution & Technology 15.1 (2006): 55.

[11] David Kinsley argues that, "[i]n essence, these are *religious* questions," italics mine. See David Kinsley, Health, Healing, and Religion: A Cross-Cultural Perspective (Upper Saddle River, NJ: Prentice Hall, 1996) 152.

Bostrom, is hopeful about defeating ageing as a cause of death. In addition, I report on a number of notable developments in the science of longevity to shed light on the plausibility of the transhumanist investment in the radical extension of human life. This demonstrates how progress in the area is pointing to a *real* potential for science to negotiate ageing and dramatically alter the life span.

The third chapter engages the Roman Catholic Church, an active voice in public bioethical discourse, whose Magisterium has not yet been studied in relation to the prospect of significantly prolonging human life. Here, I survey major tenets in the tradition that have bearing on the issue at hand, making extensive use of a chapter by Terence Nichols, professor of systematic theology and former department chair at the University of St. Thomas, in Derek Maher and Calvin Mercer's Religion and the Implications of Radical Life Extension. I take up the Catechism of the Catholic Church as a seminal point of reference when addressing the fundamental contents of doctrine found, mainly, in two important texts from the Congregation for the Doctrine of Faith, namely *Donum Vitae* and *Dignitas Personae*, the International Theological Commission's "Communion and Stewardship: Human Persons Created in the Image of God," John Paul II's *Evangelium Vitae* and *Veritatis Splendor*, and contributions from Benedict XVI that pertain to radical life extension, immortality, and other attempts to improve the human condition and manipulate human nature. The ethical analysis that is begun here in the Roman Catholic context is developed in conjunction with other sources in the chapter that follows.

The fourth chapter intersects transhumanist philosophy, biogerontology, and Roman Catholicism in an ethical exploration of radical life extension. Since

the Church has yet to rule on the issue at hand, I look to authors, in addition to Somerville and Bostrom, who have contributed to the study of transhumanism, the radical prolongation of life, and religion in some combination. In particular, I take up the work of Ronald Cole-Turner, the H. Parker Sharp Professor of Theology and Ethics at Pittsburgh Theological Seminary and an ordained minister of the United Church of Christ, and Todd Daly, assistant professor of theology and ethics at Urbana Theological Seminary in Illinois. Over the course of my discussion on personhood, embodiment, the common good, social justice, and the significance of nature and "the natural," I expose a number of similarities and differences between transhumanism and religion[12] that will fuel the discussion taken up in the last chapter.

In the fifth chapter, I question the possibility of considering transhumanism as a religion. Once again, I call upon Margaret Somerville and Nick Bostrom, in addition to Brent Waters, director of the Center for Ethics and Values, and assistant professor of Christian social ethics at Garret-Evangelical Theological Seminary in Illinois, who have each made claims about classifying transhumanism as a religion. Although the authors agree that transhumanism shares a number of the same *functions* that we ordinarily attribute to religion, no consensus is reached about its actual status as a religion. Here, I initiate a conversation on the phenomenon of "secular religion" using transhumanism and cryonics as cases in point.

[12] It is important to note that my point of reference for religion here is Christianity, although comparisons can (and should) also be made with other religious traditions.

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Citissimus. *Altissimus*. *Fortissimus*: Outlining Transhumanist Anthropology

At the 2008 spring convocation, McGill University counted itself among a number of prominent learning institutes to confer an honorary doctorate on Raymond Kurzweil. To be sure, the American inventor's accomplishments are nothing short of outstanding. He was the first to develop an omni-font optical character recognition system, a pocket-sized print-to-speech reading machine for persons with visual impairment, and a music synthesizer that can recreate the grand piano in addition to many other things.[1]

Kurzweil is at the helm of a slew of companies that he founded over the last few decades. He is nationally and internationally recognized, having won a host of prestigious awards for technological innovations too numerous to list here.[2] It is no wonder that Forbes has called Kurzweil "the ultimate thinking machine," that *Inc*. magazine has hailed him as "Edison's rightful heir," and that PBS has ranked him among sixteen "revolutionaries who made America."[3] Clearly, it was on account of this extraordinary merit that McGill selected Kurzweil as an honorary degree recipient.

But the inventor is also known by his prolific writing. His futuristic ideas and predictions, captured in such works as The Age of Spiritual Machines and The Singularity Is Near, have been judged by some to be a peculiar stretch of the

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[1] Kurzweil Technologies, "A Brief Career Summary of Ray Kurzweil," 2008, 17 April 2009 <http://www.kurzweiltech.com/aboutray.html> par.1.
[2] Kurzweil Technologies par.1.
[3] Raymond Kurzweil, The Singularity Is Near: When Humans Transcend Biology (New York: Penguin, 2005) iv.

imagination that is unbecoming of an "ultimate thinking machine." Kurzweil is, after all, a transhumanist or is, at the very least, quite easily associated with transhumanist motivations. He is on an extensive daily supplement regimen (of 200 or so vitamins and minerals) in addition to receiving weekly "intravenous longevity treatments" so that he might live long enough to witness the Singularity: a secular eschaton of sorts for which some transhumanists have been anxiously awaiting.[4] The Singularity, grounded primarily in the conceptualizations of mathematicians John von Neumann and Vernor Vinge, is a "future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed" in its ultimate liberation from biological restraint and inevitable death.[5]

Kurzweil confidently "set[s] the date for the Singularity – representing a profound and disruptive transformation in human capability – as 2045. The nonbiological intelligence created in that year," he predicts, "will be one billion times more powerful than all human intelligence today."[6] Yet, the inventor is convinced that with the Singularity will come "a world that is still human but that transcends our biological roots" as opposed to Vinge who anticipates the end of the human era with the creation of superhuman intelligence.[7] In fact, what

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[4] Gary Wolf, "Futurist Ray Kurzweil Pulls Out All the Stops (and Pills) to Live to Witness the Singularity," Wired Magazine 24 Mar. 2008, 14 Jan. 2009 <http://www.wired.com/medtech/drugs/magazine/16-04/ff_kurzweil> par. 7; Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association, 2003, 16 July 2005 <http://www.transhumanism.org/resources/FAQv21.pdf> 19-20.

[5] Kurzweil, Singularity 7-9; Bostrom, "Transhumanism FAQ" 19-20.

[6] Kurzweil, Singularity 136.

[7] Kurzweil, Singularity 9; Vernor Vinge, "The Coming Technological Singularity: How to Survive in the Post-Human Era," VISION-21 Symposium, NASA Lewis Research Center and the Ohio Aerospace Institute, Mar. 1993, 16 Dec. 2008 <http://www-rohan.sdsu.edu/faculty/vinge/misc/singularity.html> par.1.

Kurzweil finds problematic about the term "transhumanism" is that it suggests that we will transcend our humanity. Since his vision is that we will no longer be contained in our *biology*, Kurzweil prefers "transbiologism" as the better nomenclature.[8] Although there will most certainly be a convergence, or hybridization, of humans and machines post-Singularity, Kurzweil is convinced that "what will remain unequivocally human in such a world, [is] simply this quality: ours is the species that inherently seeks to extend its physical and mental reach beyond current limitations."[9] The question, of course, is whether we can transcend our biology without transcending our humanity.

Immortality and Religion

The desire for agelessness is embedded in the human condition and the roots of our anti-ageing, prolongevity, and pro-immortality imaginings go deep into the reaches of human history and are central to many religious worldviews. One of the most famous of these comes from Mesopotamia.

The Poem of the Supersage, composed some 1700 years before the common era, is fundamental to the ancient Mesopotamian account of anthropogenesis. Assyriologist Jean Bottéro argues that it is "the oldest known description of the ideas that humankind had developed with regard to its own

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[8] Ray Kurzweil, e-mail to author, 10 Sept. 2009.

[9] Kurzweil, Singularity 9. Incidentally, Kurzweil serves as chancellor for Singularity University in California. The school's mission is "to assemble, educate and inspire a cadre of leaders who strive to understand and facilitate the development of exponentially advancing technologies and apply, focus and guide these tools to address humanity's grand challenges." See Singularity University, "Origin, Mission & Vision," 2010, 16 Aug. 2010 <http://singularityu.org/about/faq/#mission>.

origins and with regard to the sense of its existence."[10] The creation myth tells of a time, before the advent of humanity, when only the gods were living. As might be expected, the order of the divine realm closely paralleled that of its earthly counterpart, dividing the heavenly citizens into two distinct groups: the gods of first rank (called the Anunnaki), who were pure consumers, and the labourer-gods (called the Igigi) who served them.[11]

As it happened, the Igigi, wearied by work and the unjust conditions of life, revolted. They brought their petitions to Enlil, sovereign lord of the universe. The Anunnaki feared famine and commotion shook the heavens. During the assembly of the divine council to deliberate on the matter, Enki, god of intelligence *par excellence* and third in power of the Mesopotamian triad, designed a plan to replace the labourers. Humankind, fashioned out of clay and the blood of a minor deity (in order to take up the tasks of the Igigi with comparable efficiency), would, in their stead, live the life of service, even though it would be one of finite duration.[12] To be sure, immortality belonged to the gods alone.

The council was delighted with Enki's ingenuity and all proceeded according to plan until the humans began to populate. Their growing numbers produced such a noise that it continuously disrupted the divine sovereign's slumber. Exhausted and terribly frustrated, Enlil sought to eliminate every last one of them. In the end, however, the gods recognized that such wrath had to be

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[10] Jean Bottéro, Mesopotamia: Writing, Reasoning, and the Gods, trans. Zainab Bahrani and Marc Van De Mieroop (Chicago: U of Chicago P, 1992) 221-222.
[11] Bottéro 222.
[12] Bottéro 222.

capped when, in the shadow of a deluge sent to obliterate all of humankind, they found themselves once again on the verge of starvation. The Supersage, a human protégé who was secretly spared and instructed by Enki to build an ark, emerged as the sole survivor of the catastrophe and thus the sole provider for the hungry gods.[13]

The divine council assembled again, this time coming quickly to a consensus that humans ought to be preserved, but with a number of limitations put in place to keep their population in check. Consequently, Enki "introduced not only a decrease of the number of births by the natural or voluntary sterility of certain women and by infant mortality, but also a shortening of human life" to a mere one hundred years.[14] In Genesis, too, we see significant longevity reduced to a mere one hundred and twenty years when God grew displeased with human wickedness.[15] Before then, Adam and his descendants (Seth, Enosh, Kenan, Mahalalel, Jared, and Methuselah – the proverbial representative of long mortal life) lived to a ripe nine hundred years or so.[16]

In the ancient Near East, these divine restrictions would constitute "the 'final touch' to man's nature, constitution and destiny."[17] All else considered, the *only* distinction between the nature and destiny of the inhabitants of Heaven and

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[13] Bottéro 223.
[14] Bottéro 223.
[15] Gen. 6.3.
[16] Gen. 5.
[17] Bottéro 223.

those of Earth was the blessed exemption of the former from finitude.[18]

This "injustice" is best described in the ancient Babylonian Epic of Gilgamesh. The pursuit of agelessness is its primary theme. When Gilgamesh, king of the city-state of Uruk loses his friend and companion to an untimely death at the decree of the gods, he is hit by the stark reality of his own mortality and, fearing oblivion, embarks on a journey to learn the secret of the immortal Uta-napishti ("he found life"). He happens upon the wise alewife, Shiduri, who warns him of the futility of his efforts. Relentless, Gilgamesh proceeds with the quest until meeting Uta-napishti, who survived the great Deluge of early human history. "You exhaust yourself with ceaseless toil,"[19] Uta-napishti says to the sorrowed king, and he goes on to explain the particularity of being blessed with timelessness by the sovereign deity, Enlil.[20]

Gilgamesh is astounded by the ordinariness of the immortal whose gift of eternal life had come with no other superhuman capacity. "Your form is no different," the king notes, "you are just like me."[21] Uta-napishti, perhaps to entertain the familiar – though vain – attempt of a human trying to secure his own immortality, complies with Gilgamesh's pleading and challenges him to remain awake for a full week; since sleep was considered the brother of death in the

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[18] That such a view has an interesting semblance to Epicurean theology should not be lost on readers. To be sure, Mesopotamians looked to the promise of an afterlife, but it was gloomy at best. Although the happiness of the sage, as per Epicurus, could match that of the gods, it fell short in regard to duration. See Bottéro 230 and Andrew R. Dyck, ed., Cicero's *De Natura Deorum* (Cambridge: Cambridge UP, 2003) 1.

[19] Andrew George, trans., The Epic of Gilgamesh (London: Penguin, 1999) X.298.

[20] George, Gilgamesh XI.203.

[21] George, Gilgamesh XI.3.

ancient world, this would be the king's last hope.[22] Gilgamesh fails in the attempt and petitions the long-lived man: "O Uta-napishti, what should I do and where should I go? A thief has taken hold of my [*flesh!*] For there in my bed-chamber Death does abide, and wherever [I] turn, there too will be Death."[23]

Uta-napishti's wife is filled with compassion for the forlorn hero and urges that a gift be given to Gilgamesh that he might not return home empty-handed.[24] Uta-napishti offers what could only be the next best thing short of immortality. "Let me disclose, O Gilgamesh, a matter most secret," he says, "to you [I will] tell a mystery of [gods]."[25] At the bottom of the ocean lay rooted a plant that would restore youth and vigor to any who possessed it ("Its name shall be, 'Old Man Grown Young'").[26] Gilgamesh dives in and retrieves it, but later, while refreshing himself in a pool, a snake steals away the precious plant.[27] Defeated once again, Gilgamesh weeps bitterly as the snake sloughs its skin and dons the youth that should have been his.[28] On his return home, he recognizes that while (biological or physical) immortality is unattainable, he will not be forgotten (a deep and boding fear of Mesopotamians): the great walls of Uruk would stand in remembrance of him.[29]

Coveting divinity is a recurrent theme – albeit a negative one – in the first chapters of Genesis. In the second account of Creation, the serpent stirs distrust in

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[22] George, Gilgamesh XI.209.
[23] George, Gilgamesh XI.243-246.
[24] George, Gilgamesh XI.274-275.
[25] George, Gilgamesh XI.281-282.
[26] George, Gilgamesh XI.299.
[27] George, Gilgamesh XI.303-306.
[28] George, Gilgamesh XI.307-309.
[29] George, Gilgamesh XI.321-329.

the primordial couple upon suggesting that consuming fruit from the forbidden tree would open their eyes and make them like gods.[30] Their disobedience results in a number of curses that strain the relationships between humans, humans and nature, and humans and God culminating in their expulsion from the Garden lest they reach out to the Tree of Life and live forever.[31] In the eleventh chapter of Genesis, the desire for divinity is no less apparent as a united humanity chooses to build a city whose tower would reach the heavens; the humans wanted to make a name for themselves.[32] The human impulse to be God (and not merely *like* God) angers the Deity who foils the project by confusing their language so that they would not be able to communicate with each other, thereby rifting, once again, the human-human relationship.[33] Consciously forfeiting dependence on God by choosing to rely exclusively on themselves in the pursuit of greatness is, here, deeply offensive to the Deity.[34] This is a theme that we will return to more than once.

It is no wonder, then, that our religious traditions speak of only few mortals who were spared from the threat of oblivion, lifted into the divine assembly, or eternalized. Besides Uta-napishti, we might include Enoch, who "walked with God; then he was no more, because God took him"[35] (hinting at preservation from corporeal death); Imhotep, a physician and architect, as well as Amenhotep, son of Hapu and high official of Amenhotep III, who were deified in

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[30] Gen. 3.5. See also Barry L. Bandstra, Reading the Old Testament: An Introduction to the Hebrew Bible, 2nd ed. (Belmont: Wadsworth, 1999) 65-66.
[31] Gen. 3.22.
[32] Gen. 11.4.
[33] Gen.11.7.
[34] Bandstra 82-83.
[35] Gen. 5.24.

ancient Egypt;[36] the Apotheothenai of ancient Greece;[37] ancient Roman emperors and heroes who were granted divine citizenship;[38] the Virgin Mary who, according to the doctrine of the Assumption declared by Pius XII, was taken up body and soul – that is, free from bodily corruption and decay – into Heaven;[39] and Jesus, whose resurrection from the dead is the "crowning truth" of the Christian religion.[40] A common thread in many of these narratives is the futility of the human quest to secure immortality or divinity; it is for God, or the gods, to bestow such a gift. Transcendence is alluring, but the desire for transcendence has been, and continues to be, looked upon with a cautious ambivalence at best.

However, many religious traditions teach that such experiences are not beyond the possession of ordinary humans. The righteous followers of Jesus, firstborn from the dead and redeemer of humankind, shall walk in the newness of life.[41] Faithful Muslims will delight in the lush gardens of Paradise[42] and Jews "who sleep in the dust of the earth will awake" to everlasting life.[43] For Hindus, the eternal destiny is *moksha*: liberation from the endless round of births and the

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[36] John Baines, Leonard H. Lesko, and David P. Silverman, Religion in Ancient Egypt: Gods, Myths, and Personal Practice, ed. Byron E. Shafer (Ithaca: Cornell UP, 1991) 57.

[37] See Carla M. Antonaccio, An Archaeology of Ancestors: Tomb Cult and Hero Cult in Early Greece (Lanham, MD: Rowman & Littlefield, 1995). See also Christopher Partridge, ed., An Introduction to World Religions (Minneapolis: Fortress P, 2005) 80-81.

[38] See Ittai Gradel, Emperor Worship and Roman Religion (Oxford: Clarendon P, 2002). See also Christopher Partridge 85-86.

[39] Pius XII, *Munificentissimus Deus*: Defining the Dogma of the Assumption, Vatican City: Libreria Editrice Vaticana, 1950, 18 Aug. 2009 <http://www.vatican. va/holy_father/pius_xii/apost_constitutions/documents/hf_p-xii_apc_19501101_munificentissimus-deus_en.html>.

[40] See Matt. 28; Mark 16; Luke 24; John 20-21; Catechism of the Catholic Church (Ottawa: Canadian Conference of Catholic Bishops, 1994) §638.

[41] Rom. 6.4; Col. 1.18.

[42] See, for example, Qur'an 2.25; 18.107; 31.8; 47.15.

[43] Dan. 12.2. Bandstra notes that "[t]his late passage in Daniel is a hint of the notion of resurrection that takes hold strongly within Judaism and Christianity after the second century B.C.E." See Bandstra 471. To be sure, there are differences in opinion within each of the religions

binding laws of karma, and release from every limitation.[44] The unfathomable, unconditioned bliss beyond death is known to Buddhists as *nirvana* (although it would be incorrect to liken this to a perpetual existence of the self in the way that many of the religions mentioned here do).[45]

The agenda of contemporary science (I think here of genetic engineering, anti-ageing medicine, neuroscience, and nanotechnology, among others) certainly reveals a shared interest with religion in regard to the pursuit of long life, perfection, and other attributes once thought unattainable because of the constraints of the human condition. Whereas many who identify with the Abrahamic religions look for a share in the world to come and those of the Indic religions for a liberation from suffering and cyclical rebirth that is beyond this material existence, transhumanism is confident that the here-and-now may be a possible venue for transcendence (however paradoxical this may sound to students of religion). In popular culture, this has been called the "immanentization of the eschaton."[46] Why be haunted by the uncertainty of life after death, transhumanists argue, when the physical world and the palpable body can be

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listed here as to what life in the hereafter entails. For instance, while some forms of Judaism speak of the immortal soul dwelling in Gan Eden, others teach about the reunion of body and soul in Paradise. Some Jews deny literal interpretations of immortality or the resurrection altogether, although Theodore Ludwig is convinced that "even Jewish modernists generally believe that some essence of the person lives on after death." See Theodore Ludwig, The Sacred Paths: Understanding the Religions of the World, 4th ed. (Upper Saddle River: Pearson Prentice Hall, 2006) 377.

[44] See David R. Kinsley, Hinduism: A Cultural Perspective, 2nd ed (Upper Saddle River, NY: Prentice Hall, 1993) 89-93. Huston Smith states that the purpose of Hinduism is "to pass beyond imperfection altogether." See Huston Smith, The World's Religions: Our Great Wisdom Traditions (New York: HarperCollins, 1991) 22.

[45] See Peter Harvey, An Introduction to Buddhism: Teachings, History and Practices (Cambridge: Cambridge UP, 1990) 60-68; 103-104.

[46] Eric Voegelin discusses the immanentization of the (Christian) eschaton in The New Science of Politics: An Introduction (Chicago: U of Chicago P, 1987) 66; 69; 91.

manipulated to produce promising results of life extension in the here-and-now? Transhumanism takes its cue from, and looks to deepen, these motivations.

Managing Evolution

There is more than just an allure of the transcendent here. Transhumanists, like Kurzweil, are adamant about taking the reins of evolution away from nature. Since they do not recognize *Homo s. sapiens* as the pinnacle or end of evolutionary development, the intention is to assume control over our (re)design to advance the species into a more optimal state. Wilton Krogman leaves much room for such progression in his rendering of natural selection as adequate, but deficient (listing the backbone, impacted teeth, and the birthing process among the technical flaws) in "The Scars of Human Evolution."[47] "As a piece of machinery," he notes, "we humans are such a hodgepodge and makeshift that the real wonder resides in the fact that we get along as well as we do."[48] That said, Krogman argues that "[i]t is mayhap a form of human conceit – the egotism born of a highly evolved brain – to worry about our bodily imperfections or inadequacies."[49]

According to Frank Poirier and Jeffrey McKee, "[t]he legacy of our human evolutionary past has been one of unparalleled evolutionary success, due to remarkable behavioural adaptability born of our expanded brains."[50] However great this capacity for adaptability may be, it is limited, nonetheless; as a result,

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[47] Wilton M. Krogman, "The Scars of Human Evolution," Scientific American 185.6 (1951): 54-57.
[48] Krogman 54.
[49] Krogman 57.
[50] Frank E. Poirier and Jeffrey K. McKee, Understanding Human Evolution, 4th ed. (Upper Saddle River: Prentice Hall, 1999) 346.

transhumanists turn to the possibility of technological transformation. No longer patients at the whim of involuntary biological responses to environmental flux, humans are to become agents of their own transfiguration.

> According to Bostrom, transhumanism is defined as:
>
> (1) The intellectual and cultural movement that 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, and psychological capacities.
>
> (2) The study of the ramifications, promises, and potential dangers of technologies that will enable us to overcome fundamental human limitations, and the related study of the ethical matters involved in developing and using such technologies.[51]

A transhuman, then, is a transient being between current humans and posthumans: future beings "whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards."[52] Bostrom minimizes the suggestion that we may already be transhuman (vis-à-vis the development of humans over history)[53] even though it is quite clear that our increased longevity alone may very well point to such a truth.

In this way, the concept of "transhuman" as it is described here assumes an essentialist understanding of humanhood that is, characteristically, static and categorized by its arbitrarily standardized capacities that are relatively deficient when compared to what could be. Is *Homo s. sapiens* transhuman in light of its hominid ancestors? Do the variable traits of bipedalism, large and complex brains,

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[51] Bostrom, "Transhumanism FAQ" 4.
[52] Bostrom, "Transhumanism FAQ" 5.
[53] Bostrom, "Transhumanism FAQ" 6.

language, and culture constitute human status?[54] If so, will posthumans, especially those who/that are uploads or "synthetic artificial intelligences,"[55] be human at all? When it comes to self-preservation, do we strive to maintain *person*hood, *human*hood, or both? Can the two be teased apart?[56] The extensive philosophical literature on personhood theory[57] is largely ignored by transhumanist authors who often circumvent questions of this sort by alluding to the elusiveness of notions such as trans- and posthuman.[58] However vague its conceptualization, the objective, they say, is to become transhuman, at least for now.

To be sure, transhumanists are champions of autonomy, chief of the bioethical principles, and concede that people may "choose to remain unenhanced or choose to be enhanced" when the opportunities arise.[59] Yet, this more conscious dominion over the future of our species has interesting implications for gradualist and punctuated perspectives of hominid phylogeny; the first prospect views evolution as a continuous process of large populations whereas the second views it as a number of speciations resulting from smaller, isolated populations

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[54] In fact, large and complex brains, language, and culture were not characteristics of the first hominds. See Poirier and McKee 343.

[55] Bostrom, "Transhumanism FAQ" 5.

[56] See Peter Singer, Practical Ethics, 2nd ed (New York: Cambridge UP, 1993) 110-117.

[57] For example, see : Edward J. Furton and Louise A. Mitchell, eds., What Is Man, O Lord? The Human Person in a Biotech Age, Proceedings of the Eighteenth Workshop for Bishops (Boston: National Catholic Bioethics Center, 2002); Linda MacDonald Glenn, "Biotechnology at the Margins of Personhood: An Evolving Legal Paradigm," Diss., McGill U, 2002; Stanley Hauerwas, "Must a Patient Be a Person to Be a Patient? Or, My Uncle Charlie Is Not Much of a Person But He Is Still My Uncle Charlie," On Moral Medicine: Theological Perspectives in Medical Ethics, ed. Stephen E. Lammers and Allen Verhey (Grand Rapids: William B. Eerdmans, 1987); Derek Parfit, Reasons and Persons (Oxford: Clarendon P, 1984); Paul Ramsey, The Patient as Person: Explorations in Medical Ethics, 2nd ed. (New Haven: Yale UP, 2002); Stanley Rudman, Concepts of Person and Christian Ethics (Cambridge: Cambridge UP, 1997); Peter Singer, Practical Ethics, 2nd ed. (New York: Cambridge UP, 1993); Michael Tooley, Abortion and Infanticide (Oxford: Clarendon P, 1983); James Walters, What Is a Person? An Ethical Exploration (Urbana: U of Illinois P, 1997).

[58] Bostrom, "Transhumanism FAQ" 6.

[59] Bostrom, "Transhumanism FAQ" 4. The problem of classism will be taken up in later chapters.

broken off from the parent group.[60] Although self-directed designer evolution, as Simon Young refers to it,[61] will operate under the instruction of the human genome and by the providence of what Pierre Sonigo has called "l'ADN, dieu moderne" 'DNA, modern god,'[62] how development will proceed is difficult to fathom. Determining what type of descendants will be produced if humans assume control over their own evolution is a scientific question of great philosophical, religious, anthropological, economic, political, and ethical import.

The greater part of this discussion on transhumanist anthropology is drawn from publications of the World Transhumanist Association (now called "Humanity+") that boasts, at this time, some six thousand members worldwide.[63] Bostrom is its cofounder and is a principal spokesperson for the movement. His compendium, "The Transhumanism FAQ," is the work of almost a hundred contributors and, like a catechism, serves as an important exposition of basic tenets. There is no particular canon or comprehensive reading list that is representative of transhumanism, though a loosely defined corpus significant for the development of transhumanist thought can be accessed, as one might expect, electronically.[64] Bostrom cites James Hughes, Eliezer Yudkowsky, Mark Alan Walker, Julian Savulescu, Max More, and David Pearce among others as

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[60] Poirier and McKee 343-345.

[61] Simon Young, Designer Evolution: A Transhumanist Manifesto (Amherst, NY: Prometheus, 2006) 38; 305-306.

[62] Pierre Sonigo, "L'ADN, dieu moderne," Dieu et la science: Le nouveau choc, Le Nouvel Observateur 2094-2095 (23 Dec. 2004-5 Jan. 2005): 69.

[63] See Humanity +, "Membership," 21 Aug. 2009 <http://humanityplus.org/learn/about-us/membership>.

[64] Nick Bostrom, e-mail to author, 14 Nov. 2008.

important figures. Yet he notes that, like many disciplines, diversity abounds within the field itself.[65]

Among the various currents in transhumanism, Bostrom includes: (1) extropianism (which supports such principles as perpetual progress, self-transformation, practical optimism, intelligent technology, open society, self-direction, and rational thinking); (2) democratic transhumanism (which "advocates both the right to use technology to transcend the limitations of the human body and the extension of democratic concerns beyond formal legal equality and liberty, into economic and cultural liberty and equality, in order to protect values such as equality, solidarity, and democratic participation in a transhuman context"); (3) the hedonistic imperative (which looks to eradicate all forms of suffering and promotes "paradise-engineering"); and (4) singularitarianism (that is primarily concerned with the advent of superhuman intelligence).[66] Although my treatment of transhumanism as a philosophy and a movement will necessarily be a general one, major themes from each of these currents will be discussed to some degree.

Although Bostrom argues that "[i]t is not our human shape or the details of our current human biology that define what is valuable about us,"[67] he goes on to admit that "[r]adical technological modifications to our brains and bodies are needed" for posthumanhood.[68] By definition, transhumanists want to transcend our current human condition, which is ultimately flawed, feeble, and limiting. The

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[65] Bostrom, e-mail to author, 14 Nov. 2008.
[66] Bostrom, "Transhumanism FAQ" 44.
[67] Bostrom, "Transhumanism FAQ" 4.
[68] Bostrom, "Transhumanism FAQ" 6.

technological means that might serve this end include artificial intelligence, molecular nanotechnology, cryonic preservation and life extension, uploading (of the mind onto a computer), stem cells, nootropics, cloning, and genetic engineering.[69] "Technologies such as brain-computer interfaces and neuropharmacology could amplify human intelligence, increase emotional well-being, improve our capacity for steady commitment to life projects or a loved one, and even multiply the range and richness of possible emotions."[70]

Cryonic Self-Preservation

A number of transhumanists deride what they consider to be the deathist ideals of the majority; deathism, as the name implies, is complacency in the face of death, acceptance of death as a "natural" and/or necessary part of human life, or the belief that death, in its inevitability, infuses life with certain meaning.[71] As such, many in the transhumanist movement support cryonics, the experimental practice of "freezing" people, who cannot be helped by ordinary medical techniques and have been declared legally dead, in order to preserve them until the day that medical breakthroughs might bring about their reanimation.[72]

As of July 31, 2010, the Alcor Life Extension Foundation, established in 1972, claims 98 cryopatients and another 924 members who have made financial

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[69] Bostrom, "Transhumanism FAQ" 7-19.
[70] Bostrom, "Transhumanism FAQ" 5.
[71] Bostrom, "Transhumanism FAQ" 16.
[72] Bostrom, "Transhumanism FAQ" 15. See also Alcor Life Extension Foundation, "What Is Cryonics?" 20 Aug. 2007 <http://www.alcor.org/About Cryonics/index.html> par. 1.

and legal arrangements for cryopreservation.[73] Indeed, the commitment is a costly one at $150,000 (US) for the whole body or a more affordable $80,000 (US) for neurocryopreservation that is often paid out by making the firm a beneficiary of one's life insurance; current annual membership dues hover at $400 (US) with a 50% discount for full-time students![74] Despite the exorbitant pricing and the multiple risks involved in cryonics (such as the firm falling out of business or people in the future being disinterested in reviving cryopatients), the "chances of a this-worldly comeback if you opt for one of the popular alternative treatments – such as cremation or burial – are zero […]. [A] cost-benefit analysis justifies the expense."[75]

By a process called vitrification, which includes the use of high concentrations of cryoprotectants to prevent ice formation at temperatures below -120°C, the "person" (Alcor is adamant that this is the correct terminology here) is carried forward through time, for however long it may take, until the now only emerging science of nanomedicine[76] becomes mainstream and health can be fully restored.[77] The main objective here is to preserve the *structure* of matter; cryonicists are convinced that the restoration of physiological processes depends

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[73] Alcor Life Extension Foundation, "Alcor Membership Statistics," 2010, 13 Aug. 2010 <http://www.alcor.org/AboutAlcor/membershipstats.html>.

[74] Alcor Life Extension Foundation, "Required Costs and Cryopreservation Fund Minimums," 2009, 19 May 2010 <http://www.alcor.org/BecomeMember/scheduleA.html>.

[75] Bostrom, "Transhumanism FAQ" 16.

[76] Nanomedicine "will involve designing and building a vast proliferation of incredibly efficacious molecular devices, including medical nanorobots, and then deploying these devices in patients to establish and maintain a continuous state of human healthiness." In sum, this will grant humans molecular control over their own biology. See Fritz Allhoff, Patrick Lin, James Moor, and John Weckert, eds., Nanoethics: The Ethical and Social Implications of Nanotechnology (Hoboken, NJ: John Wiley, 2007) 162; 169.

[77] Alcor, "What Is Cryonics?" See also Bostrom, "Transhumanism FAQ" 16.

on the maintenance of cellular structure and cytochemistry.[78] This is precisely where the cryonicist theory of personhood lies: with the survival of basic brain structure (encoding memory and personality) comes the survival of the human person.[79]

Are the promises of cryonics nonsense? Not quite. The early 1970s marked the successful cryopreservation of preimplanted mammalian embryos and a decade or so later the first frozen human embryo was brought to term.[80] Since then, the cryopreservation of human embryos (often by the process of vitrification by which water becomes solid without freezing), in addition to gamete and ovarian tissue freezing, has become a mainstay of reproductive technology.

In addition, there are examples of reanimation of this type in nature. The wood frog, *Rana sylvatica*, is a remarkable creature, found throughout the continent (from the northeastern US, into much of Canada, most of Alaska, and even the Arctic Circle), that has proven exceedingly useful for studies in vertebrate cryobiology.[81] At low temperatures, glucose is synthesized in excessive amounts from the frog's liver glycogen and is distributed throughout its body, decreasing cell shrinkage that is caused by an osmotic pressure differential induced by extracellular freezing.[82] Urea, which is localized in the cells prior to

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[78] Alcor, "What Is Cryonics?" See also Bostrom, "Transhumanism FAQ" 16.
[79] Alcor, "What Is Cryonics?"
[80] Advanced Fertility Center of Chicago, "Embryo Freezing After IVF: Human Blastocyst and Embryo Cryopreservation and Vitrification," 2010, 21 Feb. 2010 <http://www.advancedfertility.com/cryo.htm> par. 9; 11.
[81] Miami University Department of Zoology, "Wood Frog Freezing Survival," Laboratory for Ecophysiological Cryobiology, 2009, 3 Sept. 2009 <http://www.units.muohio.edu/cryolab/projects/woodfrogfreezing.htm> par. 1.
[82] Miami University, "Wood Frog" par. 6-8.

freezing, and glucose serve as cryoprotective agents.[83] Studies have shown that the animal can survive "(a) the freezing of up to 65-70% of their body water; (b) a minimum body temperature of -6°C; and (c) uninterrupted freezing for [more than] 4 weeks" (although it is largely expected that wood frogs living in more northerly climates can sustain colder temperatures for longer periods).[84] In its frozen state, the heart beats but a few times per minute and then ceases altogether as does pulmonary respiration, circulation, and muscle contraction. Even though the animal appears to be dead, at least clinically, the process is reversible and, within a few hours after thawing, physiological function is restored.[85] The freeze tolerance of wood frogs is invaluable for research into the preservation of human tissue and organs for banking let alone for cryonics.

At Alcor, cryopreservation is ideally begun within moments after cardiac arrest. As soon as legal death is pronounced, cryotechnique can begin without the legal restrictions of procedures performed on those who are legally alive.[86] The distinction, for cryonicists, is merely a *legal* one. Blood circulation and oxygenation are artificially restored in cryopatients; if all goes well, blood chemistry and blood gases are indistinguishable from those of a legally living person.[87] Therefore, while cryopatients may be legally dead, they are biologically alive.[88] And when (not if) these patients are revived, they clearly were not dead in the first place. Cryonicists are convinced that "[t]oday's physicians will simply

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[83] Miami University, "Wood Frog" par. 6-8.
[84] Miami University, "Wood Frog" par. 1; 3; 4; 7.
[85] Miami University, "Wood Frog" par. 5.
[86] Alcor Life Extension Foundation, "Frequently Asked Questions," 20 Aug. 2009 <http://www.alcor.org/FAQs/faq01.html> Q.18.
[87] Alcor, "Frequently Asked Questions" Q.3.
[88] Alcor, "Frequently Asked Questions" Q.3.

have been wrong about when death occurs, as they have been so many times in the past."[89]

We must wonder here whether death ought to be defined, then, not so much in terms of the irreversibility of integrated function in the patient[90] but in reference to the current state of human technology. Even if it seems that this would somehow allow for different interpretations of death depending on the accessibility of such technologies, there is some truth in this matter regarding the evolution of defining death. It is no longer the case, for instance, that the arrest of breathing and heartbeat are necessarily indicative of death. Indeed, the more holistic definition that holds death to be the irreversible cessation of integrated functioning is a rather recent idea in medicine.[91]

Self-Preservation *in Machina*

Mind uploading consists of transferring human intellect from the brain to an electronic medium, such as a computer, that will simulate the brain so closely, it is hoped, that the two systems will be indistinguishable. Bostrom reports:

> A widely accepted position is that you survive so long as certain information patterns are conserved, such as your memories, values, attitudes, and emotional dispositions, and so long as there is causal continuity so that earlier stages of yourself help determine later stages of yourself. Views differ on the relative importance of these two criteria, but they can both be satisfied in the case of uploading. For the continuation of personhood, on this view, it matters little whether you are implemented on a silicon chip inside a computer

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[89] Alcor, "What Is Cryonics?" par. 10.

[90] David Lamb, Death, Brain Death, and Ethics (London: Croom Helm, 1985) 14.

[91] Jeff McMahan, "Brain Death, Cortical Death and Persistent Vegetative State," A Companion to Bioethics, ed. Helga Kuhse and Peter Singer (Oxford: Blackwell, 2001) 250-260.

> or in that gray, cheesy lump inside your skull, assuming both implementations are conscious.[92]

The allure of mind uploading for some transhumanists is its evasion of the biological deterioration, neurodegeneration, or senescence that comes with being contained in a corruptible and finite body; on this note, Bostrom suggests that a *virtual* or simulated body may provide the comfort and familiarity of embodiment but with the bonus of enhanced experiences of every kind.[93] The regular creation of back-up copies of these uploads, and their propensity for cognitive enhancement, would result in an indefinite life span, although Bostrom recognizes that this might muddy the waters for philosophers and ethicists contemplating the implication of such a technology for personhood.[94]

Transhumanism as Philosophy

Although the desire to transcend the human condition can be detected throughout human history, Bostrom traces the etymology of "transhuman" to the Iranian author and futurist Fereidoun M. Esfandiary, who is said to have had a "deep nostalgia for the future."[95] This transitional "earliest manifestation of new evolutionary beings," Esfandiary predicted, would be characterized by "prostheses, plastic surgery, intensive use of telecommunications, a cosmopolitan outlook and a globetrotting lifestyle, androgyny, mediated reproduction (such as

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[92] Bostrom, "Transhumanism FAQ" 17-18.
[93] Bostrom, "Transhumanism FAQ" 18.
[94] Bostrom, "Transhumanism FAQ" 18.
[95] See Douglas Martin, "Futurist Known as FM-2030 Is Dead at 69." The New York Times 11 July 2000. 14 May 2009 <http://www.nytimes.com/2000/ 07/ 11/us/futurist-known-as-fm-2030-is-dead-at-69.html> par. 11. See also Bostrom, "Transhumanism FAQ" 7.

in vitro fertilization), absence of religious beliefs, and a rejection of traditional family values."[96]

In his "History of Transhumanist Thought," Bostrom identifies strong ties between transhumanism and rational humanism; he points to Isaac Newton, John Locke, Immanuel Kant, and the Marquis de Condorcet among others as key figures leading up to the development of contemporary transhumanism.[97] He lists Charles Darwin's Origin of Species, Friedrich Nietzsche's Thus Spoke Zarathustra and his concept of the *Übermensch*,[98] J. B. S. Haldane's Daedalus, Aldous Huxley's Brave New World, as well as the works of Arthur C. Clarke and Isaac Asimov as major contributions to the debate between those who champion technology as a potential to improve the human condition and those who warn of its capacity to dehumanize.[99] Bostrom briefly credits Julian Huxley, evolutionary biologist, first director-general of UNESCO, and president of the British Eugenics Society from 1959 to 1962,[100] as the first to coin the term "transhumanism,"

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[96] Bostrom, "Transhumanism FAQ" 7.

[97] Nick Bostrom, "A History of Transhumanist Thought," Journal of Evolution and Technology 14.1 (2005): 2.

[98] Bostrom explains that the Nietzschean vision does not quite capture the technological transformation of contemporary transhumanism. See Bostrom, "History" 4.

[99] Bostrom, "History" 3-5.

[100] Julian Huxley was a prominent figure in the eugenics movement of his time, inheriting some measure of his grandfather's affinity for Social Darwinism. His actual influence on contemporary transhumanism, as we shall see, is rather scant. Although a proponent of technologies that enhance human intellectual, physical, and psychological capacities, Bostrom makes clear that a eugenics program that supports the involuntarily sterilization of the "genetically unfit" or the breeding of the "genetically advantaged" is "entirely contrary to the tolerant humanistic and scientific tenets of transhumanism." He goes on to say that "transhumanists strongly reject the racialist and classist assumptions on which [these ideas] were based, along with the notion that eugenic improvements could be accomplished in a practically meaningful timeframe through selective human breeding." See Bostrom, "Transhumanism FAQ" 21.

which bears some truth although Dante introduced its verbal root some six hundred years prior.[101] I think that this deserves more comment.

The opening chapter of Huxley's 1957 publication Knowledge, Morality, and Destiny is called "Transhumanism" and is largely concerned about self-realization. Human-directed evolution, a theme discussed in the text, is the ultimate objective for transhumanists.

> [M]an's responsibility and destiny [is] to be an agent for the rest of the world in the job of realizing its inherent potentialities as fully as possible. It is as if man had been suddenly appointed managing director of the biggest business of all, the business of evolution – appointed without being asked if he wanted it, and without proper warning and preparation. What is more, he can't refuse the job. Whether he wants to or not, whether he is conscious of what he is doing or not, he is in point of fact determining the future direction of evolution on this earth. That is his inescapable destiny, and the sooner he realizes it and starts believing in it, the better for all concerned. What the job really boils down to is this – the fullest realization of man's possibilities, whether by the individual, by the community, or by the species in its processional adventure along the corridors of time […] The first thing that the human species has to do to prepare itself for the cosmic office to which it finds itself appointed is to explore human nature, to find out what are the possibilities open to it (including, of course, its limitations, whether inherent or imposed by the facts of external nature) […] A vast New World of uncharted possibilities awaits its Columbus.[102]

Huxley wants to determine how we might "create new possibilities for *ordinary* living"[103] and to "bring out the latent capacities of the ordinary man and woman."[104] His outlook is congruent with contemporary transhumanists who believe that our current mode of being is minute compared to what will be

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[101] Bostom, "History" 6. Dante's *Paradiso* was written in the early fourteenth century. See Robert Hollander and Jean Hollander, trans., *Paradiso*, Dante Alighieri (New York: Doubleday, 2007) xv-xvi.

[102] Julian Huxley, Knowledge, Morality, and Destiny: Essays (New York: Mentor, 1957) 13-14.

[103] Huxley, Knowledge 14, italics mine.

[104] Huxley, Knowledge 15.

accessible to posthumans. Although Huxley idealizes the fruition of humans within the human realm,[105] and not in some electro-mechanical world advocated by a number of transhumanists as an acceptable venue for existence, he agrees that science will raise us out of our less-than-ideal standard of living and make such possibilities manifest:

> Up till now human life has generally been, as Hobbes described it, "nasty, brutish and short"; the great majority of human beings (if they have not already died young) have been afflicted with misery in one form or another – poverty, disease, ill-health, over-work, cruelty, or oppression. They have attempted to lighten their misery by means of their hopes and their ideals. The trouble has been that the hopes have generally been unjustified, the ideals have generally failed to correspond with reality […] but scientific exploration of possibilities and of the techniques for realizing them will make our hopes rational, and will set our ideals within the framework of reality, by showing how much of them are indeed realizable. Already, we can justifiably hold the belief that these lands of possibility exist, and that the present limitations and miserable frustrations of our existence could be in large measure surmounted. We are already justified in the conviction that human life as we know it in history is a wretched makeshift, rooted in ignorance; and that it could be transcended by a state of existence based on the illumination of knowledge and comprehension.[106]

It is here that Huxley formally introduces transhumanism as a "new belief" that encapsulates the human drive to overcome limitation; it is a credo, the tenets of which would later be outlined in his Essays of a Humanist. In many ways, Huxley argues, transhumanism will serve as a universal social organ dealing with the questions of destiny that was once the province of traditional religion.[107]

> The human species can, if it wishes, transcend itself – not just sporadically, an individual here in one way, an individual there in

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[105] Huxley, Knowledge 15; 235. See also Nick Bostrom,"Transhumanist Values," 2003, 28 July 2005 <http://www.nickbostrom.com/ethics/values. pdf> 2.

[106] Huxley, Knowledge 15-16.

[107] Julian Huxley, Essays of a Humanist (London: Chatto and Windus, 1964) 220. I will return to this idea in the last chapter.

> 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. "I believe in transhumanism": once there are enough people who can truly say that, the human species will be on the threshold of a new kind of existence, as different from ours as ours is from that of Pekin man. It will at last be consciously fulfilling its real destiny.[108]

To be sure, Huxley does not leave the opportunity for transcendence without boundary. He issues a warning that may indeed distinguish him from the philosophy and ideology of today's transhumanists:

> During the past hundred years there has been in the Western world an over-emphasis on the material side of things – on quantity as against quality, on novelty for its own sake, on control over the forces of nature as against control over our own nature, on variety and multiplicity as against unity, on matter as against mind, on technology as against art (including the art of life), on means as against ends. This trend is taking us off the main line of possible progress, and must be corrected soon unless it is to bring about a reaction of over-compensation, so violent as to deviate man's advance towards the opposite side of its true line.[109]

Perhaps this over-compensation risks "man remaining man" as the pursuit for self-realization easily lends itself to a yearning for self-optimization and, ultimately, to a self-transcendence that is no longer tied to human experience. This understanding of transhumanism, then, shares in the *binding* nature of religion (from the Latin *re-ligare*); that is, it seeks to maintain the connection between humans, their environment, and some form of divinity, which I turn to here.

In his Essays of a Humanist, Huxley proposes that "[t]he radical evolutionary crisis through which man is now passing can only be surmounted by

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[108] Huxley, Knowledge 17.
[109] Huxley, Knowledge 32.

an equally radical re-organization of his dominant system of thought and belief."[110] In time, Huxley prophesies, old ideas will no longer function with the growth of knowledge and social change, and so a "radical reconstruction" of religious thought from a theocentric to an evolution-centred paradigm will be of necessity;[111] that is, we will require new bottles for new wine.[112]

"[O]nce our relief at jettisoning an outdated piece of ideological furniture is over [that is, once we abandon the god-hypothesis that has "ceased to be scientifically tenable," explanatory, convincing, or comforting], […] we must construct something to take its place."[113] Here, Huxley alludes to a humanist religion that: (1) is evolution-centred; (2) allows humankind to flourish on both spiritual and material plains;[114] (3) promotes, as its central tenet, the optimum realization of human potentialities yet untapped and the transcending of limitations;[115] (4) develops its own symbolism and ritual system; (5) thinks in terms of enduring process, and not eternity; (6) seeks to attain "the satisfying states of inner being which combine energy and peace;"[116] (7) champions aspiration and self-exploration; and (8) connects humankind to the "permanent and enduring, with the deeper and higher aspects of existence."[117] These features

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[110] Huxley, Humanist 219.
[111] Huxley, Humanist 220.
[112] "New Bottles for New Wine" was the original title given to Knowledge, Morality, and Destiny. This is undoubtedly a take on a famous saying of Jesus recorded in the synoptic Gospels, emphasizing that the new cannot be contained in the old. See Matt 9.17; Mark 2.22; Luke 5.37-39.
[113] Huxley, Humanist 222.
[114] It is not clear what Huxley means by "spiritual" here. See Huxley, Humanist 223.
[115] Huxley, Humanist 224; Huxley, Knowledge 235-236.
[116] This ambiguous language is not uncommon in contemporary and popular discourse on spirituality. See, for example, Dean Hamer, The God Gene: How Faith Is Hardwired into Our Genes (New York: Doubleday, 2004).
[117] Huxley, Humanist 224-225.

recall Huxley's description of transhumanism, evidently with the intent to introduce it as the alternative, humanist evolution-centred religion that will do more "to satisfy the multitudes seeking assurance about their destiny" than the current systems of belief that will all but fade as they "become progressively less effective as a social organ."[118]

> The truth [as the "organization of our knowledge in greater concordance with reality"] of the transhumanist approach and its central conception is larger and more universal that any previous truth, and is bound in the long run to supersede lesser, more partial, or more distorted truths, such as Marxism, or Christian theology, or liberal individualism, or at any rate to assimilate those of their elements which are relevant to itself.[119]

Among these relevant elements, Huxley includes: the equal worth, or intrinsic value, of all human beings (a concept borrowed from Christianity and Western democracy); the importance of the "individual;" and the scientific method of objective testing as well as the principle of limited certitude from natural science.[120]

In addition, Huxley finds the need to maintain use of the word "divinity" to designate those phenomena that "introduce us to a realm beyond our ordinary experience;" he is convinced that a humanist evolution-centred religion needs divinity, though without God.[121] Huxley explains that his reference to divinity does not signify that which is "supernatural;" rather, by it he means "transnatural" as "it grows out of ordinary nature, but transcends it […]."[122] Huxley's transhumanism, then, does not propose a rising out of the human condition;

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[118] Huxley, Humanist 220.
[119] Huxley, Knowledge 235.
[120] Huxley, Knowledge 236.
[121] Huxley, Humanist 223.
[122] Huxley, Humanist 223.

indeed, as we have seen, he speaks of "man remaining man."[123] In this way, contemporary transhumanism is different as it looks beyond the transitoriness of the transhuman state to the posthuman: a being that may very well not be human at all.[124]

Transhumanism as Movement

Although Bostrom's attempt to capture the many philosophical and cultural antecedents of transhumanism is bound to be incomplete, and perhaps necessarily so, it is peculiar that he makes no mention of Dante Alighieri's *Divina Commedia*; in fact, very few authors who write in this area have discussed the significance of this epic poem.[125]

Robin Kirkpatrick's reading of Dante's *transumanar,* an Italian neologism introduced in the first canto of the *Paradiso* and the first recorded instance of "transhumanating" in the literature as far as I can tell, speaks to the simultaneous transformation and continuity of personhood that Huxley seems to adopt. Importantly, Dante's rendering will be relevant to our study of the Christian notion of resurrection, particularly in light of the transhumanist ideal of evolving humans into posthumans. Most translators rightly allude to the root of *transumanar* as "becoming more than human" or "passing beyond normal human

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[123] Huxley, Knowledge 17. This seems to be what Kurzweil has in mind in his preference for the term "transbiologism" over "transhumanism." However, members of the Extropy Institute (which claims to be "the original transhumanist organization") explain that even though "Huxley had a vision of a possible future for humanity, he single-tracked the future when he saw man remaining man." See Max More and Natasha Vita-More, "Transhumanist FAQ," 2003, Extropy Institute, 21 Feb. 2008 <http://www. extropy.org/faq.htm> 1.1; 8.

[124] Bostrom admits this. See Bostrom, "Transhumanism FAQ" 5-6; 41. See also More and Vita-More 1.1.

[125] Members of the Extropy Institute do make reference to Dante's use of "*transumanar*" in the opening of their "Transhumanist FAQ." See More and Vita-More 1.1.

limits" as in the case of Glaucus, the mortal fisherman turned sea-god.[126] Kirkpatrick, however, notes that the term "carries suggestion of transubstantiation and transfiguration and implies not the transcendence of humanity but its transference from one dimension to another."[127] It is a "pointing to" in the same way that the transfiguration of Jesus is an anticipation of his resurrection. This agrees with Charles Singleton's reading of Dante's *transumanar* as a "verb of motion" that in many ways describes the pilgrim's own bodily ascension and transubstantiation.[128]

In addition, *transumanar* addresses the standing question about "how and why the human being can be assimilated into the perfect nature of the heavenly spheres and whether assimilation includes the bodily form of the human person."[129] This interpretation captures the paradox of how, in the resurrection, one preserves personal identity but is at the same time glorified. That is, how can we speak of the continuity of personhood in the glorified/perfected state when one's identity is closely bound to a body, which in its earthly form is weak, fragile, and limited? Would it be immoral to not only aspire for such a glorified/perfected state *in vivo*, but to achieve it by taking hold of our own evolution and delighting in, say, the enhancement technologies that transhumanists champion?

In the *Paradiso*, Dante enters the first, and lowest, sphere of Heaven, and comes upon Piccarda, a nun who, in life, had been stolen away from the Poor

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[126] Hollander and Hollander 24.
[127] Robin Kirkpatrick, trans., *Paradiso*, Dante Alighieri (London: Penguin, 2007) 333.
[128] Charles S. Singleton, trans., *Paradiso*: Commentary, Dante Alighieri (Princeton: Princeton UP, 1975) 18; Kirkpatrick xxix.
[129] Kirkpatrick 333.

Clare Sisters by her brother and forced into a political marriage for the benefit of her family. Though she was the sister of one of Dante's closest friends, he does not recognize Piccarda in her heavenly transfigured state until her words stir his memory.[130] The similarity between this encounter and the appearances of the Risen Christ (namely, to Mary of Magdala and the disciples on the road to Emmaus) is not lost on readers. The continuity and transcendence paradigm, that will be discussed more fully in a later chapter, is brought to the fore. Importantly, though, is what follows. Dante is curious: "But tell me, do you, who are here content [in this the lowest of the celestial spheres], desire to achieve a higher place, where you might see still more and make yourselves more dear?"[131] Piccarda's response paints a complete picture:

> Brother, the power of love subdues our will so that we long for only what we have and thirst for nothing else. If we desired to be more exalted, our desires would be discordant with His will, which assigns us to this place […] it is the very essence of this blessèd state that we remain within the will of God, so that our wills combine in unity.[132]

Transhumanists would scoff at Piccarda's passivity and tolerance. It is this very desire "to be more exalted" than one's condition that fuels transhumanism, particularly as a movement. Accepting to exist within the confines of one's lot (whether in one of Dante's celestial spheres or on earth) is in accord with God's will; to be clear, the reference here is to the universal human condition, of which limitation is an inherent feature, and not to those states, such as poverty or class,

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[130] Hollander and Hollander III.58-63; 73.
[131] Hollander and Hollander III.64-66.
[132] Hollander and Hollander III.70-75; III.79-81.

that are imposed by humans on other humans.[133] Furthermore, while this is not to foster, by any stretch of the imagination, an anti-progress polemic, it does command restraint. The question, though, is whether or not limitation is a defining feature of humanhood.

And yet, what Dante sees as Piccarda's confinement to what seems to be a lower plain in the ascent to God, she identifies as total freedom and peace in having attained the end of her own longing; this is a freedom born from the binding of human and divine wills as described in the passage above. To be sure, this rendering of limitation as freedom bears greater similarity to the Roman Catholic, rather than transhumanist, understanding of our human condition. "Since happiness," for Thomas Aquinas, "means the acquisition of the last end"[134] and the last end, for humans, is God alone, then Piccarda, who has nothing left to desire and whose intellect shows attainment of the Sovereign Good, has come into supreme perfection.[135] I take up this discussion more fully in the third chapter.

Huxley, as noted previously, suggests that transcendence need not imply escapism nor abandonment of humanhood. This is a primary point of contention among transhumanists, scientists, philosophers, scholars of religion, and ethicists. The debate brings to the fore those technologies, such as cognitive enhancement, nanotechnology, and genetic engineering that will have drastic effects on what it means to be human; but this becomes less of an idea in the abstract and more of a

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[133] Otherwise, this would completely undermine respect for persons and, as we shall see in the third chapter, the Roman Catholic Church's commitment to social justice.

[134] Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province, 1920, 16 Aug. 2009 <http://www.newadvent.org/summa/index.html> IaIIae Q.1, art.8 *resp*.

[135] Aquinas, *Summa* IaIIae Q.3, art.2 *resp*; IaIIae Q.3, art.8 *resp*; IaIIae Q.5, art.1 *resp*.

possibility if we can manage to significantly prolong human life. Bostrom's description of this immanent transcendence, congruent in some ways with the Christian concept of the glorified body, makes this plain:

> We can conceive of aesthetic and contemplative pleasures whose blissfulness vastly exceeds what any human being has yet experienced. We can imagine beings that reach a much greater level of personal development and maturity than current human beings do, because they have the opportunity to live for hundreds or thousands of years with full bodily and psychic vigor.[136]

As such, this dissertation concentrates on the issue of radical life extension as a pre-requisite for posthumanhood. The next chapter takes up the scientific feasibility of this prospect.

[136] Nick Bostrom, "Human Genetic Enhancements: A Transhumanist Perspective," Journal of Value Inquiry 37.4 (2003): 494-495.

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Scientific Challenges to Human Finitude: The Biology of Ageing, Anti-Ageing Medicine, and Prolongevity

In the early 1960s, when Leonard Hayflick and Paul Moorhead discovered that normal human cells in culture replicated a finite number of times before entering a senescent phase,[1] they were challenging the widely held belief of cellular immortality that was made popular by the work of French Nobel Laureate, Alexis Carrel. Carrel proposed that, under certain experimental conditions, the active life of tissues could be prolonged indefinitely *in vitro*.[2] In his "Le rajeunissement artificiel des cultures de tissus," published in 1911, Carrel announced that "la sénescence et la mort sont un phénomène contingent et non nécessaire."[3] Although the implications of these claims for a science of longevity did not go unnoticed, Hayflick and Moorhead's evidence for a restricted cellular replicative capacity would supplant earlier views, such as Carrel's, that suggested an unlimited potential for cell division. The Hayflick Limit has since become an important biological tenet, though not without its critics,[4] that has fuelled progress in cell biology, oncology, and, especially, cytogerontology (the study of ageing at

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[1] Leonard Hayflick and Paul Moorhead, "The Serial Cultivation of Human Diploid Cell Strains," Experimental Cell Research 25.3 (1961): 585-621; Leonard Hayflick, "The Limited *In Vitro* Lifetime of Human Diploid Cell Strains," Experimental Cell Research 37.3 (1965): 614-636.

[2] Alexis Carrel, "On the Permanent Life of Tissues Outside of the Organism," Journal of Experimental Medicine 15.5 (1912): 516-528.

[3] Alexis Carrel, "Le rajeunissement artificiel des cultures de tissus," C. r. Soc. Biol., Paris 71 (1911): 402.

[4] See, for instance, Harry Rubin, "Telomerase and Cellular Lifespan: Ending the Debate?" Nature Biotechnology 16.5 (1998): 396–397.

the cellular level).[5]

Hayflick, a microbiologist by training, taught at the University of Pennsylvania, Stanford, the University of Florida, Gainesville, and the University of California, San Francisco. He was a founding member of the National Advisory Council on Aging (which advises the US Department of Health and Human Services, the National Institute on Aging, and the National Institutes of Health) and served as president of the Gerontological Society of America from 1982 to 1983. Hayflick is a prolific writer who, for the last fifty years or so, has contributed extensively to the growing body of literature on the science and conception of ageing.

To be sure, the recognition of ageing as a legitimate subject for scientific scrutiny continues to be a point of contention. After decades of incessant struggling to secure funding (and affirmation) from the National Institutes of Health for research on the biological mechanisms of ageing, American biogerontologists drafted a bill that would eventually lead to the founding of the National Institute on Aging in 1974.[6] Nevertheless, the dispute over the utility of studying the basic processes of ageing and the classification of such a pursuit as a credible science has not been resolved. Two recurrent themes in the ongoing debate that continue to aggravate researchers in the field are: (1) the

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[5] Apparently, when Carrel warned that "the technique [in measuring cell growth] is delicate and, in untrained hands, the experimental errors are of such magnitude as to render the results worthless," this paralyzed or, at the very least, strongly discouraged research in the field. See Alexis Carrel, "Tissue Culture and Cell Physiology," Physiological Reviews 4.1 (1924): 6 and J. A. Witkowski, "Alexis Carrel and the Mysticism of Tissue Culture," Medical History 23 (1979): 285.

[6] Robert Binstock provides a more comprehensive account of this struggle in his chapter on "The Search for Prolongevity: A Contentious Pursuit" in The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 11-37.

disproportionate allocation of monetary resources that largely favours geriatric medicine over biogerontology[7] and (2) the potentially misleading association of biogerontology with anti-ageing medicine. I shall tend to these each in turn in discussing the science of ageing and the study of prolongevitism.

Theorizing Ageing

An easily observed graying of the nations[8] fuels an ostensibly urgent need to understand ageing and, more so, to counter age-related diseases. The unsettling prevalence of neurodegenerative disease, together with a greater susceptibility to cancer, congestive cardiac failure, coronary artery disease, osteoarthritis, osteoporosis, cerebrovascular disease, and chronic lung disease in an ever-increasing (and increasingly vulnerable) elderly population may very well lead to the conclusion that "ageing" is, *ipso facto*, synonymous with "disease."[9] Hayflick has long been adamant about refuting this claim. He argues that eliminating the three most common causes of death in advanced age – cancer, stroke, and cardiovascular diseases – will only add fifteen years to human life expectancy in the Western world.[10] In addition, unlike any disease, changes related to ageing:

> (a) occur in every multicellular animal that reaches a fixed size at reproductive maturity, (b) cross virtually all species barriers, (c) occur in all members of a species only after the age of reproductive maturation, (d) occur in all animals removed from the wild and protected by humans even when that species probably has

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[7] Geriatric medicine involves the study, treatment, and prevention of age-associated diseases whereas biogerontology is concerned with the biological processes of ageing itself. See Leonard Hayflick, "Anarchy in Gerontological Terminology," The Gerontologist 42.3 (2002): 419-420.

[8] United Nations Department of Economics and Social Affairs' Population Division, "World Population to 2300," 2004, 12 Aug. 2010 <http://www.un.org/esa/population/publications/longrange2/WorldPop2300final.pdf> 66-85.

[9] Rory H. Fisher, "The Health Care System and the Elderly," Bioethics Update 3.1 (2003): 1.

[10] Leonard Hayflick, "The Future of Ageing," Nature 408 (2000): 267.

> not experienced aging for thousands or even millions of years, (e) occur in virtually all animate and inanimate matter, and (f) have the same universal molecular etiology, that is, thermodynamic instability.[11]

Although the ageing process is *the* major risk factor for all age-associated diseases, it is not quite clear why older cells are more susceptible to these diseases than younger cells.[12] It is even less clear, according to Hayflick, why the lion's share of funding continues to pour into the various projects of geriatric medicine, especially research on Alzheimer's Disease (AD) and other common age-related pathologies, at the expense of biogerontological science that aims at understanding basic biological process(es) by which humans age and the biomolecular changes that lead to ageing and increased vulnerability to age-associated diseases.[13]

Ageing is a convoluted phenomenon. Even though we can describe phenotypic features of ageing, elucidating the basic processes, species variation in life span, and the role of genetics and environment, and accounting for the intricacies of age changes at molecular and organismic levels are not simple tasks. In addition, the debate over what is meant by "ageing" often amounts to sterile polemics as biogerontologists, geriatricians, philosophers, transhumanists, and a whole host of organizations (including the National Institute on Aging, the President's Council on Bioethics, and the American Academy of Anti-Aging

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[11] Leonard Hayflick, "Biological Aging Is No Longer an Unsolved Problem," Annals of the New York Academy of Sciences 1100 (2007): 1

[12] Leonard Hayflick, "Anarchy" 417; 421.

[13] Hayflick, "Future of Ageing" 267; Hayflick, "Anarchy" 417; Hayflick, "Biological Aging" 2.

Medicine, among many others) continue to vie for authority and credibility in matters of definition.[14]

In a variety of articles on this subject, notably "Anarchy in Gerontological Terminology," Hayflick admonishes scholars, researchers, and funding units for having thrown caution to the wind when it comes to distinguishing between ageing and longevity determination.[15] Whereas (molecular) ageing is the "systemic random loss of molecular fidelity that occurs over an extended period of time after reproductive success" that exceeds the body's capacity for repair and thus increases our susceptibility to disease, the determination of longevity is "not a random process and is driven by the excess physiological capacity reached at the time of sexual maturation."[16] Although the genome oversees biological development from conception to adulthood and indirectly determines longevity, it does not, according to Hayflick, govern the ageing process in any direct way.[17]

The maximum human *life span* (that is, the maximum age reached by any one member of the species) has remained fixed at one hundred and twenty five years or so for the last one hundred millennia but human *life expectancy* ("the age at which 50% of a given population survive")[18] at birth in the West has increased some twenty-seven years over the past century alone.[19] This is remarkable as it has taken a much longer period (that is, from the time of ancient Rome to about

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[14] See Binstock, "Search for Prolongevity" 11-37 for a good overview.
[15] Hayflick, "Anarchy" 417-418.
[16] Hayflick, "Anarchy" 417.
[17] Hayflick, "Future of Ageing" 268; Hayflick, "Anarchy" 418.
[18] Bruce R. Troen, "The Biology of Aging," Mount Sinai Journal of Medicine 70.1 (2003): 3-4.
[19] Hayflick, "Biological Aging" 11.

1900 CE) for life expectancy to have risen by a comparable magnitude.[20] "Because modern humans, unlike feral animals [which rarely live long enough to age], have learned how to escape death long after reproductive success," Hayflick explains, "we have revealed a process that, teleologically, was never intended for us to experience."[21] Perhaps this is why the average life expectancy for 99% of human history has been relatively short (at about 30 years or so).[22] As such, "aging is a product of evolutionary *neglect*, not evolutionary *intent*."[23] This is because, when speaking of the survival of the species, there is "no selective advantage favouring the survival of old individuals" and so ageing is an "artifact of civilization" resulting largely from the innovative sifting out of some of the great predators of humankind: infectious and parasitic diseases.[24]

Ultimately, death begins at birth.[25] Stuart Olshansky, Bruce Carnes, and Hayflick confess a sobering truth: "it is an inescapable biological reality that once the engine of life switches on, the body inevitably sows the seeds of its own destruction."[26] They are convinced, like many biogerontologists, that ageing is polygenic and that the plan to arrest, retard, or reverse the process(es) by a single genetic intervention or by some other quick fix largely takes for granted the

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[20] Hayflick, "Future of Ageing" 268; Hayflick, "Biological Aging" 10-11; Gerald Gruman, A History of Ideas About the Prolongation of Life (New York: Springer, 2003) 3-4. Incidentally, the maximum human life span matches the one hundred and twenty year limitation that God imposes on humanity in Gen. 6.3.

[21] Hayflick, "Future of Ageing" 267; 269.

[22] Troen 4.

[23] S. Jay Olshansky, Leonard Hayflick, and Bruce A. Carnes, "Position Statement on Human Aging," Journal of Gerontology 57A.8 (2002): B294.

[24] Hayflick, "Future of Ageing," 268-269: Hayflick, "Anti-Aging Medicine: Hype, Hope, and Reality," Generations 25.4 (2001-2002): 24.

[25] Augustine speaks to this in The City of God, trans. Marcus Dods (New York: Modern Library, 2000) XIII.10.

[26] S. Jay Olshansky, Leonard Hayflick, and Bruce A. Carnes, "No Truth to the Fountain of Youth," Scientific American 14.3 (2004): 99.

complexity of the human system.[27] Therefore, the claim is that there is a genetic component to ageing, but it is not itself a genetically programmed process as others have suggested. Rather, it is the result of increasing molecular disorder that exceeds repair.[28] This loss of molecular integrity, Hayflick notes, is the result of "the intrinsic thermodynamic instability of most complex biological molecules whose precise three-dimensional folded structures cannot be maintained with accuracy indefinitely."[29]

Evolution seems to have given precedence to self-preservation up until the point of successful reproduction; theoretically, what happens to the organism after propagation is, in essence, pointless. Bruce Troen explains that

> [e]volutionary pressures select for minimum successful life: this includes the ability to reach reproductive age, procreate, and then care for offspring until they are weaned (so that they, in turn, will achieve reproductive age and continue the cycle). Within this context, it is likely that the post-reproductive/parental physiology of an organism is an epigenetic and pleiotropic manifestation of the optimization for early fitness.[30]

Here, we may situate George Williams' antagonistic pleiotropy hypothesis – which explains that senescence, the post-reproductive processes leading to diminished homeostasis, physiological decline, increased susceptibility to disease, and increased mortality which we commonly (and collectively) associate with

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[27] Olshansky, Hayflick, and Carnes, "No Truth" 99-100.

[28] Olshansky, Hayflick, and Carnes, "No Truth" 99; Hayflick, "Biological Aging" 3-4.

[29] Hayflick, "Biological Aging" 4.

[30] Troen 6. Epigenetics is "the study of heritable changes in the cellular state – such as the gene expression profile of a cell – that are not caused by changes in the nucleotide sequence of the DNA." See Jörg Tost, Epigenetics (Norfolk, UK: Caister Academic P, 2008) ix. Most genes are pleiotropic; that is, they can have more than one effect on the phenotype (the physical and physiological characteristics of an organism). For example, in tigers, the same allele causes abnormal pigmentation and strabismus (the condition of having crossed-eyes). See Neil A. Campbell, Biology, 3rd ed. (Redwood City, CA: Benjamin/Cummings, 1993) 263; 269.

"ageing" – may be governed at some level by genes that secure fitness and function during development but then become detrimental to survival post-maturation.[31] Evidence shows that antagonistic pleiotropy is somewhat of a trade-off; although contributing to ageing, it may prevent tumorigenesis (that is, the formation of tumors).[32]

Interest in ageing research has grown exponentially, especially over the last twenty-five years or so.[33] Yet, there is a considerable amount of disagreement in the field and, because ageing is complex and multidimensional, there is no one comprehensive theory to account for the cause(s) of human ageing.[34] In fact, studies are ongoing and much of the evidence amassed in testing the dozen or so prominent hypotheses about ageing remains inconclusive.[35]

Conceptualizations of ageing have largely been categorized as either "stochastic" – which suggests that ageing is caused by the accumulation of random damage to vital molecules that inevitably leads to loss of function and death – or "developmental-genetic" – which proposes that ageing is very much a genetically programmed part of the developmental-maturation continuum.[36] The two categories frequently overlap. Troen includes the following as stochastic: the DNA repair model (which focuses on how genetic damage from background radiation ultimately results in cell dysfunction and death), protein modification,

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[31] Troen 5. This seems compatible with Hayflick's notion of longevity determination as "the state of all molecules prior to succumbing to irreparable loss of molecular structure," which is governed by "the excess or reserve physiological capacity reached at the time of sexual maturation." See Hayflick, "Biological Aging" 7.
[32] See Troen 6.
[33] Hayflick, "Biological Aging" 2.
[34] Hayflick, though, argues for a single comprehensive theory in "Biological Aging" 1-13.
[35] Troen 6.
[36] Troen 7; 9.

the error-catastrophe theory (concerned with the accumulation of random errors in the synthesis of DNA), and the free radical/mitochondrial DNA approach to ageing (together with the effects of caloric restriction and its mimics).[37] As developmental-genetic, Troen lists theories of longevity genes (which explore the role of genetics in senescence, vulnerability to disease, and life span), telomeric shortening, cellular senescence, and cell death.[38] Immunological explanations (which are concerned with the decline of immune function and the increase of the autoimmune response with age), neuroendocrine accounts (which study the effects of the loss of neuronal function on ageing), and research on so-called "accelerated ageing" diseases (such as Werner's Syndrome and Hutchinson–Gilford Progeria) are also included in the developmental-genetic category.[39]

Although the sciences do not posit a universal (molecular) cause for ageing – indeed, most of these theories work to describe a particular feature of the process[40] – three propositions in particular have garnered an increasing amount of attention as of late: those concerning oxidative damage, telomere shortening, and caloric restriction without malnutrition.

The first poses an interesting dilemma. Even though the free-radical by-products of cellular metabolism serve important roles in the immune response and in cell communication,[41] they are highly reactive and, if not intercepted by anti-oxidants, can cause a considerable amount of damage to the cell, especially to

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[37] Troen 7-9.
[38] Troen 9-10; 13-16.
[39] Troen 10-11;13.
[40] M. Tosato et al., "The Aging Process and Potential Interventions to Extend Life Expectancy," Clinical Interventions in Aging 2 (2007): 401.
[41] S. Jay Olshansky, Leonard Hayflick, and Bruce A. Carnes, "Position Statement on Human Aging," Journal of Gerontology 57A.8 (2002): B293.

mitochondria.[42] A number of the aforementioned features of ageing (such as increased vulnerability to disease and compromised functionality) have indeed been linked to oxidative injury of the mitochondria, but intervening to prevent this may counter the benefit of free-radicals.[43]

The second of these theories involves telomeres, which cap chromosomes at either end to ensure their stability and prevent their degradation during cellular replication. For most cells, the length of the telomeres decreases with every division until, eventually, they become too short to maintain chromosomal integrity and enter a senescent phase;[44] recall here that a key question in the science of ageing is why older cells such as these are more susceptible to disease than younger ones. At the same time, many normal human cells contain an enzyme, called telomerase, which has the ability to restore telomeres during cell division but is usually quiescent under normal conditions. Active telomerase expression is largely accountable for the longer life spans of cancer cells and stem cells, many of which replicate incessantly without the senescing effect of telomeric shortening.[45] Analyzing the relationship between telomere capping and length, telomerase activity, oxidative damage, and age changes at cellular and organismic levels has become an important venture in the science of ageing and longevity.[46]

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[42] Troen 8.
[43] Lewis D. Solomon, The Quest for Human Longevity: Science, Business, and Public Policy (New Brunswick, NJ: Transaction, 2006) 51-75; Troen 8.
[44] Solomon 20.
[45] Solomon 20. In fact, there are also immortal cells that lack telomerase and other cells that express telomerase, but experience telomeric shortening nonetheless. See Troen 14.
[46] Solomon 19-50.

Finally, a number of studies correlate a calorie-restricted diet (without malnutrition) with a delayed onset of age changes – especially if initiated before late adolescence – considerably extending mean and maximum life span in worms and mice, as we shall see, while maintaining vigour, perhaps through the free-radical pathway.[47] Preliminary studies on humans and non-human primates have, not surprisingly, shown reduced risk for diabetes, atherosclerosis, and cardiovascular disease.[48]

Although Hayflick, among many other biogerontologists, sees some promise in caloric restriction as a means to decelerate the ageing process,[49] he argues that the results of research in this area do not necessarily point to the fact that a restricted diet increases longevity, but that *overeating* shortens life.[50] Interestingly, "the fact that so few people have attempted caloric restriction since the phenomenon was discovered more than 60 years ago suggests that, for most people, quality of life seems to be preferred to quantity of life."[51] As such, science has turned to the possibility of developing drugs (metformin and phenformin are

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[47] Solomon 77-94; Troen 4-5; Gemma Casadesus, George Perry, James A. Joseph, and Mark A. Smith, "Eat Less, Eat Better: Does It Work and Is It Worth It? The Role of Diet in Aging and Exercise," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 203. Richard A. Miller, "Extending Life: Scientific Prospects and Political Obstacles," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 233-235; 242.

[48] Solomon 78-79; Binstock, "Search for Prolongevity" 29. As of this writing, the National Institue on Aging is funding the CALERIE (Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy) study "to better understand the effect of prolonged caloric restriction on aging and to test how practical and safe is a 25% calorie-restricted diet in normal-weight [human] individuals." See Duke Clinical Research Institute, "About CALERIE," 12 May 2008, 15 Dec. 2009 <http://calerie.dcri.duke.edu/about/index.html> par. 2.

[49] Hayflick, "Future of Aging" 269.

[50] Hayflick, "Anarchy" 419. Few have noted that poor eating habits and unhealthy diets world-wide would make it difficult to sustain an increased life span unless the human body is engineered to deal with such things.

[51] Olshansky, Hayflick, and Carnes, "Position Statement" B294.

potential candidates) or identifying molecules (such as the plant polyphenol resveratrol found in red wine) that imitate the effects of undernourishment on life span.[52]

Legitimizing Ageing

Christopher Lasch points to a "growing number of sciences and pseudosciences [which] concern themselves specifically with aging and death: geriatrics, gerontology, thanatology, cryonics, 'immortalism' […] genetics, genetic engineering, and community medicine" among so many others.[53] Jennifer Fishman et al explain how the emergence of biogerontology as a legitimate discipline in its own right was largely a struggle because it was frequently associated with the "charlatanic" world of elixirs, alchemy, and rejuvenating thermal springs that was the fantastical stuff of anti-ageing/prolongevity quackery.[54] Indeed, as C. A. Taylor makes plain in his Defining Science: A Rhetoric of Demarcation,

> Practicing scientists, consciously or otherwise, discursively construct working definitions of science that function, for example, to exclude various non- or pseudo-sciences so as to sustain their

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[52] Shino Nemoto and Toren Finkel, "Ageing and the Mystery at Arles," Nature 429 (2004): 152. See also Robert Arking, "Extending Human Longevity: A Biological Probability," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 197. Although many studies on resveratrol have shown promise to this end, some researchers are showing only variable results. See, for instance, Konrad T. Howitz et al., "Small Molecule Activators of Sirtuins Extend *Saccharomyces cerevisiae* Lifespan," Nature 425.6954 (2003): 191-196 and Timothy M. Bass, David Weinkove, Koen Houthoofd, David Gems, and Linda Partridge, "Effects of Resveratrol on Lifespan in *Drosophila melanogaster* and *Caenorhabditis elegans*," Mechanisms of Ageing and Development 128.10 (2007): 546-552.

[53] Christopher Lasch, "Aging in a Culture without a Future," Hastings Center Report 7.4 (1977): 42.

[54] Jennifer R. Fishman, Robert H. Binstock, and Marcie A. Lambrix, "Anti-Aging Science: The Emergence, Maintenance, and Enhancement of a Discipline," Journal of Aging Studies 22 (2008): 295-296.

> (perhaps well-earned) position of epistemic authority and to maintain a variety of professional resources.[55]

Again, the significance of definitions rears its head in the fight for credibility. Once earned, the maintenance of repute becomes primary and unrelenting. As such, in June of 2002, over fifty prominent biogerontologists released a joint declaration for the public to take serious heed regarding the scientific (and moral) bankruptcy of the claims and products of certain anti-ageing advocates. Olshansky, Hayflick, and Carnes make the point in their "No Truth to the Fountain of Youth:"

> The hawking of antiaging "therapies" has taken a particularly troubling turn of late. Disturbingly large numbers of entrepreneurs are luring gullible and frequently desperate customers of all ages to "longevity" clinics, claiming a scientific basis for the antiaging products they recommend and, often, sell. At the same time, the Internet has enabled those who seek lucre from supposed antiaging products to reach new consumers with ease […]. [N]o currently marketed intervention – none – has yet been proved to slow, stop or reverse human aging, and some can be downright dangerous.[56]

Augustus Kinzel, president and chief executive officer of the Salk Institute for Biological Studies from 1965 to 1967, predicted that "we will lick the problem of aging completely, so that accidents will be essentially the only cause of death."[57] This is echoed by transhumanists who are, as we have already seen, adamant about the intolerability, or imposition, of ageing. Regardless of the warnings issued by renowned scientists in the field, the global anti-ageing market is equally

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[55] C. A. Taylor, Defining Science: A Rhetoric of Demarcation (Madison: U of Wisconsin P, 1996). 5

[56] Olshansky, Hayflick, and Carnes, "No Truth" 98-99.

[57] Lasch 42.

enthusiastic; it reached $162 billion in 2008 and is expected to exceed $274 billion in 2013.[58]

In the end, Terrie Wetle notes that even though the principal aim of mainstream biogerontology is not the prevention of death, "it will be difficult, if not impossible, to disentangle interventions aimed at increasing longevity from those interventions intended to improve health and function."[59]

Negotiating Ageing

In his integrative approach to mapping proto-scientific ideas (from ancient times to the nineteenth century) about life extension, Gerald Gruman, a physician and historian of science, coined "prolongevity" to describe "the significant extension of the length of life [beyond the limit of maximum life span] by human action."[60] He also made plain that the goal of prolongevitism is not simply the increase of chronological age, but the prolongation of healthy and productive life.[61] This important caveat is often endorsed by contemporary "conservative" biogerontologists who contest the ambitions of those who seek to extend life radically without much concern for its implications.[62]

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[58] See Business Communications Company, "Anti-Aging Products and Services: The Global Market," 2009, 1 June 2010 <http://www.bccresearch.com/report/HLC060A.html>.

[59] Terrie Wetle, "Fountains of Youth or Fountains of Health? Searching for the Future of Aging Research," The Gerontologist 44.6 (2004): 846.

[60] Gruman 3, emphasis added. Gruman mentions that he actually introduced the term in 1955.

[61] Gruman 6. Authors refer to this as the "health span."

[62] Hayflick calls the extension of health span the "least imperfect scenario" (although he limits this to just under the current maximum life span). See Hayflick, "Anti-Aging Medicine" 25; Hayflick, "Future of Ageing" 269; Stephen G. Post and Robert H. Binstock, "Introduction," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 2.

Stephen Post, professor of preventive medicine and director of the Center for Medical Humanities, Compassionate Care, and Bioethics at Stony Brook University, and Robert Binstock, professor of aging, health, and society at Case Western Reserve University, identify three approaches to the question of prolongevitism in the biogerontological literature: compressed morbidity, decelerated ageing, and arrested ageing.[63]

The first model sees humans living "long and vigorous lives, terminated by a sharp decline in functioning mandated by senescence, followed relatively swiftly by death" within the prescribed limitation of the maximum life span.[64] This parallels Hayflick's "least imperfect scenario" in which he describes persons living long, vibrant, and healthy lives until their one hundredth birthday when they would suddenly (but expectedly?) die at midnight.[65] Here, life expectancy is increased by about two decades or so at which point the inevitable loss in physiological capacity reaches a chronic level that results in death.[66]

The decelerated ageing approach, as the name of the model suggests, looks to slow down the ageing process and defer age-related disabilities to the very end of an increased life span.[67] Here, Richard Miller cites the "incontrovertible evidence" collected from studies on metabolic alteration, environmental adaptation, artificial selection for specific body size, and caloric restriction.[68] As we have seen, this method looks promising, especially for the prolongation of

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[63] Post and Binstock, "Introduction" 2-4.
[64] Post and Binstock, "Introduction" 2-3.
[65] Hayflick, "Anti-Aging Medicine" 25; Hayflick, "Future of Ageing" 269.
[66] Hayflick, "Biological Aging" 11.
[67] Post and Binstock, "Introduction" 3.
[68] Richard Miller 229-230; 232.

healthy and functional life. Miller describes research on calorie-restricted rats, which were shown to run four to five times the distance (4-5km/day) of their non-restricted counterparts (1km/day) and do so for an extended period. That is, undernourished rats continue running such lengths until they are two years old then drop to about 1km/day when they are three whereas non-restricted rats reduce running to 0.2km/day after just eight months of age.[69]

Finally, a number of biogerontologists are interested in arresting and/or reversing the ageing process altogether in order to put off ageing for an indefinite period or achieve "virtual immortality."[70] Aubrey de Grey, for instance, has outlined his strategies for engineered negligible senescence (abbreviated as SENS). These are largely rooted in his own working definition of ageing: "[a] collection of cumulative changes to the molecular and cellular structure of the adult organism, which result from essential metabolic processes but which, once they progress far enough, increasingly disrupt metabolism, resulting in pathology and death."[71] Counted among these changes are: cell loss (without replacement) and senescence, mitochondrial and oncogenic nuclear mutations, lysosomal and extracellular aggregates, and immune system decline.[72]

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[69] Richard Miller 235.

[70] Post and Binstock, "Introduction" 3-4; Aubrey D. N. J de Grey, John W. Baynes, David Berd, Christopher B. Heward, Graham Pawelec, and Gregory Stock, "Is Human Aging Still Mysterious Enough to Be Left Only to Scientists?" BioEssays 24.7 (2002): 670; Aubrey de Grey, B. N. Ames, J. K. Andersen, A. Bartke, J. Campisi, C. B. Heward, R. J. M. McCarter, and G. Stock, "Time to Talk SENS: Critiquing the Immutability of Human Aging," Annals of the New York Academy of Sciences 959 (2002): 452–62.

[71] Aubrey de Grey, "An Engineer's Approach to Developing Real Anti-Aging Medicine," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 253.

[72] de Grey, "Engineer's Approach" 254.

The SENS combat these changes on all fronts. For instance, de Grey proposes the use of stem cells to compensate for cell loss, senescence marker-targeted toxins to cause apoptosis of senescent cells, hydrolases to digest lysosomal aggregates, and immune-mediated phagocytosis to clear out extracellular aggregates.[73] To this, the biogerontologist adds a sense of urgency: "we risk being responsible for the deaths of (count them) over 100,000 people every day that this technology is not developed if we delay the process by failing to speak and act to bring it about. To coin a phrase: I don't know much about ethics, but I know which risk I prefer to take."[74]

These last two models of prolongevity, championing the deceleration and the arrest or reversal of ageing, have been critiqued for attempting to validate proto-scientific (what a number of biogerontologists will call *pseudo*-scientific) approaches to life extension of the type described by Gruman.[75]

> Yesterday's prolongevists who searched for the fountain of youth, advocated sleeping with young virgins, encouraged grafting of monkey testicles, and ate yogurt simply have been replaced with modern equivalents, who have an equal probability for success. The touting of interventions capable of slowing the aging process will not end because there is too much quick profit to be made by those who have discovered how rich one can get by exploiting the ignorance and gullibility of the public.[76]

But, as we have seen, not all biogerontologists find themselves on the conservative side of life extension. Miller and de Grey represent a cohort that is shaking the field from the inside. Hinting at almost unreasonably substantial increases in the maximum number of years that a human can live, similar in kind

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[73] de Grey, "Engineer's Approach" 264.
[74] de Grey, "Engineer's Approach" 265.
[75] Gruman 7.
[76] Hayflick, "Anti-Aging Medicine" 25.

to what transhumanists have prophesied, is "fodder for vigorous opposition from sectors of society that object to life extension of these (and even lesser) magnitudes on moral and ethical grounds,"[77] which will be taken up more fully in the fourth chapter. Miller's prediction that decelerating the ageing process might very well increase the mean age at death (of Caucasian American or Japanese women) to one hundred and twelve years or so to a maximum of about one hundred and forty years[78] is rather moderate. de Grey, on the other hand, is much more optimistic. Although he claims that it is "inevitable, barring the end of civilization, that we will eventually achieve a 150-year mean longevity,"[79] in an ABC News interview with Barbara Walters, de Grey confidently affirmed: "I think that within the next few decades we have a pretty good chance of effectively defeating ageing as a cause of death. I think people will live to about a thousand years in that circumstance, on average."[80]

The pursuit of an indefinite longevity of this type, in conjunction with the heightened endemic fear of ageing and death in Western culture as Cromwell Crawford[81] and Christopher Lasch[82] describe, stirs thoughts about whether the ancient mortality/immortality divide between humans and the gods could (or should) in actuality be dissolved. Conservative biogerontologists, agitated by the

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[77] Fishman et al. 301.
[78] Richard Miller 237-238.
[79] Aubrey de Grey, "Gerontologists and the Media: The Dangers of Over-Pessimism," Biogerontology 1.4 (2000): 369.
[80] Barbara Walters, rep., "Live to Be 150 . . . Can You Do It?" Dir. George Paul, prod. Rob Wallace, ABC News, 2008. de Grey makes a similar pronouncement. See de Grey, "Engineer's Approach" 265.
[81] S. Cromwell Crawford, Hindu Bioethics for the Twenty-First Century (Albany: State U of New York P, 2003) 181.
[82] Lasch 43.

intrusion of what they contend to be the "quackery" of yore, emphasize over and again that "the goal of research on ageing is not to increase human longevity regardless of the consequences, but to increase active longevity free from disability and functional dependence."[83] Whereas Hayflick and his scientific cohort assert the (near) universality and inevitability of ageing, others, such as Cynthia Kenyon and de Grey, draw attention to the incredible increases in the life spans of less complex organisms in recent research to support their enthusiasm.[84]

For instance, the silent information regulator gene (in particular, the histone deacetylase enzymatic activity of Sir2) has come to the foreground as a potentially critical determinant of yeast life span and a factor in promoting longevity in *Caenorhabditis elegans*, the common roundworm – a salient discovery even for the *human* science of ageing and longevity determination.[85] We can also speak here of transgenic flies expressing high levels of both Cu, Zn-superoxide dismutase and catalase (which act together to remove superoxide radicals – produced by aerobic metabolism – and hydrogen peroxide) showing up

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[83] Hayflick, "Future of Ageing" 269.

[84] Since the early 1990s, Kenyon's work on daf-2 and daf-16 genes in particular has produced results showing a several-fold increase in the active and youthful life span of *C. elegans*. See Nuno Arantes-Oliveira, Jennifer R. Berman, and Cynthia Kenyon, "Healthy Animals with Extreme Longevity," Science 302.5645 (2003): 611; Cynthia Kenyon, Jean Chang, Erin Gensch, Adam Rudner, and Ramon Tabtiang, "A *C. elegans* Mutant that Lives Twice as Long as Wild Type," Nature 366.6454 (1993): 461-464; Honor Hsin and Cynthia Kenyon, "Signals from the Reproductive System Regulate the Lifespan of *C. elegans*," Nature 399.6734 (1999): 362-366.

[85] L. Guarente, Ageless Quest: One Scientist's Search for Genes That Prolong Youth (Cold Spring Harbor: Cold Spring Harbor Laboratory P, 2003) 57; 64; Nemoto and Finkel 149-150.

to a one third increase in life span[86] and single gene mutations in *Drosophila* or caloric restricted nematode worms (tampering with the insulin pathway may be important here) that exhibit a doubling or more of average life span.[87]

In addition, there exist a number of other non-human organisms that show evidence of negligible senescence.[88] The bristlecone pines of the White Mountains in California are a good case in point. The eldest in the ancient grove, called Methuselah, is almost five thousand years old.[89] Certain cnidarians, namely hydras and *Turritopsis nutricula* (a type of jellyfish), have been studied with regard to what some scientists call "biological immortality."[90] The former seem to put off senescence through constant cellular renewal whereas the latter have the ability, through transdifferentiation,[91] to revert back to a juvenile state (ontogeny reversal) after reaching sexual maturity.[92] That said, immortality of the sort

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[86] Troen 8. Although recent research by Jeremy Van Raamsdonk and Siegfried Hekimi at McGill University has produced results that challenge the free radical/oxidative stress theory of ageing. After switching off a number of superoxide dismutase genes, which counter the damaging effects of oxidants, there was no indication of decreased life span in worms. In fact, Hekimi's team reported an *increase* in the life span of one specimen by way of altered function of the mitochondria. See Jeremy Van Raamsdonk and Siegfried Hekimi, "Deletion of the Mitochondrial Superoxide Dismutase *sod-2* Extends Lifespan in *Caenorhabditis elegans*," PLoS Genetics (2009) 5.2: 1-13.

[87] Troen 10; Lewis Wolpert, How We Live and Why We Die: The Secret Lives of Cells (London: Faber and Faber, 2009) 152.

[88] Hayflick laments the lack of serious research on longevity determination in animals (such as certain tortoises, the American lobster, and deep-sea fish) whose ageing processes are either negligible or undetectable. See Hayflick, "Anarchy" 418.

[89] See Bain, Don, "Methuselah Grove," Nova Online, 2001, 15 Sept. 2009 <http://www.pbs.org/wgbh/nova/methuselah/expl_grove.html> par.1.

[90] Of course, this is not immortality *per se* since these organisms are constantly threatened by predation, environmental toxins, and other hazards, for instance.

[91] Transdifferentiation is "a change of commitment and gene expression of somatic, well-differentiated, noncycling cells to other cell types directly or through the return to a condition of undifferentiated cells." See Stefano Piraino, Ferdinando Boero, Brigitte Aeshbach, and Volker Schmid, "Reversing the Life Cycle: Medusae Transforming into Polyps and Cell Transdifferentiation in *Turritopsis nutricula* (Cnidaria, Hydrozoa)," Biological Bulletin 190.3 (1996): 303.

[92] Daniel E. Martinez, "Mortality Patterns Suggest Lack of Senescence in Hydra," Experimental Gerontology 33.3 (1998): 217–225; Piraino et al. 302-312.

described here is by definition impossible for mortals to actually measure. To be sure, biogerontologists continue to quarrel about the possibility (and desirability) of such a thing, especially for humans.[93]

Many of these findings are impressive indeed, but the problem, of course, is that the results are difficult to extrapolate for human ageing, and there are significant differences between ageing observed *in vitro* and *in vivo*. As a result, scientists and biodemographers are turning to human centenarian studies.[94] The southern Japanese prefecture of Okinawa, for instance, has been the locus of just this, after it was learned that its population enjoys the longest life expectancy on earth with about 50 centenarians per 100,000.[95] Moreover, developmental biologist Lewis Wolpert reports that, for Okinawans, "[t]he death rates from stroke, heart disease and cancer are only about two thirds of those for Japan as a whole, and the death rate for sixty-year-olds is half the national average."[96] At the same time, low caloric/glycemic diet (the average food intake of Okinawans is 20% less than the Japanese average), low blood levels of free radicals, high physical activity, a "psychospiritual outlook," negligible levels of atherosclerosis, low levels of osteoporosis, as well as a reduced risk for dementia, hormone-dependent cancers, and coronary heart disease cooperate to produce long life.[97]

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[93] Hayflick, "Biological Aging" 4-5; 11; Hayflick, "Anti-Aging Medicine" 24-25; Binstock, "Search for Prolongevity" 29-31.

[94] For instance, Makoto Suzuki, Bradley Willcox, and Craig Willcox are co-principal investigators of the Okinawa Centenarian Study. See Okinawa Centenarian Study, "The Team" 4 Sept. 2009 <http://www.okicent.org/team.html>.

[95] Compare this to the American ratio of 10-20 centenarians per 100,000. See Okinawa Centenarian Study, "Okinawa's Centenarians," 4 Sept. 2009 <http://www.okicent.org/cent.html> par. 3.

[96] Wolpert 151.

[97] Wolpert 151. See also Okinawa Centenarian Study, "Okinawa's Centenarians" par. 2.

Developments in rejuvenation technologies and tissue regeneration have also stirred the interest of prolongevists intrigued by the prospect of generating organs and tissues to replace those that have become defective, damaged, or less efficient as the body ages in order to increase functional longevity. In 1991, groundbreaking scientists Joseph and Charles Vacanti managed to seed the cartilage cells of a boy with Poland syndrome (who had neither bone nor cartilage over his left thoracic cavity) on a polymer scaffold to produce a bioengineered cartilaginous plate that they shaped to his chest in order for it to grow with the patient.[98] In 2006, a group of researchers from the Department of Urology and the Wake Forest Institute for Regenerative Medicine at the Wake Forest University School of Medicine in North Carolina reported the successful implantation of artificial lab-grown urinary bladders in seven human patients suffering from myelomeningocele using a biodegradable scaffold seeded with the patients' own bladder cells.[99]

Recently, attempts to engineer even the most complex of organs have shown promise. In 2008, Doris Taylor, Harald Ott, and their team at the Center for Cardiovascular Repair at the University of Minnesota created new rat hearts in their laboratory by a process described as "whole organ decellularization."[100] They extracted hearts from rat cadavers and used detergents to remove their cells in order to be left with only the extracellular matrix; the matrix, which served as a

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[98] Charles A. Vacanti, "The History of Tissue Engineering and A Glimpse Into Its Future," Tissue Engineering 12.5 (2006): 1141.

[99] A. Atala, S. B. Bauer, S. Soker, J. J. Yoo, and A. B. Retik, "Tissue-engineered Autologous Bladders for Patients Needing Cystoplasty," Lancet 367.9518 (2006): 1241-1246.

[100] University of Minnesota Academic Health Center, "Whole Organ Decellularization," 2009, 5 Apr. 2010 <http://www.stemcell.umn.edu/stemcell/faculty/Taylor_D/ home.html>.

scaffold, was reseeded with the neonatal cardiac cells of a living animal to create a new heart.[101]

Much of the research in this area, still in its infancy, has the potential to answer the growing need for human donor organs (of any and every kind) and to eliminate one of the most serious risks involved in transplantation: the recipient's body rejecting the donor organ.[102] To be sure, the ability of modern science to restore, reconstitute, and rejuvenate worn-out body parts also holds great import for the prolongation of life.[103]

The Stoic ethical doctrine of *oikeiōsis*, like Thomas Aquinas' discussion of the natural law, maintains that the first impulse shared by all living things is for self-preservation.[104] This, we have seen, is fundamental to a number of theories of ageing, emphasizing a primordial drive to preserve the self through procreation. Recent developments in the science of ageing and the study of prolongevitism indicate that survival of the self need not be sought within the limits of human life span alone. Like the Stoics, who emphasized the preservation of one's own

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[101] See Harald C. Ott, Thomas S. Matthiesen, Saik-Kia Goh, Lauren D. Black, Stefan M. Kren, Theoden I. Netoff, and Doris A. Taylor, "Perfusion-decellularized Matrix: Using Nature's Platform to Engineer a Bioartificial Heart," Nature Medicine 14.2 (2008): 213-221.

[102] Since the immune system identifies the donor organ as "non-self" and, therefore, targets it for destruction, a substantial number of patients must take immunosuppressant drugs for the rest of their lives. Being able to seed the matrix of a donor organ with a patient's own cells may very well reduce the severity of this rejection. I say "reduce" and not "eliminate" here because there may be a problem with the "foreign" donor matrix that is used as the scaffold to construct the new organ. The use of *biodegradable* scaffolds may pose less of a risk.

[103] A number of biogerontologists agree that, theoretically, this may be possible, but debate its feasibility as a means to extend human life. There is an interesting discussion in biogerontology about the implications of replacing or reprogramming the brain for self-identity. See Olshansky, Hayflick, and Carnes, "Position Statement" B295; Hayflick, "Future of Ageing" 269.

[104] Marcus T. Cicero, On Moral Ends, trans. R. Woolf, ed. J. Annas (Cambridge: Cambridge UP, 2001) III.16; Diogenes Laertius, Lives of the Eminent Philosophers, trans. R. D. Hicks (Cambridge, MA: Harvard UP, 1950) VII.85; John Sellars, Stoicism (Berkeley: U of California P, 2006) 107-109; Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province, 2008, 16 Aug. 2009 <http://www.newadvent.org/summa/index.html> IaIIae, Q.94, art.2 *resp.*

constitution (although living well might necessitate the preservation of the rational being at the expense of the physical),[105] a number of biogerontologists and transhumanists are working to secure the infinitude of composite existence (that is, physical and rational), however paradoxical such a project might seem.

Those transhumanists in particular who champion mind-computer uploading and, therefore, situate personhood (or at least the defining elements of the human person) in the brain, share a similar predisposition to sustaining "the rational" or, at the very least, protecting the source of rationality above all else. John Sellars, a senior lecturer in philosophy at the University of the West of England in Bristol, offers a description of *oikeiōsis* that further supports this link between Stoicism and transhumanism: "the Stoic doctrine of self-preservation will, in cases of rational beings – that is, philosophers working toward the ideal of the sage – sometimes lead to choices that may actually threaten an individual's physical existence."[106]

What exactly are we trying to prolong? The mind? Our DNA? Our physical bodies fixed at a certain age? Can the human person be located in any one of these or should our understanding be more integrative? Whatever the case, research developments in the biological basis of ageing, age-related diseases, and interventions to compress morbidity, decelerate ageing, or arrest it altogether warrant serious ethical consideration, especially regarding our understanding of what it means to be human. Post is cautious:

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[105] Sellars 109. "Paradoxically," John Sellars explains, "it is the Stoic theory of self-preservation that forms the basis for their [the Stoics] later infamous defence of suicide." Thomas Aquinas, on the other hand, argues that suicide is "contrary to the natural law and to charity." See Aquinas IIaIIae, Q.64, art.5 *resp.*

[106] Sellars 109.

> At a time when biotechnology is allowing the reconstruction of both nature and human nature, all thoughtful citizens must ponder the implications of potentially dramatic change. Of the many possible biotechnological goals on the horizon, which ones are likely to enhance the human condition and which ones are likely to diminish human dignity? We think of the provocative developments in therapeutic cloning, in fertility and reproduction, in organ procurement and transplantation, in genetic testing and therapy, or in the treatment of myriad illnesses, and our collective breath is taken away by the pace of change. But we are also rightly haunted by the reality that while biotechnological powers grow, human nature has in no obvious way progressed with regard to unselfish behavior, humility, peace, and equality. Thus, we raise the question of the very nature of goodness, and whether some biotechnological developments divert us from growth in virtue or even tempt us to create a new class of an ageless elite that inevitably begins to look down upon the ordinary older adult as a misfit. Should we move forward in the twenty-first century as bold new cocreators of our somewhat malleable human nature, or should we accept a more humble approach that endorses a caring and just stewardship over human nature more or less as it is, seeking therapies rather than transformations?[107]

In this passage, Post brings to light a number of concepts, namely co-creatorship and stewardship, which are particularly important for a Christian analysis of radical life extension. In addition, his evaluation of the technology in question based on whether or not its objectivity is ordered to the good is fundamental to the Roman Catholic moral tradition.

Having looked at transhumanism and the scientific developments that may support the transhumanist agenda, I turn here to an exploration of how Roman Catholicism might view prolongevitism.

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[107] Stephen G. Post, "Decelerated Aging: Should I Drink From a Fountain of Youth?" The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 90-91.

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Mori aut Morari: Developing a Roman Catholic Perspective on the Radical Prolongation of Life

Although the Roman Catholic moral tradition has produced a substantial body of teaching on medical ethics, at least from the Middle Ages onward,[1] and the Church has played an important role in bioethics since its inception as a discipline, it has said surprisingly little about the prospect of radical life extension. I am not convinced that this is because the Church is reluctant to stir up discussion at a time when it may seem premature to do so or because the topic is overly speculative or ostensibly fictional. To be sure, the Magisterium is not lacking in publications relating to genetic engineering, xenotransplantation, cloning, or reproductive technologies, nor has the Church waited for science to perfect such things before releasing said documents to the faithful.

The author of Ecclesiastes could never have fathomed the depths of human innovation or imagined the potential reach of human technique. The ancients would not have found a refreshing thought in the suggestion that no one has power over the day of death;[2] death was inevitable and humans, however special, could not escape its dominion.[3] Although there may very well have been a yearning to live forever, to consume oneself with such things was nothing more than childish fantasy. Times have changed.

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[1] See Thomas A. Shannon, "The Roman Catholic Magisterium and Genetic Research: An Overview and Evaluation" Design and Destiny: Jewish and Christian Perspectives on Human Germline Modification, ed. Ronald Cole-Turner (Cambridge, MA: MIT P, 2008) 51.

[2] Eccles. 8.8.

[3] Ps. 89.48; Eccles. 7.1-2.

Few opposed the increasing life expectancy that came with the advent of more sophisticated public health interventions[4] in post-industrial societies during the twentieth century. However, aside from the immediate implications of the demographic shift to a longer lived population,[5] little attention has been given to the possibility of *radically* extending healthy human life beyond our current maximum span of one hundred and twenty five years. Derek Maher, director of the religious studies program at East Carolina University, and Calvin Mercer, director of the multidisciplinary studies program also at East Carolina, argue that progress in medicine and biotechnology is quickly re-directing the conversation about radical life extension from a philosophical delight in the speculative to serious consideration of the theoretically and technically feasible:

> RLE [radical life extension] in particular and human enhancement technologies in general could very well displace in importance terrorism, global climate change, and other momentous public issues of our day. This is not meant to minimize our appreciation of the critical importance of those issues; rather, it underscores our assessment of the profound significance that new and emerging human enhancement technologies will have for our species.[6]

Maher and Mercer's edited collection, Religion and the Implications of Radical Life Extension, which was published at the end of 2009, is "the first concerted effort"[7] to explore the prospect of radical life extension from Christian, Jewish, Jain, Daoist, Hindu, Buddhist, and Islamic traditions. Apart from the authors who lent their expertise on religion to this text, the religious traditions have barely engaged the issue (though prolongevity is certainly not a novel idea)

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[4] This was discussed in the previous chapter.

[5] There is ever increasing concern about how to manage the ageing "baby boom" generation.

[6] Derek F. Maher and Calvin Mercer, eds., Religion and the Implications of Radical Life Extension (New York: Palgrave Macmillan, 2009) 7.

[7] Maher and Mercer 3.

and only now has a critical treatment of transhumanism, an enthusiastic proponent of radical life extension technologies, begun to take shape in academia.[8]

Introducing Old Ideas to New Conversation

This chapter limits the scope of this discussion to the Roman Catholic context. In Religion and the Implications of Radical Life Extension, Terence Nichols commits to a "thought experiment;" he is the only scholar, to date, to envisage how the Roman Catholic Church might rule on the issue of significant longevity.[9]

Echoing basic Church teachings and rooting much of his experiment in the first chapters of Genesis, Nichols lays down a number of fundamental concepts to initiate conversation and contextualize the debate. Foremost, "death is not natural," Nichols says, "but is the result of sin, while life is the gift of God."[10] Long life, he contends, is a divine blessing in the Old Testament and eternal life is the gift of God offered post-mortem through Jesus according to the New

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[8] For instance, Arizona State University was awarded the Templeton Research Lecture Series for Hava Tirosh-Samuelson's project called "Facing the Challenges of Transhumanism: Religion, Science, and Technology." See Arizona State University, "Facing the Challenges of Transhumanism: Religion, Science, and Technology," 2006-2009, 9 April 2010 <http://transhumanism.asu.edu/index.php>. In 2006 and 2007, Calvin Mercer introduced "wildcard" sessions on radical life extension at the American Academy of Religion, which led to the development of the AAR's "Transhumanism and Religion" consultation in 2008. In addition, see Brent Waters, From Human to Posthuman: Christian Theology and Technology in a Postmodern World (Aldershot: Ashgate, 2006); Todd T. W. Daly, "A Theological Analysis of Life Extension via Aging Attenuation with Particular Reference to Ascetic Practice in the Desert Fathers" (Diss. U of Edinburgh, 2008); and the special issue of the Journal of Evolution and Technology 14.2 (2005) on transhumanism and religion.

[9] Terence L. Nichols, "Radical Life Extension: Implications for Roman Catholicism," Religion and the Implications of Radical Life Extension, ed. Derek F. Maher and Calvin Mercer (New York: Palgrave Macmillan, 2009) 133-144. As far as I know, Nichols is the only one who has published material that explores the intersection of radical life extension and Roman Catholicism in English. In September 2009, the Italian Diocese of Pistoia hosted a symposium entitled "L'idea dell'immortalità terrena: una nuova sfida per la teologia" 'The Idea of Earthly Immortality: A New Challenge for Theology.' The week-long conference was organized by Andrea Vaccaro, author of L'ultimo esorcismo: Filosofie dell'immortalita' terrena (Bologna: Edizioni Dehoniane Bologna, 2009), and hosted by Bishop Mansueto Bianchi.

[10] Nichols 135.

Testament.[11] Nichols makes clear that the resurrection of Jesus is pivotal for Christians, who bind themselves to this as hope and promise for their own perpetuity in the world to come[12] – a hope that "does not disappoint"[13] and a perpetuity that is only good because it is, above all, communion with God, who "alone constitutes man's happiness."[14] Indeed, Douglas Farrow reminds us that, for Saint Augustine, "the pursuit of happiness *requires* bodily resurrection […]"[15] and "[t]he fathers thought it impossible to maintain the biblical unity of creation and redemption, or the true character of Christian hope, or the gospel story itself, without maintaining the resurrection of the body."[16] This is why Tertullian can say that "[t]he flesh is the hinge of salvation."[17]

Nichols speaks of the glorified body of the resurrection as one that is material but that "transcends nature as we know it," transforming the boundaries of time, space, and the physicality of mortal existence.[18] Here, though, the narratives of Jesus' resurrection point to an interesting paradox: the one who is risen from the dead transcends materiality but is, at the same time, continuous

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[11] John 3.36; Rom. 6.23; Nichols 135.

[12] Nichols 135-136; 1 Thess. 4.14. Although I attempt here a properly Christological account of the resurrection of the body to serve the purposes of this thesis, I leave discussions about the credibility of this central tenet of the Christian tradition to scholars of greater competence than I. See, for example, Douglas Farrow, "Resurrection and Immortality," The Oxford Handbook of Systematic Theology, ed. John Webster, Kathryn Tanner, and Iain Torrance (Oxford: Oxford UP, 2007) 221-229.

[13] Rom. 5.5.

[14] Nichols 140; Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province, 2008, 16 Aug. 2009 <http://www.newadvent.org/summa/index.html> IaIIae, Q.2, art.8 *resp.* Note that I retain the Church's language (of using "man" as an inclusive term) in direct citations throughout the dissertation.

[15] Farrow, "Resurrection and Immortality" 219, italics mine.

[16] Farrow, "Resurrection and Immortality" 215.

[17] Catechism of the Catholic Church (Ottawa: Canadian Conference of Catholic Bishops, 1994) §1015.

[18] Nichols 136.

with the earthly self.[19] That is, although mortal life ceases at death, the human person survives the transition to immortality with the bonds forged in life unbroken.[20] According to Farrow's interpretation of Tertullian, the changes that will lead to the resurrection will introduce "a radical discontinuity into 'our condition, not our nature.'"[21] Inspired by the Gospels and the writings of Paul, the Church professes its belief in "the true resurrection of this flesh that we now possess. We sow a corruptible body in the tomb, but he [God] raises up an incorruptible body, a 'spiritual body.'"[22] This important concept regarding the continuity of the self[23] is raised over and again in Catholic bioethical theory; the potential rift in this continuity of the whole person[24] underlies much of the

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[19] The Risen Christ is not recognized in the flesh by his companions on the road to Emmaus (Luke 24.13-35), but at the same time he bears the wounds of his crucifixion (John 20. 19-29) and assures the disciples when he appears to them: "see that it is I myself" (Luke 24.39). In addition, it is important to note that even though the transcendent dimension of the human person is *fully* realized in communion with God, we already transcend materiality in the sense that we have a soul.

[20] When Mary of Magdala realizes that the man with whom she is speaking by the empty tomb is not the gardener but the Risen Christ, she turns to him and says "Rabbouni! (which means Teacher)." See John 20.16. See also Cory Andrew Labrecque, "Transcending the Functional Self: A Discourse on the Continuity of Personhood in Degenerative Dementia," M.A. thesis, McGill University, 2004, 77.

[21] Tertullian, On the Resurrection of the Flesh, Christian Classics Ethereal Library, 8 July 2010 <http://www.ccel.org/ccel/schaff/anf03.v.viii.lvii.html> LVII; Farrow, "Resurrection and Immortality" 217.

[22] Catechism §1017; 1 Cor. 15.42-44.

[23] Although Nichols does not explicitly address this, the subject of continuity-discontinuity is seminal to Farrow's "Resurrection and Immortality."

[24] Heightened attention to the "whole person" counters the biomedicalization of health and illness, lending support to George Engel's call for a biopsychosocial conceptualization of such things. See G. Engel, "The Need for a New Medical Model: A Challenge for Biomedicine," Science, New Series 196.4286 (1977): 129-136. The doctrine of the resurrection of the body in the Christian tradition, particularly evident in John Paul II's emphasis on *corpus et anima unus*, implies the resurrection of the *whole person*. See Farrow, "Resurrection and Immortality" 216; 218; 221, italics mine; Joseph Ratzinger, Eschatology: Death and Eternal Life, 2nd ed., trans. Michael Waldstein, ed. Aidan Nichols (Washington: Catholic U of America P, 1988) 74; 235; 245.

Church's reticence about germ line modification, genetic engineering,[25] and other speculative biotechnologies (such as mind uploading) that may very well render the present bodily aspect of human nature obsolete. Nichols himself suggests that radical life extension might mean that certain Roman Catholics, having "the illusion of immortality without being truly immortal," will fall (further) away from theocentrism and divine providence, and turn instead to science as the source and sustenance of long life.[26]

In the end, Nichols is convinced that the Roman Catholic Church will not condemn radical life extension technologies in principle but will rule against such things because of their responsibility for, or perpetuation of, "adverse social consequences:" apostasy and a decreased need for God; greater procrastination in preparing for death than what we see in the current age of increased life span; attachment to worldly things that the urgency of impending death reminds us are fleeting; the restricted availability of radical life extension to only the wealthy minority; the probability of an unwavering gerontocracy and limited opportunity for the young; an exponential rise in population (as birthrates continue to fall) without a proportional increase of access to proper healthcare; economic disparity; and questions over the stability of marriage and commitment to the religious life.[27]

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[25] Congregation for the Doctrine of Faith, Instruction *Dignitas Personae* on Certain Bioethical Questions, Vatican City: CDF, 2008, 16 May 2009 <http://www.vatican.va/ roman_curia/ congregations/cfaith/documents/rc_con_cfaith_doc_20081208_dignitas-personae_en.html> §25-27.

[26] Nichols 136-137.

[27] Nichols 138-143.

Nichols does not offer a balanced critical evaluation of what he foresees as the social consequences of radical life extension, but he does suggest that a number of these may be construed in less negative ways. For instance, Nichols entertains the possibility that people who live for many centuries will "eventually become bored with new adventures, new careers, more sex, sports, fun, travel, distractions, and so on, and will turn to meditation, prayer, and the contemplation of God out of sheer ennui."[28] He imagines that the significant prolongation of life may very well lead to the pursuit of love and knowledge (and perhaps, ultimately, a turn *toward* union with God) instead of looking for fulfillment in satiating self-limiting, transient, and material desires (such as money, fame, and possession).[29] Although Nichols does not make this plain, an ideological change of this sort would have vast environmental implications; for one, it might reorient the unsustainable economic paradigm that champions commodification and the accumulation/overconsumption of commodities.

Nichols admits that it is quite possible that the aforementioned social trends, particularly those regarding population growth patterns and economic disparity, might *not* be accentuated by radical life extension.[30] He does, however, conclude that this technology, which "could be used either for good or for evil," "is unlikely to change sinful [oppressive] social structures, more likely it will lead to their entrenchment."[31] Accordingly, Nichols predicts that the Catholic Magisterium will denounce radical life extension technologies because of their

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[28] Nichols 139.
[29] Nichols 139.
[30] Nichols 142-143.
[31] Nichols 142.

potentially detrimental effects on the common good, which is defined by the Second Vatican Ecumenical Council as "the sum total of social conditions which allow people, either as groups or as individuals, to reach their fulfillment more fully and more easily."[32]

Nichols argues that what is at stake is not that the duration of life will be increased significantly with radical life extension technologies but that they will have untoward ramifications for the quality of life.[33] Indeed, the age-old biblical inquiry that concerned the primordial couple in Eden, "do I choose my own autonomy or the union and love of God?" is being addressed here anew.[34]

Nichols breaks ground in his chapter. He introduces broad but highly important themes that would most certainly be constituent of the Church's response to the emergent technology in question, although he does so without much attention to those ecclesial texts that are fundamental to Roman Catholic moral theology. To be sure, since Maher and Mercer's edited collection is a first attempt at engaging scholars in deliberation about the implications of significantly prolonging human life, the conversation has only just begun. I endeavour here to contribute a more nuanced examination of the Roman Catholic tradition concerning radical life extension by relying heavily on the teaching primacy of the Magisterium.

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[32] Second Vatican Ecumenical Council, Pastoral Constitution on the Church in the Modern World: *Gaudium et Spes*, Vatican City: Libreria Editrice Vaticana, 1965, 16 May 2009 <http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_cons_19651207_gaudium-et-spes_en.html> §26; Nichols 144.

[33] Nichols 144.

[34] Nichols 144.

Peter Casarella, professor of Catholic Studies and director of the Center for World Catholicism and Intercultural Theology at DePaul University, is perplexed at how little attention the English-speaking world has given to Joseph Cardinal Ratzinger's writings on eschatology, especially in light of the current renewal of academic interest in the study of the last things (*ta eschata*).[35] Ratzinger's involvement in this field can be traced some fifty years prior to his election to the papacy (as Pope Benedict XVI) when he was lecturing on eschatology, among other subjects, at the Higher School of Philosophy and Theology in Freising. The sum of his thoughts and ideas on the matter were compiled into the manuscript *Eschatologie - Tod und ewiges Leben* that was published in 1977, translated into English in 1988, and then re-released in 2007.[36]

Throughout this chapter, I weave insight from Ratzinger's Eschatology, an important text that expounds the Church's doctrine on death, immortality, and resurrection, in order to clarify or deepen concepts brought to the foreground in the various ecclesial documents studied herein. My investigation of these sources in light of radical life extension is not so much a "revolutionary invasion of a new eschatological awareness," but is perhaps "a telltale sign of some change in consciousness by which [we] are looking at reality with new eyes […]."[37]

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[35] Ratzinger xii.
[36] Joseph Ratzinger, Eschatology: Death and Eternal Life xi-xii.
[37] Joseph Ratzinger, Eschatology: Death and Eternal Life 2.

Donum Vitae on Theological Anthropology and Ontology

Over twenty years ago, a number of bishops, physicians, and theologians began to implore the Congregation for the Doctrine of Faith[38] of the Roman Catholic Church for counsel and direction with regard to the permissibility of employing certain biomedical techniques to assist, replace, or intervene in human reproduction.[39] Although *Donum Vitae* ("The Gift of Life"), the Church's written response to this request, is largely interested in the transmission of human life, the nature and identity of the embryo, and the dignity of procreation in the conjugal union, a host of other pertinent concepts and themes that have some bearing on the prospect of prolongevitism are discussed in the text.

It is important to note that the role of the Magisterium is defined as "contributing to the formation of conscience, by authentically teaching the truth which is Christ and at the same time by declaring and confirming authoritatively the principles of the moral order which spring from human nature itself."[40] As such, it is indispensable for Roman Catholic moral thought. The Congregation for the Doctrine of Faith makes this plain in *Donum Vitae*:

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[38] In the Apostolic Constitution *Pastor Bonus*, John Paul II declares that the role of the Congregation for the Doctrine of Faith (CDF) is "to promote and safeguard the doctrine on faith and morals in the whole Catholic world; so it has competence in things that touch this matter in any way. Fulfilling its duty of promoting doctrine, the Congregation fosters studies so that the understanding of the faith may grow and a response in the light of the faith may be given to new questions arising from the progress of the sciences or human culture." See John Paul II, *Pastor Bonus*, trans. Francis C.C.F. Kelly, James H. Provost, and Michel Thériault, Vatican City: Libreria Editrice Vaticana, 1998, 24 Apr. 2010 <http://www.vatican.va/holy_ father/john_paul_ii/ apost_constitutions/documents/hf_jp-ii_apc_19880628_pastor-bonus-index_en.html> §48-49.

[39] Refer to the Congregation for the Doctrine of Faith's forward to *Donum Vitae*: Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation; Replies to Certain Questions of the Day, Vatican City: CDF, 1987, 16 May 2009 <http://www.vatican.va/ roman_ curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en. html>.

[40] Congregation for the Doctrine of Faith, *Dignitas Personae* §10.

> The Church's Magisterium does not intervene on the basis of a particular competence in the area of the experimental sciences; but having taken account of the data of research and technology, it intends to put forward, by virtue of its evangelical mission and apostolic duty, the moral teaching corresponding to the dignity of the person and to his or her integral vocation. It intends to do so by expounding the criteria of moral judgment as regards the applications of scientific research and technology, especially in relation to human life and its beginnings. These criteria are the respect, defence and promotion of man, his "primary and fundamental right" to life, his dignity as a person who is endowed with a spiritual soul and with moral responsibility and who is called to beatific communion with God.[41]

The careful attention paid here to the ontological and teleological dimensions of human personhood is essential for our understanding of Christian anthropology.

The first principle of this moral order finds itself at the center of the Church's theological anthropology: created in the *imago Dei* (that is, in the image and likeness of God), every human life possesses an inviolable dignity and is, as God's gift, of "inestimable value."[42] The Book of Genesis describes how after being made in God's image, humans are granted dominion over the earth.[43]

> Basic scientific research and applied research constitute a significant expression of this dominion of man over creation. Science and technology are valuable resources for man when placed at his service and when they promote his integral development for the benefit of all; but they cannot of themselves show the meaning of existence and of human progress. Being ordered to man, who initiates and develops them, they draw from the person and his moral values the indication of their purpose and the awareness of their limits. [44]

To be sure, science and technology can entice humankind "to go beyond the limits of a reasonable dominion over nature" and exert new powers whose consequences

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[41] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §1.

[42] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §1; Catechism §357; §1700; International Theological Commission, "Communion and Stewardship: Human Persons Created in the Image of God," 2004, 18 Aug. 2008 <http://www.vatican.va/ roman_curia/ congregations/ cfaith/cti_documents/rc_con_cfaith_doc_20040723_communion-stewardship_en.html> §18.

[43] Gen. 1.27-28.

[44] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §2.

are, as yet, unfathomable.[45] This concern for a restricted and responsible dominion, or stewardship, has become the hallmark of a Christian environmentalism that is increasingly sensitive to the havoc that comes with an interpretation of dominion as all-out domination or despotism. The Church teaches that science and technology are "at the service of the human person, of his inalienable rights and his true and integral good according to the design and will of God;"[46] progress is never to be championed for the sake of itself. I will return to this later in my treatment of the Church's social doctrine.

The corporeality of human existence is at the forefront of this discussion of ontology.[47] In his address to the members of the 35th General Assembly of the World Medical Association in 1983, John Paul II declared that:

> [t]he biological nature of each person is untouchable in the sense that it is constitutive of the personal identity of the individual throughout the whole course of his history. Each human person, in his absolutely unique singularity, is constituted not only by his spirit, but by his body as well. Thus, in the body and through the body, one touches the person himself in his concrete reality. To respect the dignity of man, consequently, amounts to safeguarding this identity of the man "*corpore et anima unus*" […][48]

Human persons are not only composite in nature; they are also transcendent in character.[49] Here, the Magisterium's teleological criterion of moral judgment is brought to light. The ultimate end of Christian life is beatific communion with God wherein that transcendent dimension of the human person comes to

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[45] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §1.
[46] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §2.
[47] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §3.
[48] John Paul II, "Address to Participants of the 35th General Assembly of the World Medical Association," 29 Oct. 1983, 14 Jan. 2010 <http://www.ewtn.com/library/ PAPALDOC/ JP2GENMP.htm> par. 24; Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §3. Although I bring to the fore, in this chapter, a number of important points concerning the human body that are discussed in the various writings of John Paul II over the course of his pontificate, a systematic study of how his Theology of the Body relates to the prospect of radical life extension would make an excellent contribution to the work started here.
[49] Second Vatican Ecumenical Council, *Gaudium et Spes* §76.

perfection and, as Irenaeus puts it, the righteous shall "forget to die."[50] On this note, the Catechism teaches that:

> [d]esire for true happiness frees man from his immoderate attachment to the goods of this world so that he can find his fulfillment in the vision and beatitude of God. "The promise [of seeing God] surpasses all beatitude . . . [w]hoever sees God has obtained all the goods of which he can conceive."[51]

As such, interfering with the human body (by whatever biomedical technique) does not simply affect tissues and organs, but involves the whole person, who is "called by the Creator to direct and regulate his life and actions and in particular to make use of his own body"[52] in a way that respects these ontological and teleological dimensions. That is, in the Roman Catholic tradition, the resounding ethical issue regarding radical life extension might not be about the number of years added to the human life span but the postponement of perfect self-realization that can only be experienced after death when in full communion with God. The Congregation for the Doctrine of Faith maintains that "[i]t is on the basis of this anthropological vision that one is to find the fundamental criteria for decision-making in the case of procedures which are not strictly therapeutic, as, for example, those aimed at the improvement of the human biological condition."[53] In this way, radical life extension becomes an unwarranted expansion of life under the conditions of the Fall, even if some of those conditions have been ameliorated.

If "[t]he inviolability of the innocent human being's right to life 'from the moment of conception until death' is a sign and requirement of the very

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[50] Irenaeus, Against Heresies, Christian Classics Ethereal Library, 8 July 2010 <http://www.ccel.org/ccel/schaff/anf01.ix.vii.xxxvii.html> V.36.2; Farrow, "Resurrection and Immortality" 219.
[51] Catechism §2548.
[52] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §3.
[53] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §3.

inviolability of the person to whom the Creator has given the gift of life"[54] and the body is to be regarded "as good and to [be held] in honour since God has created it and will raise it up on the last day,"[55] does this mean that (bodily) life itself, in its earthly state, has *absolute* value? Does the Roman Catholic Church promulgate an unconditionally pro-life position that necessarily culminates in a "more life is better" attitude? Or, to situate the question within the context of prolongevitism, if "human life is always a good" because it is "a manifestation of God in the world, a sign of his presence, a trace of his glory,"[56] should the Church, then, not be the staunchest supporter of radical life extension?

Donum Vitae explains that "[p]hysical life, with which the course of human life in the world begins, certainly does not itself contain the whole of a person's value, nor does it represent the supreme good of man who is called to eternal life."[57] At once, the Magisterium teaches that:

> [f]rom the moment of conception, the life of every human being is to be respected in an *absolute* way because man is the only creature on earth that God has "wished for himself" and the spiritual soul of each man is "immediately created" by God; his whole being bears the image of the Creator. Human life is sacred because from its beginning it involves "the creative action of God" and it remains forever in a special relationship with the Creator,

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[54] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §4.

[55] Second Vatican Ecumenical Council, *Gaudium et Spes* §14.1; Catechism §364. Importantly, the doctrine of the Incarnation (God assuming the weakness of human nature and becoming flesh in the person of Jesus), gives value to the physicality of human existence, credence to the human person as a totality of body and soul, makes it possible for humans to share in the divine nature (2 Pet. 1.4), and, ultimately, is the foundation of human dignity. See Congregation for the Doctrine of Faith, *Dignitas Personae* §7. Mary Knutsen suggests that ageing bodies in particular should be looked upon as an actualization of the Incarnation. See Stanley Hauerwas, Carole Bailey Stoneking, Keith G. Meador, and David Cloutier, eds., Growing Old in Christ (Grand Rapids: Eerdmans, 2003) 299.

[56] Benedict XVI, "Address to the Participants at the 12th General Assembly of the Pontifical Academy for Life and Congress on 'The Human Embryo in the Pre-Implantation Phase,'" Vatican City: Libreria Editrice Vaticana, 2006, 16 July 2009 <http://www. vatican.va/holy_father/ benedict_xvi/speeches/2006/february/documents/hf_ben-xvi_spe_20060227_embrione-umano_en.html> par. 14; John Paul II, *Evangelium Vitae*, Vatican City: Libreria Editrice Vaticana, 1995, 16 May 2009 <http://www.vatican.va/edocs/ENG0141/_INDEX.HTM> §34.

[57] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §4.

> who is its sole end. God alone is the Lord of life from its beginning until its end […][58]

The Roman Catholic tradition is physicalist[59] in the sense that all human beings are *ipso facto* to be treated as persons clothed with a dignity grounded, unconditionally, in the *imago Dei*. That is, the Church dismisses personalist definitions[60] that require a human being to adequately meet a set number of standards of functionality (such as rationality, self-consciousness, and language, for instance) in order to be included in the category of person.[61] This reasoning forms the Church's teaching against abortion and euthanasia. It does not follow, however, that an *absolute* respect for the life of composite human existence requires an *absolute* value granted to its corporeal dimension even though "it does constitute in a certain way the 'fundamental' value of life."[62]

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[58] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §5, italics mine.

[59] Here, I am referring to James Walters' distinction between physicalism ("the essence of a person is found in his or her biological make-up. All humans are persons, ipso facto") and personalism ("the essence of a person is located in one's mental capacities and ability to use these in satisfying ways. Whether one is a human is not important"). Joseph Cardinal Bernardin offers the following summary: "[p]hysicalism (he called it 'personalist humanism') finds human dignity in 'being human,' whereas personalism (he called it 'pragmatic humanism') finds human dignity in doing 'human things.'" See James Walters, "Is Koko a Person?" 1997, 4 Jan. 2008 <http://dialogue.adventist.org/articles/09_2_walters_e.htm> par. 16; 18; 20; Margaret Somerville, The Ethical Imagination: Journeys of the Human Spirit (Toronto: Anansi, 2006) 163-164. This construal is also important for Peter Singer. See his Practical Ethics, 2nd ed. (New York: Cambridge UP, 1993) 87.

[60] If we adopt Walters' distinction, the Church would therefore be identified as "physicalist" in its treatment of human personhood. However, there are a number of examples of personalism found in the ecclesial texts. For instance, immediately following the ascription of "the dignity of a person" to all human beings by virtue of being made in God's image in §357, the Catechism states: "[h]e is capable of self-knowledge, of self-possession and of freely giving himself and entering into communion with other persons." This does not, however, diminish the inalienable rights of the person that the Church accords human nature. See Congregation for the Doctrine of Faith, *Donum Vitae* §III; Catechism §1700; §1930-1931; §2273; John Paul II, *Evangelium Vitae* §11; §60; §81. See also Benedict XVI's reading of John's distinction between βίος and ζωή in his "Papal Homily at Rome's San Lorenzo International Youth Centre," Vatican City: Libreria Editrice Vaticana, 2008, 16 July 2009 <http://www.vatican.va/holy_father/ benedict_xvi/homilies/2008/documents/hf_ben-xvi_hom_20080309_xxv-csl_en.html> par. 9-12.

[61] This was the subject of my Master's thesis. See Labrecque.

[62] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §4.

Humans are obliged to regard the body as good and honourable since God created it;[63] the Catechism calls for the *absolute* protection of human life from its beginning.[64] Nevertheless, a caveat of restriction is filed in the event that tenantship of the human person over his or her body[65] is misconstrued as unconditional dominion or that this concern for physical integrity is understood as sanction for worship of the body:

> If morality requires respect for the life of the body, it does not make it an absolute value. It rejects a neo-pagan notion that tends to promote the *cult of the body*, to sacrifice everything for it's [*sic*] sake, to idolize physical perfection and success at sports. By its selective preference of the strong over the weak, such a conception can lead to the perversion of human relationships.[66]

Pius XII is cautious: "care for the body, strengthening of the body – yes; but cult of the body, making a god of the body – no."[67]

In this way, the Roman Catholic Church legitimates self-defense "even if [one] is forced to deal his aggressor a lethal blow,"[68] the discontinuation of medical procedures that are considered to be extraordinary or disproportionate to the expected result of their employ,[69] and the use of analgesics to alleviate extensive suffering even if their use has the *unwilled* effect of hastening death.[70]

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[63] Second Vatican Ecumenical Council, *Gaudium et Spes* §14.
[64] Catechism §2270.
[65] Paul puts the following question to the Church at Corinth: "[D]o you not know that your body is a temple of the Holy Spirit within you, which you have from God, and that you are not your own?" 1 Cor. 6.19.
[66] Catechism §2289. Note that I preserve the Church's use of italics throughout unless otherwise indicated.
[67] R. Feeney, A Catholic Perspective: Physical Exercise and Sports (Virginia: Aquinas P, 1995) 48.
[68] Catechism §2264.
[69] Catechism §2278; International Theological Commission §92.
[70] Catechism §2279; International Theological Commission §92.

Interestingly, the cryopreservation of human embryos, even when the intention is to safeguard the life of those embryos, is deemed illicit in *Donum Vitae*.[71]

Employing *therapeutic* procedures in order to heal or to promote a person's well-being is in conformity with the Church's moral tradition.[72] However,

> [c]ertain attempts to influence chromosomic or genetic inheritance are not therapeutic but are aimed at producing human beings selected according to sex or other predetermined qualities. These manipulations are contrary to the personal dignity of the human being and his or her integrity and identity. Therefore in no way can they be justified on the grounds of possible beneficial consequences for future humanity. Every person must be respected for himself: in this consists the dignity and right of every human being from his or her beginning.[73]

Indeed, the Roman Catholic tradition holds to the idea that humans are called to collaborate with God to complete the work of Creation;[74] that said, this cooperative participation must conform to Creation[75] and be ordered to the good.[76] Like the world, humankind was created *in statu viae*; that is, in "a state of journeying" toward a perfection that has not yet been attained.[77] Accordingly, the Catechism speaks of "the insurmountable limits that man, being a creature, must freely recognize and respect with trust. Man is dependent on his Creator and

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[71] Cryopreservation as such "*constitutes an offence against the respect due to human beings* by exposing them to grave risks of death or harm to their physical integrity and depriving them, at least temporarily, of maternal shelter and gestation, thus placing them in a situation in which further offences and manipulation are possible." See Congregation for the Doctrine of Faith, *Donum Vitae* §I.6; Congregation for the Doctrine of Faith, *Dignitas Personae* §18.

[72] Congregation for the Doctrine of Faith, *Donum Vitae* §I.3.

[73] Congregation for the Doctrine of Faith, *Donum Vitae* §I.6.

[74] Catechism §306-307; §378.

[75] Pontifical Council for Justice and Peace, Compendium of the Social Doctrine of the Church, Vatican City: Libreria Editrice Vaticana, 2004, 16 July 2008 <http://www.vatican.va/roman_ curia/pontifical_councils/justpeace/documents/rc_pc_ justpeace_doc_20060526_compendio-dott-soc_en.html# SECRETARIAT OF STATE> §460.

[76] John Paul II, *Veritatis Splendor*, Vatican City: Libreria Editrice Vaticana, 1993, 16 May 2009 <http://www.vatican.va/edocs/ENG0222/_INDEX.HTM> §79.

[77] Catechism §302.

subject to the laws of creation and to the moral norms that govern the use of freedom."[78]

Human nature, as a consequence of sin, is persistently "wounded in the natural powers proper to it; subject to ignorance, suffering and the dominion of death."[79] Although limited, it is in this ignorance, *Donum Vitae* warns, that the human person risks overstepping the bounds of creatureliness by ruling over the life and death of others.[80] The Church fears that when the divine mandate for responsible human dominion gives way to the domination of biotechnology over human origins and destiny (instead of being the servant of humankind), this could possibly culminate in the legitimization of eugenics.[81] Sickness, disability, and death, the Church reminds us, are a "*part of the human condition* and affect every individual."[82] Herein lies a fundamental understanding of the human condition: "[a] creation that is good but not God is finite"[83] and, therefore limited, by definition, while it is bound to earthly, temporal existence. In Revelation, when John is granted a vision of "a new heaven and a new earth," a voice speaks from the throne: "See, the home of God is among mortals. He will dwell with them; they will be his peoples, and God himself will be with them; he will wipe every tear from their eyes. Death will be no more; mourning and crying and pain will be no more, for the first things have passed away."[84]

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[78] Catechism §396.
[79] Catechism §405.
[80] Congregation for the Doctrine of Faith, *Donum Vitae* §I.5; §II.
[81] Congregation for the Doctrine of Faith, *Donum Vitae* §II; §II.5; §III; Congregation for the Doctrine of Faith, *Dignitas Personae* §2. The Church speaks of "defending man against the excess of his own power." Refer to the conclusion of *Donum Vitae*.
[82] Congregation for the Doctrine of Faith, *Dignitas Personae* §3; §22, italics mine.
[83] Evangelical Lutheran Church in America, "Basis for Our Caring," This Sacred Earth: Religion, Nature, Environment, ed. Roger Gottlieb (New York: Routledge, 1996) 244.
[84] Rev. 21.1-4.

"Our era needs such wisdom more than bygone ages if the discoveries made by man are to be further humanized," the Congregation for the Doctrine of Faith states in *Donum Vitae*, "[f]or the future of the world stands in peril unless wiser people are forthcoming."[85]

Dignitas Personae on Biological Slavery and the Value of Finitude

As of this writing, *Dignitas Personae* ("The Dignity of the Person") is the most recent doctrinal document produced by the Congregation for the Doctrine of Faith. Taking up biotechnological and bioethical matters that have surfaced in the twenty years since the publication of *Donum Vitae* in 1987, this instruction validates and applies the Church's teaching on theological anthropology to new questions regarding procreation (including developments in assisted reproductive technologies, the cryopreservation of human embryos and gametes, preimplantation diagnosis, and prenatal adoption), gene therapy, hybridization, cloning, and the therapeutic use of stem cells.

In *Dignitas Personae*, the Congregation for the Doctrine of Faith reaffirms the inviolable dignity of the human person, from conception to natural death, as a cornerstone of Roman Catholic bioethical discourse;[86] the Church argues that this must also be the core principle of legislation in dealing with such matters in medicine and biotechnology.[87] Science, as we have seen, is lauded as "an invaluable service to the integral good of the life and dignity of every human

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[85] Congregation for the Doctrine of Faith, *Donum Vitae* Introduction §2.
[86] Congregation for the Doctrine of Faith, *Dignitas Personae* §1; Christopher Tollefsen, ed., John Paul II's Contribution to Catholic Bioethics (Dordrecht: Springer, 2004) 2-3.
[87] Congregation for the Doctrine of Faith, *Dignitas Personae* §5.

being," which is only properly assured when all humans can reap the benefits of biomedical research.[88]

At the same time, the Church reiterates caution about certain developments in the sciences that are influenced by a "eugenic mentality" and those interventions that predetermine genetic identity.[89] The Church alludes to this as "biological slavery, from which it would be difficult to free [the person created by these means]. The fact that someone would arrogate to himself the right to determine arbitrarily the genetic characteristics of another person represents a grave offense to the dignity of that person as well as to the fundamental equality of all people."[90] This is one of the Church's primary reasons for rejecting reproductive and therapeutic cloning, preimplantation diagnosis, as well as germ line therapy that seeks to remedy genetic defects in such a way that the therapeutic effects of the correction would be transmitted to progeny.[91] In this last case, concern is for the risks of genetic manipulation and the potential of these risks to become manifest in the offspring. As these risks are currently neither fully known nor under our complete control, the Church has ruled with precaution against germ line therapy for the time being.[92]

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[88] Congregation for the Doctrine of Faith, *Dignitas Personae* §3.
[89] Congregation for the Doctrine of Faith, *Dignitas Personae* §22; §27; §29.
[90] Congregation for the Doctrine of Faith, *Dignitas Personae* §29. Genetic predetermination of this sort is in stark contrast to the acceptance of what is given in and with spousal union.
[91] The Church also condemns human cloning (and other such techniques that engage in artificial fertilization) because, among other important reasons, it disconnects the creation of a human being from the conjugal union. See Congregation for the Doctrine of Faith, *Dignitas Personae* §22; §25-30.
[92] Congregation for the Doctrine of Faith, *Dignitas Personae* §26; International Theological Commission §90.

Perhaps the most significant contribution of *Dignitas Personae* to the subject at hand is the following passage that integrates the warning against eugenics, the evaluation of risks to the individual and collective, the attention to the common good, and the perception of finitude as a defining feature of humanhood. Take note in particular of the Church's concern for the creation of a "new type of human being:"

> Some have imagined the possibility of using techniques of genetic engineering to introduce alterations with the presumed aim of improving and strengthening the gene pool. Some of these proposals exhibit a certain dissatisfaction or even rejection of the value of the human being as a finite creature and person. Apart from technical difficulties and the real and potential risks involved, such manipulation would promote a eugenic mentality and would lead to indirect social stigma with regard to people who lack certain qualities, while privileging qualities that happen to be appreciated by a certain culture or society; such qualities do not constitute what is specifically human. This would be in contrast with the fundamental truth of the equality of all human beings which is expressed in the principle of justice, the violation of which, in the long run, would harm peaceful coexistence among individuals. Furthermore, one wonders who would be able to establish which modifications were to be held as positive and which not, or what limits should be placed on individual requests for improvement since it would be materially impossible to fulfil the wishes of every single person. Any conceivable response to these questions would, however, derive from arbitrary and questionable criteria. All of this leads to the conclusion that the prospect of such an intervention would end sooner or later by harming the common good, by favouring the will of some over the freedom of others. Finally it must also be noted that in the attempt to create *a new type of human being* one can recognize *an ideological element* in which man tries to take the place of his Creator. In stating the ethical negativity of these kinds of interventions which imply *an unjust domination of man over man,* the Church also recalls the need to return to an attitude of care for people and of education in accepting human life in its concrete historical finite nature.[93]

[93] Congregation for the Doctrine of Faith, *Dignitas Personae* §27.

Thus, the Church insists that limitedness is a basic and indispensable characteristic of the human condition; indeed, the Church finds value in human finitude and vice in transgressing the boundaries of creatureliness.[94] At the same time, we see in this discussion contempt for the indiscriminate assignment of other traits and qualities as constituent of humanhood; this, once again, makes plain the Church's refusal to define "person" in terms of possessing, and effectively harnessing, certain functions or capacities.

There is also heightened attention here to the ramifications of misusing technology and the potential threats to equality, justice, freedom, and social order that could come with failed stewardship over technological interventions. In this way, the Church continuously promotes the common good, which is premised on the unconditional dignity and inalienable rights of the human person.[95] Recall that Nichols is convinced that the Magisterium's major critique regarding radical life extension will most likely lie in its potentially negative effects on the common good vis-à-vis intergenerational inequity, restricted access to the technology in question, etc.[96] It is clear, in the above passage from *Dignitas Personae*, that the Church is, in fact, deeply concerned about such things.

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[94] Charles Pinches discusses how limitedness, in the Christian context, can be seen as a gift, a call, and a virtue. See Hauerwas, Stoneking, Meador, and Cloutier 212. Refer also to Pontifical Council for Justice and Peace §115. It is important to note that life extension, however radical, is not synonymous with immortality and does not necessarily dispose of the finitude of human existence. See Harry Moody, "Who's Afraid of Life Extension?" Generations 25.4 (2002): 35.

[95] Catechism §1905; §1907; §1912.

[96] Nichols 143.

Evangelium Vitae on Telos, Transcendence, and Theocentrism

In 1995, John Paul II issued an encyclical called *Evangelium Vitae* ("The Gospel of Life"), which linked the Church's teaching about the value and inviolability of human life to an outright condemnation of the direct and voluntary killing of innocent human beings, especially through abortion and euthanasia. At the very beginning of the text, the transcendent character and theocentric orientation of human nature is established as a cornerstone of this inviolability:

> Man is called to a fullness of life which far exceeds the dimensions of his earthly existence, because it consists in sharing the very life of God. The loftiness of this supernatural vocation reveals the greatness and the inestimable value of human life even in its temporal phase. Life in time, in fact, is the fundamental condition, the initial stage and an integral part of the entire unified process of human existence. It is a process which, unexpectedly and undeservedly, is enlightened by the promise and renewed by the gift of divine life, which will reach its full realization in eternity (cf. 1 Jn 3:1-2). At the same time, it is precisely this supernatural calling which highlights the relative character of each individual's earthly life. After all, life on earth is not an "ultimate" but a "penultimate" reality; even so, it remains a sacred reality entrusted to us, to be preserved with a sense of responsibility and brought to perfection in love and in the gift of ourselves to God and to our brothers and sisters.[97]

In a striking parallel to Christian ecotheologian Sallie McFague's reconceptualization of salvation, which she situates in the here-and-now (that is, in and for all of Creation),[98] transhumanists, in their rejection of religious notions of soteriology, look to the redemption of humankind (from its imperfect and finite state) in this world and in these days. The Roman Catholic Church, however, could never fathom an earthly immortality that fastens humanity to a this-worldly

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[97] John Paul II, *Evangelium Vitae* §2.

[98] Sallie McFague, "The Scope of the Body: The Cosmic Christ," This Sacred Earth: Religion, Nature, Environment, ed. Roger Gottlieb (New York: Routledge, 1996) 288.

existence because the *telos* and perfection of Christian life can only be had in communion with God in a "new mode of presence" that "lies neither inside nor outside the space of our world."[99] "Heaven," the Catechism describes, "is the ultimate end and fulfillment of the deepest human longings, the state of supreme, definitive happiness."[100] Although there can be no heaven on earth, so to speak, an image of heaven that denies its relation with our world is false.[101]

As such, the radical prolongation of life postpones the realization of this *telos*. However, one could also argue that extended longevity might offer increased opportunity for the cultivation of virtue and godliness, the restitution for sin, and the commitment to good works in anticipation of the life to come. The question remains: is there an age (say, one hundred fifty, two hundred, or one thousand years) at which human nature becomes – by whatever standards we use to describe it at this time – obsolete? In other words, when does a *quantitative* change become a *qualitative* one?

When Jesus says "I came that they may have life, and have it abundantly,"[102] *Evangelium Vitae* makes plain that he is referring to the realization of humanhood that comes with eternal life in communion with God.[103] In his homily on the fifth Sunday of Lent in 2008 at the Church of San Lorenzo in Piscibus, Benedict XVI explained that "[l]ife in abundance is not as some think: to consume everything, to have all, to be able to do all that one wants. In

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[99] Ratzinger 236-237.
[100] Catechism §1024.
[101] Ratzinger 237.
[102] John 10.10; John Paul II, *Evangelium Vitae* §1.
[103] John Paul II, *Evangelium Vitae* §1.

that case we would live for inanimate things, we would live for death."[104] That said, the "penultimate reality" of temporal life is not undermined as a mere prologue of sorts but is "an integral part of the entire unified process of human existence."[105]

This speaks to the *biographical* continuity of human personhood which is not endangered by the degeneration of age nor the separation of soul and body at death;[106] the person is an integrated whole. In this vein, "[t]he dignity of this life is linked not only to its beginning, to the fact that it comes from God," the Church insists, "but also to its final end, to its destiny of fellowship with God in knowledge and love of him."[107] The theocentric orientation of this thinking situates a proper definition of humanhood in a covenantal context; that is, one cannot possibly understand the human person apart from his or her relationship to God, others, and the environment.

> [W]hen the sense of God is lost, the sense of man is also threatened and poisoned, as the Second Vatican Council concisely states: "Without the Creator the creature would disappear . . . But when God is forgotten the creature itself grows unintelligible". Man is no longer able to see himself as "mysteriously different" from other earthly creatures; he regards himself merely as one more living being, as an organism which, at most, has reached a very high stage of perfection. Enclosed in the narrow horizon of his physical nature, he is somehow reduced to being "a thing", and no longer grasps the "transcendent" character of his "existence as man". He no longer considers life as a splendid gift of God, something "sacred" entrusted to his responsibility and thus also to his loving

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[104] Benedict XVI, "Papal Homily" par. 22.

[105] McFague criticizes the emphasis placed on the other-worldliness of salvation in the Christian traditions and argues that this denigrates creation and the "here-and-now aspects of spatiality." See McFague 288.

[106] For a more elaborate discussion, see Labrecque and Ratzinger 245.

[107] John Paul II, *Evangelium Vitae* §38. The Second Vatican Ecumenical Council teaches that the "root reason for human dignity lies in man's call to communion with God." See *Gaudium et Spes* §19.

> care and "veneration". Life itself becomes a mere "thing", which man claims as his exclusive property, completely subject to his control and manipulation. Thus, in relation to life at birth or at death, man is no longer capable of posing the question of the truest meaning of his own existence, nor can he assimilate with genuine freedom these crucial moments of his own history. He is concerned only with "doing", and, using all kinds of technology, he busies himself with programming, controlling and dominating birth and death. Birth and death, instead of being primary experiences demanding to be "lived", become things to be merely "possessed" or "rejected" […] By living "as if God did not exist", man not only loses sight of the mystery of God, but also of the mystery of the world and the mystery of his own being.[108]

In this vein, Ratzinger warns that any "existence in which man tries to divinize himself, to become 'like a god' in his autonomy, independence and self-sufficiency, turns into a Sheol-existence, a being in nothingness, a shadow-life on the fringe of real living."[109]

In his 1952 address to the First International Congress on the Histopathology of the Nervous System, Pius XII defined the moral limits of medical research and treatment. The pope explained that "science is not the highest value, that to which all other orders of values – or in the same order of value, all particular values – should be subordinated."[110] Importantly, he described the "natural finality" of human beings who are users (not proprietors or masters) of the body "bound to the immanent teleology laid down by nature."[111] Yet, "the life which God bestows upon man is much more than mere existence in time. It is a drive towards fullness of life; it is the seed of an existence which transcends the

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[108] John Paul II, *Evangelium Vitae* §22.
[109] Ratzinger 156.
[110] Pius XII, "The Moral Limits of Medical Research and Treatment," Address to the First International Congress on the Histopathology of the Nervous System, 14 Sept. 1952, 4 Apr. 2007 <http://www.papalencyclicals.net/Pius12/P12PSYCH.HTM> §8.
[111] Pius XII, "Moral Limits" §13.

very limits of time: 'For God created man for incorruption, and made him in the image of his own eternity' (Wis 2:23)."[112] Consequently, "the divine origin of this spirit of life explains the perennial dissatisfaction which man feels throughout his days on earth. Because he is made by God and bears within himself an indelible imprint of God, man is naturally drawn to God."[113]

Therefore, the Church could never support scientific pursuits to secure permanence on earth since this would be an outright rejection of this "natural finality," the resurrection of the body, and the Christian *telos* of everlasting life in communion with God.[114] To dispose of this theocentric worldview in favour of an anthropocentrism[115] that renders humanhood the source, summit, and end of all things, makes human life an absolute, does away with the transcendent character that sets human beings apart from the rest of the created order, and erodes any notion of dignity that is rooted in the *imago Dei*. In this way, the Church would also condemn attempts to radically extend life if the desire is to have more life

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[112] John Paul II, *Evangelium Vitae* §34.

[113] John Paul II, *Evangelium Vitae* §35.

[114] As we have seen, this perfect communion with the Triune God, called "heaven," is "the ultimate end and fulfillment of the deepest human longings, the state of supreme, definitive happiness." The Church teaches that there can be no greater happiness than this. See Catechism §1024.

[115] The above passage from *Evangelium Vitae* seems to suggest that the abandonment of theocentrism will result in an interesting melange of exalted humanhood (having absolute dominion over life and death) and degraded humanhood ("he regards himself merely as one more living being"). Note that this second description bears a striking resemblance to the biocentrism (or, more properly, "ecocentrism") of deep ecology which identifies humans as plain members of the biotic community. Incidentally, the Church has outright rejected a biocentric and ecocentric conceptualization in its social doctrine. In the end, perhaps this strange dynamic is exactly what the Church means by the "unintelligibility" of humanhood that comes with the loss of the sense of God. Accordingly, the Church also teaches that "a vision of man and things that is sundered from any reference to the transcendent has led to the rejection of the concept of creation and to the attribution of a completely independent existence to man and nature." See Pontifical Council for Justice and Peace §463-464.

because of a "this-is-all-we-have" mentality.[116] In *Evangelium Vitae*, the Church warns that:

> [t]he eclipse of the sense of God and of man inevitably leads to a practical materialism, which breeds individualism, utilitarianism and hedonism […] The values of being are replaced by those of having. The only goal which counts is the pursuit of one's own material well-being. The so-called "quality of life" is interpreted primarily or exclusively as economic efficiency, inordinate consumerism, physical beauty and pleasure, to the neglect of the more profound dimensions – interpersonal, spiritual and religious – of existence. In such a context suffering, an inescapable burden of human existence but also a factor of possible personal growth, is "censored", rejected as useless, indeed opposed as an evil, always and in every way to be avoided. When it cannot be avoided and the prospect of even some future well-being vanishes, then life appears to have lost all meaning and the temptation grows in man to claim the right to suppress it. Within this same cultural climate, the body is no longer perceived as a properly personal reality, a sign and place of relations with others, with God and with the world. It is reduced to pure materiality: it is simply a complex of organs, functions and energies to be used according to the sole criteria of pleasure and efficiency. In the materialistic perspective described so far, interpersonal relations are seriously impoverished. The first to be harmed are women, children, the sick or suffering, and the elderly. The criterion of personal dignity – which demands respect, generosity and service – is replaced by the criterion of efficiency, functionality and usefulness: others are considered not for what they "are", but for what they "have, do and produce". This is the supremacy of the strong over the weak.[117]

Again, the Church's rejection of defining and evaluating persons based on functionality is made plain. Interestingly, there is an allusion here to the abolition of suffering, a topic to which we now turn.

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[116] I will return to a discussion about the relation between action, intention, and object in my reference to John Paul II's *Veritatis Splendor*.

[117] John Paul II, *Evangelium Vitae* §23.

Redemptive Suffering

In the New Testament, the primary use of the Greek verb πάσχω is "to suffer," but it is also translated as "to endure" and "to have an experience."[118] Indeed, every human being has experienced first-hand, and will come to know anew, many situations of physical and moral suffering. Inevitably, suffering is inseparable from human existence and, as such, it is "essential to the nature of man."[119] In his apostolic letter *Salvifici Doloris*, John Paul II writes that suffering is:

> as deep as man himself, precisely because it manifests in its own way that depth which is proper to man, and in its own way surpasses it. Suffering seems to belong to man's transcendence: it is one of those points in which man is in a certain sense "destined" to go beyond himself, and he is called to this in a mysterious way.[120]

Viktor Frankl echoes the writings of John Paul II from Auschwitz and Dachau. "If there is a meaning of life at all," he reflects in Man's Search for Meaning, "then there must be a meaning in suffering. Suffering is an ineradicable part of life, even as fate and death. Without suffering and death human life cannot be complete."[121] Ratzinger, too, says that:

> [t]he attempt to do away with suffering through medicine, psychology, education and the building of a new society has grown into a gigantic bid for the definitive redemption of mankind. Of course, suffering can and should be reduced by these means. But the will to do away with it completely would mean a ban on love and therewith the abolition of man. Such attempts constitute a pseudotheology. They can lead only to an empty death and a

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[118] F. Wilbur Gingrich, Shorter Lexicon of the Greek New Testament, 2nd ed. (Chicago: U of Chicago P, 1983) 153.

[119] John Paul II, *Salvifici Doloris*, Vatican City: Libreria Editrice Vaticana, 1984, 7 May 2003 <http://www.vatican.va/holy_father/john_paul_ii/apost_letters/documents/hf_jp-ii_apl_11021984_salvifici-doloris_en.html> §2.

[120] John Paul II, *Salvifici Doloris* §2.

[121] Victor E. Frankl, Man's Search for Meaning (New York: Washington Square P, 1984) 76.

> vacuous life. The person who does not confront life refuses his life. Flight from suffering is flight from life.[122]

Roman Catholics believe that suffering, in and of itself, is wanton and meaningless, yet situated within the greater totality of the Passion and death of Jesus, it acquires a certain value in this life.[123] "Suffering is sacred," Louis Evely writes, "because it confers upon those whom it rends the most intimate resemblance to the sorrowful Son whose cross saves the world."[124] By sharing in the suffering of Christ, Catholics charge individual human suffering with redemptive power. Bound more intimately to Christ, who is called "the Suffering Servant," one's own suffering, then, contributes to the redemption of humankind and participates in God's work of salvation.[125]

The Church's rejection of a complete abolition of suffering is in stark contrast with the hedonistic imperative found in some currents of transhumanism. This imperative suggests that "it will be technically feasible to rewrite the vertebrate genome, redesign the global ecosystem, and use biotechnology to abolish suffering throughout the living world."[126] Therefore, the Christian notion of a *God* who suffers is, for transhumanists, nothing short of scandalous.

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[122] Ratzinger 102-103. This responds to abolitionism, a movement that seeks to "promote a rational/scientific approach towards minimizing involuntary suffering and maximizing voluntary happiness leading to the abolition of involuntary suffering and the capacity for infinite voluntary happiness as the prime ethical directive for humanity." See Abolitionist Society, "Abolitionism," 4 Feb. 2010 <http://www.abolitionismnow.com/abolitionism.htm> par. 1.

[123] Louis Evely, Suffering (New York: Herder and Herder, 1967) 71.

[124] Evely 71.

[125] Gregory Baum, "Redemptive Suffering," The Ecumenist 39.4 (2002): 1. To this end, though, the Church does not demand stoical endurance. See See Congregation for the Doctrine of Faith, Declaration on Euthanasia, Vatican City: CDF, 1980, 16 May 2009 <http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19800505_euthanasia_en. html> §III.

[126] Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association, 2003, 16 July 2005 <http://www.transhumanism.org/resources/FAQv21.pdf> 44.

The Scandal of a Suffering God

To say that God is subject to suffering would question, or indeed challenge, divine perfection and immutability.[127] However, according to the Church, salvation history reveals a God who freely chose to unite himself with all humanity through the Incarnation of Christ.[128] It is the very mystery of the Incarnation that describes a God who intentionally *becomes* a human being to redeem all human beings. In this particular context, we are compelled to look upon suffering, then, as *becoming*.[129] This important dimension of suffering as *becoming*, described by Douglas Hall in his text God and Human Suffering, "is implicit in the creaturely being of all that is, especially of the human creature."[130] The process of *becoming* unites both God, in his saving design, and humankind, over the course of its life experience *in statu viae*. The complete abolition of suffering would, according to the Church, preclude human *becoming*.

As such, God in Christ "who emptied himself, taking the form of a slave, and being born in human likeness," freely co-suffers with humanity.[131] We might argue that in the face of human freedom, God chose to make himself "impotent."[132] This notion of "divine impotence" does not, by any stretch of the imagination, portray a God who deliberately remains silent, inactive, and superfluous to human suffering. The Church teaches that "God is always on the

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[127] Peter Koslowski, ed., The Origin and the Overcoming of Evil and Suffering in the World Religions (Dordrecht: Kluwer Academic, 2001) 3.
[128] Koslowski 53.
[129] Douglas John Hall, God & Human Suffering: An Exercise in the Theology of the Cross (Minneapolis: Augsburg, 1986) 63.
[130] Hall 63.
[131] Koslowski 3.
[132] John Paul II, Crossing the Threshold of Hope, ed. Vittorio Messori (Toronto: Alfred A. Knopf, 1994) 64.

side of the suffering."[133] In addition, it is in this very context that John Paul II, in Crossing the Threshold of Hope, attests:

> His omnipotence is manifested precisely in the fact that He freely accepted suffering. He could have chosen not to do so. He could have chosen to demonstrate His omnipotence even at the moment of the crucifixion. In fact, it was proposed to Him: "Let the Messiah, the King of Israel, come down now from the cross that we may see and believe" (Mk 15:32). But He did not accept that challenge. The fact that he stayed on the Cross until the end, the fact that on the Cross He could say, as do all who suffer: "My God, my God, why have you forsaken me?" (Mk 15:34), has remained in human history the strongest argument. If the agony on the Cross had not happened, the truth that God is Love would have been unfounded.[134]

As such, God does not will people to suffer just as God did not destine humans to die.[135] Although the Church traces the etiology of suffering to original sin,[136] that suffering necessarily assumes the nature of punishment for individual faults is a fallacious argument.[137] Defined exclusively within the context of the profound relationship between Creator and creation, sin is humanity's rejection of and opposition to God.[138]

However, God, the Church teaches, never abandons but remains ever present even in the midst of profound suffering.[139] God, in the mysteries of his Incarnation and Passover, chooses to live and suffer with creation. "The redeeming suffering of Christ, the resurrected One, who interceded by the Spirit

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[133] John Paul II, Crossing the Threshold 66.
[134] John Paul II, Crossing the Threshold 66.
[135] Marie F. Fortune, "The Transformation of Suffering: A Biblical and Theological Perspective," Christianity, Patriarchy, and Abuse: A Feminist Critique, eds. Joanne Carlson Brown and Carole R. Bohn (Cleveland: Pilgrim P, 1989) 146; Catechism §1008.
[136] Catechism §1521. Original sin conditions our nature as descendants of Adam and Eve.
[137] John Paul II, *Salvifici Doloris* §11.
[138] Catechism §386.
[139] Fortune 146.

for his People," as Julio Teran Dutari, bishop of Ibarra explains, "operates further through the suffering of the faithful community (and even of all those who suffer) for the progressive overcoming of evil."[140] With the Fall, the world was inundated with sin, and consequently death entered upon the stage of human history.[141] There is hope, though, for Paul affirms that "as one man's trespass led to condemnation for all men, so one man's act of righteousness leads to acquittal and life for all men."[142] The Exsultet that opens the Catholic liturgy of the Easter Vigil proclaims: "O happy fault, O necessary sin of Adam, which gained for us so great a Redeemer!"[143]

One can only come to share in the suffering of Christ, and likewise be "glorified with Him," if indeed Christ has "opened His suffering to man."[144] Just as humankind comes to share in the Passion and death of Jesus, Christ, too, freely comes to share in the passion and death of humankind. "While faith does not deliberately seek out suffering, it knows that without the Passion life does not discover its own wholeness, but closes the door on its own potential plenitude. If life at its highest demands the Passion," Ratzinger explains, "then faith must reject *apatheia*, the attempt to avoid suffering, as contrary to human nature."[145]

Although innocent, Christ intercedes for, and allows himself to be confused with, sinners by offering "His own life in expiation."[146] However, "his humiliation and subsequent exaltation brought deliverance to the entire world.

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[140] Koslowski 57.
[141] Catechism §400-401.
[142] Rom. 5.18.
[143] Catechism §412.
[144] Rom. 8.17; John Paul II, *Salvifici Doloris* §20.
[145] Ratzinger 101.
[146] Isa. 53.10-12.

God glorified him and, with him, rescued, rehabilitated and elevated the suffering humanity, whom Jesus, despite its sin-distorted condition, embraced in solidarity."[147] To be identified with the crucified Christ, Jürgen Moltman writes in The Crucified God, necessarily "means solidarity with the sufferings of the poor and the misery both of the oppressed and the oppressors."[148] The call to unite with the crucified Christ, "who emptied himself, taking the form of a slave," is also a call to humility and poverty: he became "poor, so that by his poverty [we] might become rich."[149] The call to suffering is necessarily a call to vulnerability. In this context, the meaning of suffering, then, is "to become particularly *susceptible*, particularly *open to the working of the salvific powers of God*, offered to humanity in Christ."[150]

Some might argue that because the atonement of Christ's sacrifice was "once and for all,"[151] the idea of human contribution to the redemption of Christ, already complete, seems erroneous.[152] The Catholic Church agrees with this in part. Although the redemption of Christ is complete, the Catholic Church would affirm, it "*remains always open to all love* expressed *in human suffering*."[153] The chapters of *Salvifici Doloris* teach that it is "in this redemptive suffering, through

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[147] Baum 4.
[148] Jürgen Moltmann, The Crucified God: The Cross of Christ as the Foundation and Criticism of Christian Theology (New York: Harper & Row, 1974) 25.
[149] 2 Cor. 8.9.
[150] John Paul II, *Salvifici Doloris* §23.
[151] Heb. 7.27; 8.12; 9.26.
[152] Baum 1. However, in his letter to the Colossians, Paul says: "I am now rejoicing in my sufferings for your sake, and in my flesh I am *completing* what is lacking in Christ's afflictions for the sake of his body, that is, the church." See Col. 1.24, italics mine.
[153] John Paul II, *Salvifici Doloris* §24.

which the redemption of the world was accomplished, [that] Christ opened Himself from the beginning to every human suffering and constantly does so."[154]

"Insofar as man becomes a sharer in Christ's sufferings – in any part of the world and at any time in history," John Paul II writes, "to that extent *he in his own way completes* the suffering through which Christ accomplished the Redemption of the world."[155] So, then, Christ's share in every human person's sufferings transcends time; the participation in the salvific work of God is ongoing. The solidarity of the Church with the whole human family in the face of affliction is affirmed once again in the Second Vatican Ecumenical Council's 1965 pastoral constitution on the Church in the Modern World, called *Gaudium et Spes* ("Joy and Hope"):

> Pressing upon the Christian to be sure, are the need and the duty to battle against evil through manifold tribulations and even to suffer death. But, linked with the paschal mystery and patterned on the dying Christ, he will hasten forward to resurrection in the strength which comes from hope. All this holds true not only for Christians, but for all men of good will in whose hearts grace works in an unseen way. For, since Christ died for all men, and since the ultimate vocation of man is in fact one, and divine, we ought to believe that the Holy Spirit in a manner known only to God offers to every man the possibility of being associated with this paschal mystery.[156]

As such, the Church teaches that the sacrificial death of Christ was by no means an isolated account in history, bearing the good news of salvation to only a

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[154] John Paul II, *Salvifici Doloris* §24.
[155] John Paul II, *Salvifici Doloris* §24.
[156] Second Vatican Ecumenical Council, *Gaudium et Spes* §22.

remote and selected few. Imbedded in the paschal mystery,[157] in which Christ and humans are partners, is the certainty that God saves humankind. The Declaration on the Relation of the Church to Non-Christian Religions called *Nostra Aetate* (that is, "In Our Age") further reminds us that "[o]ne is the community of all peoples, one their origin, for God made the whole human race to live over the face of the earth. One also is their final goal, God. His providence, His manifestations of goodness, His saving design extend to all men, until that time when the elect will be united in the Holy City, the city ablaze with the glory of God, where the nations will walk in His light."[158]

In sum, a vision of the posthuman that is bereft of suffering and finitude is, for the Church, not only a "flight from life," but the antithesis of human nature.

The Theological Impossibility of Immortality in the Here-and-Now

The Church will argue that not only is the pursuit of immortality in the here-and-now undesirable and an affront to the essence of humanhood, it is ultimately not possible because by sin death comes to all.[159]

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[157] The Paschal mystery refers to the Passover events of Jesus' life: his suffering, death, resurrection, and ascension. This, the Church teaches, has two important dimensions: "by his death, Christ liberates us from sin; by his Resurrection, he opens for us the way to a new life." See Catechism §654.

[158] Second Vatican Ecumenical Council, Declaration on the Relation of the Church to Non-Christian Religions: *Nostra Aetate*, Vatican City: Libreria Editrice Vaticana, 1965, 16 May 2009 <http://www.vatican.va/archive/hist_councils/ ii_vatican_council/documents/vat-ii_decl_ 19651028_nostra-aetate_en.html> §1.

[159] Catechism §1008. According to the Roman Catholic tradition, only a small number of humans have been spared from the bodily corruption of death. After three hundred and sixty-five years, Enoch "walked with God; then he was no more, because God took him" (Gen. 5.23-24). The Virgin Mary, who was "preserved from all stain of original sin and by a special grace of God committed no sin of any kind during her whole earthly life" was taken up body and soul into heaven "when the course of her earthly life was finished." See Catechism §411; §966.

> The Church's Magisterium, as authentic interpreter of the affirmations of Scripture and Tradition, teaches that death entered the world on account of man's sin. Even though man's nature is mortal God had destined him not to die. Death was therefore contrary to the plans of God the Creator and entered the world as a consequence of sin. "Bodily death, from which man would have been immune had he not sinned" is thus "the last enemy" of man left to be conquered.[160]

Even Jesus, whom God made "to be sin who knew no sin,"[161] suffered "the death that is part of the human condition."[162] It is only by his death and resurrection that the Church can proclaim that "this last enemy" has already been conquered; "[t]he obedience of Jesus has transformed the curse of death into a blessing."[163] In addition, as human existence is "measured by time, in the course of which we change [and] grow old," death, the Catechism teaches, lends a certain urgency to bringing this transient life to fulfillment.[164] "Teach us to number our days aright," the psalmist implores, "that we may gain wisdom of heart."[165]

In a sweeping application of these teachings to the problem of life extension, Benedict XVI has begun to initiate some serious deliberation on the matter. "Let us try to imagine that medicine succeeds in finding the recipe against death, the recipe for immortality," the pope entertained in his homily at Rome's San Lorenzo International Youth Centre in 2008.[166] "Even in this case it would always be a medicine that fitted into the biosphere, a useful medicine of course for

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[160] Catechism §1008.
[161] 2 Cor. 5.21.
[162] Catechism §1009.
[163] Catechism §1009; §1019.
[164] Catechism §1007. This is the thrust of the ancient adages of *memento mori* (that is, "remember that you must die") and *sic transit gloria mundi* ("thus passes the glory of the world") which were whispered, respectively, into the ears of triumphant Roman generals in parade or newly crowned popes in procession.
[165] Ps. 90.12.
[166] Benedict XVI, "Papal Homily" par. 15.

our spiritual and human lives, but in itself confined to within this biosphere."[167] The distinction here is made between mortal human biological life, which is valuable but not absolute, and Life in communion with God, which is the perfection of happiness and ultimately the Christian *telos*. Interestingly, the pope's concern about prolongevitism as voiced in this homily is not rooted in social injustice, elitism, hubris, or "playing God" but is in the upset of generational order:

> It is easy to imagine what would happen if the biological life of man lasted for ever; we would find ourselves in an ageing world, a world full of old people, a world that would no longer leave room for the young, for the renewal of life. We can therefore understand that this cannot be the type of immortality to which we aspire; this is not the possibility of drinking at the source of life for which we all long. Precisely at this point, when on the one hand we realize that we cannot hope for biological life to be infinitely prolonged, yet on the other, we desire to drink from the very source of life to enjoy life without end, it is precisely at this point that the Lord intervenes. He speaks to us in the Gospel, saying: "I am the resurrection and the life; he who believes in me, though he die, yet shall he live, and whoever lives and believes in me shall never die."[168]

Immortality and indefinite prolongation seem to be treated as equivalents here even though, in reality, the latter does not preclude death but only postpones it. Both are described as irrational and, in the end, unattainable. It is not that we *should not* hope for the radical extension of biological life, it is that we *cannot* hope for it. Whereas earthly immortality is impossible because of (1) sin and (2) its denial of full self-realization in communion with God, the indefinite prolongation of life cannot be hoped for because it would result in a demographic

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[167] Benedict XVI, "Papal Homily" par. 15.
[168] Benedict XVI, "Papal Homily" par. 16-18.

shift wherein a predominantly older old population would stifle (or entirely redefine) the young.

Note here the Church's emphasis on the *corporate* dimension of hope and its refusal to reduce the question of radical life extension solely to the level of *individual* persons.[169] Accordingly, Ratzinger reveals the futility of our attempt to manufacture eternity (an oxymoron in itself) since "the vessel of man must, at the last, founder;"[170] in fact, the mere want to generate our own immortality speaks to a misunderstanding of terms.

> Immortality rests upon a relationship in which we are given a share, but by which, in sharing it, we are claimed in turn. It points to a *praxis* of receiving, to that model for living which is the self-emptying of Jesus, as opposed to the vain promise of salvation contained in the words "Ye shall be as gods," the sham of total emancipation. […] [Eternal life] can become the *forma corporis*, not in the sense of estranging us from the world, but, rather, in that of saving us from the anarchy of formlessness, shaping us into a truly human form instead.[171]

The human desire for Godhead is not rejected outright in the Scriptures, Ratzinger claims, but our manner of going about it is often misconceived: "[n]ot the grasping audacity of Prometheus but the Son's obedience on the Cross is the place where man's divinization is accomplished. Man can become God not by making himself God but by allowing himself to be made 'Son.'"[172] Consequently, one must not reduce Christianity to individualism or otherworldliness; Ratzinger delineates "the task of contemporary eschatology: to marry perspectives, so that

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[169] See Ratzinger 5.
[170] Ratzinger 156.
[171] Ratzinger 157.
[172] Ratzinger 64-65.

person and community, present and future, are seen in their unity."[173]

In September 2009, the theme of the 23rd Theological Week hosted by the Italian Diocese of Pistoia was "Earthly Immortality." In his concluding remarks, Bishop Mansueto Bianchi reminds us not to take this terminology literally.[174] Instead, the

> [e]spressione più appropriata è dunque Estensione Radicale della Vita, che è certo da accogliere positivamente, soprattutto se questa si unisca ad uno stato di salute consolidato. Anche se lo rimandiamo di secoli, questo non toglie che arriverà il momento della fine della vita e, con questo, il giudizio di Dio, che rimane comunque un punto fermo.
> more appropriate expression, therefore, is the "Radical Extension of Life," which must be accepted positively, especially when it is linked to a better state of health. It remains, however, a given that even if [death is] postponed by centuries, the end of life and, with it, the judgment of God are inevitable.[175]

Although the bishop acknowledges that "[l]a riserva della nostra fede è la convinzione che l'uomo non può salvarsi da solo" 'a condition of our faith is the conviction that man cannot save himself alone,'[176] the pursuit of radically extending life, he suggests, does not necessarily amount to "playing God." Truth be told, significantly prolonging human life, even if for one thousand years, will always pale in comparison to the eternity that awaits. "Combattere ed allontanare la morte non è certamente indebolire la forza di Dio nel suo rapporto con l'uomo" 'to combat and avert death is certainly not to weaken the power of God in his

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[173] Ratzinger 12.
[174] Mansueto Bianchi, "Conclusioni del Vescovo Mons. Mansueto Bianchi: 23° Settimana Teologica della Chiesa di Pistoia," 11 Sept. 2009, e-mail to the author, 25 Sept. 2009 §2.
[175] Bianchi §2.
[176] Bianchi §3.

relation to man,' Bianchi explains, "ma promuovere la dignità dell'uomo ad immagine di Dio" 'but to promote the dignity of man in God's image.'[177]

That said, the Biblical texts repeatedly express God's displeasure with humans when they attempt to take for themselves that which can only be divinely given; acts of self-reliance, self-determination, and self-sufficiency that obliterate the need for God are offensive to the Deity.[178] Accordingly, after Adam and Eve eat from the Tree of the Knowledge of Good and Evil, God expels them from Eden lest they "reach out [their] hand and take also from the tree of life, and eat, and live for ever."[179] The curse laid upon Adam as punishment for his disobedience brings all of this to point: "you are dust," God says, "and to dust you shall return."[180]

If death and judgment are inescapable and if earthly immortality is beyond human reach, what then is wrong with the radical extension of healthy human life? As Bianchi notes, prolongation of this type seems to be a proper response to the inestimable value of what God has given. Still, others argue that "since life [is] a gift on loan from God, a proper expression of appreciation involve[s] the acceptance [of] one's bodily limits, or even laying down one's life for another as

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[177] Bianchi §7.
[178] Barry L. Bandstra, Reading the Old Testament: An Introduction to the Hebrew Bible, 2nd ed. (Belmont: Wadsworth, 1999) 69. As we have seen, the Epic of Gilgamesh also expresses the idea that immortality cannot be had by human efforts; only the gods could grant such a thing.
[179] Gen. 3.22-23.
[180] Gen. 3.19.

the ultimate sacrifice of offering one's life back to the One who gave it"[181] in the first place.

Gaudium et Spes **and the Easter Vigil Homily on the Cure for Death**

Although the Roman Catholic Church has not promulgated a definitive teaching on the matter of radical life extension, one can find direct references to the possibility and undesirability of such a thing in the ecclesial texts. In *Gaudium et Spes*, the Second Vatican Ecumenical Council considered the prospect of prolonging human life. The passage, worth noting in full, offers an excellent summary of the major themes raised over the course of this chapter:

> It is in the face of death that the riddle [of] human existence grows most acute. Not only is man tormented by pain and by the advancing deterioration of his body, but even more so by a dread of perpetual extinction. He rightly follows the intuition of his heart when he abhors and repudiates the utter ruin and total disappearance of his own person. He rebels against death because he bears in himself an eternal seed which cannot be reduced to sheer matter. All the endeavors of technology, though useful in the extreme, cannot calm his anxiety; for prolongation of biological life is unable to satisfy that desire for higher life which is inescapably lodged in his breast. Although the mystery of death utterly beggars the imagination, the Church has been taught by divine revelation and firmly teaches that man has been created by God for a blissful purpose beyond the reach of earthly misery. In addition, that bodily death from which man would have been immune had he not sinned will be vanquished, according to the Christian faith, when man who was ruined by his own doing is restored to wholeness by an almighty and merciful Saviour. For God has called man and still calls him so that with his entire being he might be joined to Him in an endless sharing of a divine life beyond all corruption. Christ won this victory when He rose to life, for by His death He freed man from death. Hence to every

[181] Todd Daly attributes this idea to Karl Barth. See Todd Daly, "Life-Extension in Transhumanist and Christian Perspectives: Consonance and Conflict," Journal of Evolution & Technology 14.2 (2005): 74.

> thoughtful man a solidly established faith provides the answer to his anxiety about what the future holds for him. At the same time faith gives him the power to be united in Christ with his loved ones who have already been snatched away by death; faith arouses the hope that they have found true life with God.[182]

Ultimately, no technological intervention can quell the human desire to fully realize the transcendent character of humanhood beyond the corruptibility, transience, and misery of earthly existence. Importantly, no technological intervention can promise, as the Church so boldly claims, reunion with loved ones who have died and who will die.[183] In this way, "[e]schatology's meaning and driving force depend upon the power of […] waiting on Christ, not on temporal expectations of the world's end or transformation, no matter of what kind."[184]

A half century later, Benedict XVI, wise to new developments in the human rebellion against finitude, declared that "the cure for death does exist."[185] In his homily for the Easter Vigil on April 3, 2010, at the height of the Church's liturgical year, the pope spoke to the "whole of humanity's anguish at the destiny of illness, pain and death that has been *imposed* upon us."[186] Whereas Paul VI comments only briefly on the prolongation of life as a tempting, but ultimately unsatisfying, promise, Benedict XVI's treatment of the subject is somewhat more developed and is, as the first of its kind, exceedingly important for establishing a Roman Catholic perspective on radical life extension.

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[182] Second Vatican Ecumenical Council, *Gaudium et Spes* §18.

[183] Although cryonicists, such as those at the Alcor Life Extension Foundation in Arizona, may disagree.

[184] Ratzinger 11.

[185] Benedict XVI, "Easter Vigil Homily," Vatican City: Libreria Editrice Vaticana, 2010, 11 June 2010 <http://www.vatican.va/holy_father/benedict_xvi/homilies/2010/documents/ hf_ben-xvi_hom_20100403_veglia-pasquale_en.html> par. 8.

[186] Benedict XVI, "Easter Vigil" par. 1.

> Man's resistance to death becomes evident: somewhere – people have constantly thought – there must be some cure for death. Sooner or later it should be possible to find the remedy not only for this or that illness, but for our ultimate destiny – for death itself. Surely the medicine of immortality must exist. Today too, the search for a source of healing continues. Modern medical science strives, if not exactly to exclude death, at least to eliminate as many as possible of its causes, to postpone it further and further, to prolong life more and more. But let us reflect for a moment: what would it really be like if we were to succeed, perhaps not in excluding death totally, but in postponing it indefinitely, in reaching an age of several hundred years? Would that be a good thing? Humanity would become extraordinarily old, there would be no more room for youth. Capacity for innovation would die, and endless life would be no paradise, if anything a condemnation. The true cure for death must be different. It cannot lead simply to an indefinite prolongation of this current life. It would have to transform our lives from within. It would need to create a new life within us, truly fit for eternity: it would need to transform us in such a way as not to come to an end with death, but only then to begin in fullness. What is new and exciting in the Christian message, in the Gospel of Jesus Christ, was and is that we are told: yes indeed, this cure for death, this true medicine of immortality, does exist. It has been found. It is within our reach. In baptism, this medicine is given to us. A new life begins in us, a life that matures in faith and is not extinguished by the death of the old life, but is only then fully revealed […] What happens in baptism is the beginning of a process that embraces the whole of our life – it makes us fit for eternity, in such a way that, robed in the garment of light of Jesus Christ, we can appear before the face of God and live with him for ever.[187]

It is peculiar that of all the possible ethical arguments that can be made *contra* radical life extension, the pope chooses to single out, once again, the demographic shift that would come with a substantial fraction of the population being "extraordinarily old." This, then, may be identified as an important theme when the Church chooses to rule on the prospect in question. Even more peculiar, in light of the Church's teaching on ageing and the aged (which I take up later in this

[187] Benedict XVI, "Easter Vigil" par. 1; 3.

chapter), is the pope's comment that joins extreme age with stunted innovation implying that novelty and creativity are the sole province of youth.

Also important in this passage is the central place given to transformation, symbolized by the new garment put on by the neophyte at Baptism,[188] which neither entails the cultivation of physical perfection in the here-and-now nor the radical extension of earthly life. Instead, it is a call to virtuous living by throwing off "the works of the flesh" (which Paul, in his letter to the Galatians, identifies as "fornication, impurity, licentiousness, idolatry, sorcery, enmities, strife, jealousy, anger, quarrels, dissensions, factions, envy, drunkenness, carousing, and things like these") and cultivating "the fruit of the Spirit" ("love, joy, peace, patience, kindness, generosity, faithfulness, gentleness, and self-control").[189] The Church teaches that it is in this conversion that the human being becomes "truly fit for eternity." It is only in the resurrection, "on the last day," that the flesh of human weakness will be transformed by God.[190] Given that resurrection exceeds human imagination and understanding,[191] the Church is hesitant to provide an elaborate description of the "how" of bodily resurrection, restricting the discussion to the transfiguration and resurrection of Jesus. Augustine, however, "trod[s] that path"

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[188] Ratzinger explains that, "[b]eginning with our baptism, we belong to the body of the resurrected one and are in this sense already attached to our future." See Ratzinger xxi.
[189] Gal. 5.19-23; Benedict XVI, "Easter Vigil" par. 4-5. This call to virtuous living is what is meant when Jesus says "[b]e perfect, therefore, as your heavenly Father is perfect" (Matt. 5.48).
[190] Catechism §990; §999-1001. This corporeal transfiguration is prefigured in the Eucharist, especially when the elements of bread and wine are transformed into the body and blood of Christ. See Catechism §1000. Farrow discusses this link made by Irenaeus in "Resurrection and Immortality" 218.
[191] Catechism §1000; Ratzinger 192.

of affirming bodily resurrection, Farrow says, "without embarrassment."[192]

Farrow's reading of Augustine is helpful here:

> "The sudden and strange power of God" shall give to each the fullness of its potential, and set at nought the defeats of this life. Defects and deformities will be removed, except those (especially the tokens of martyrdom) that enhance the glory of the resurrected and their love for one another. Necessities shall cease, and the unpleasantries of our corruptible bodies; but beauty shall endure. "These things being duly considered, this is the sum of all, that in the resurrection every man [and woman, for womanhood is no defect, he insists] shall arise with the same body that he had, or would have had in his fullest growth, in all comeliness, and without deformity of any the least member." This body shall be "no more natural but spiritual – that is, wholly subject to the spirit, which shall be wholly subject to God – hence no longer a burden: "light" not cumbersome, having "the substance of the flesh, quite exempt from all fleshly corruption."[193]

God alone harnesses the power to induce these changes; no means available to humankind could ever achieve such things.

"Communion and Stewardship"

In 2004, the International Theological Commission, headed at the time by Ratzinger, released a statement, approved *in forma specifica*, called "Communion and Stewardship: Human Persons Created in the Image of God," which I read here through the lens of the Catechism and the other relevant authoritative ecclesial publications previously discussed. The text makes several important points regarding enhancement technologies and their potential assault on human nature:

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[192] Farrow, "Resurrection and Immortality" 218.

[193] Farrow, "Resurrection and Immortality" 218. See also Augustine, The City of God, trans. Marcus Dods (New York: Modern Library, 2000) XIII.19-20; XXII.14; XXII.17; XXII.20-21.

> Enhancement genetic engineering aims at improving certain specific characteristics. The idea of man as "co-creator" with God could be used to try to justify the management of human evolution by means of such genetic engineering. But this would imply that man has full right of disposal over his own biological nature. Changing the genetic identity of man as a human person through the production of an infrahuman being is radically immoral. The use of genetic modification to yield a superhuman or being with essentially new spiritual faculties is unthinkable, given that the spiritual life principle of man – forming the matter into the body of the human person – is not a product of human hands and is not subject to genetic engineering. The uniqueness of each human person, in part constituted by his biogenetic characteristics and developed through nurture and growth, belongs intrinsically to him and cannot be instrumentalized in order to improve some of these characteristics. A man can only truly improve by realizing more fully the image of God in him by uniting himself to Christ and in imitation of him. Such modifications would in any case violate the freedom of future persons who had no part in decisions that determine his bodily structure and characteristics in a significant and possibly irreversible way.[194]

Accordingly, the "biogenetic" identity of the human person is inviolable. If radical life extension is to be secured through germline genetic engineering, which would not only allow for the suppression of undesirable traits and the enhancement of desirable ones,[195] but also the transmission of such things to the generations to come, the Roman Catholic Church would most certainly dissent. Manipulation of the germline in this way, or any other similar attempt to assume control over human evolution, transgresses the creatureliness of humanhood and violates the freedom of future persons. On the other hand, *somatic* cell gene therapy for exclusively therapeutic purposes is considered morally licit by the

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[194] International Theological Commission §91.

[195] The Church argues that the determination of these traits, such as sex selection for example, is arbitrary and, worse, motivated by a eugenic mentality. At the same time, therapeutic procedures that heal or promote a person's well being conform with Church teaching. Two important questions must be addressed here: (1) *what* is meant by "desirable" and "undesirable traits and (2) *who* decides what is meant by "desirable" and "undesirable" traits?

Church because it seeks "to restore the normal genetic configuration of the patient or to counter damage caused by genetic anomalies or those related to other pathologies" and "to eliminate or reduce genetic defects on the level of somatic cells, that is, cells other than the reproductive cells, but which make up the tissue and organs of the body. It involves procedures aimed at certain individual cells with effects that are limited to a single person."[196]

That said, the Theological Commission offers the following exception:

> Gene therapy, directed to the alleviation of congenital conditions like Down's syndrome, would certainly affect the identity of the person involved with regard to his appearance and mental gifts, but this modification would help the individual to give full expression to his real identity which is blocked by a defective gene.[197]

Transhumanists would most certainly argue that human self-realization, with or without a congenital condition like the one mentioned above, is equally encumbered by the intellectual and physical limitations wrought upon us by the mere, and unfortunate, fact of being human. Why, in this particular case, allow for genetic intervention for the "full expression" of one's "real identity," but forbid it from any other? Do not *both* therapy and enhancement respond to dis-ease or deficiency and thus foster the expression of human freedom?[198] Recall the Church's caution, in <u>*Dignitas Personae*</u>, that "in the attempt to create *a new type*

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[196] Congregation for the Doctrine of Faith, <u>*Dignitas Personae*</u> §25-26.

[197] International Theological Commission §91.

[198] The definitions of "therapy" and "enhancement" offered by the President's Council on Bioethics are useful here. Therapy is "the use of biotechnical power to treat individuals with known diseases, disabilities, or impairments, in an attempt to restore them to a normal state of health and fitness" whereas enhancement is "the directed use of biotechnical power to alter, by direct intervention, not disease processes but the 'normal' workings of the human body and psyche, to augment or improve their native capacities and performances." In the matter of radical life extension, "[o]ne needs to see the topic less in relation to medicine and its purposes, and more in

of human being [such as a posthuman] one can recognize *an ideological element* in which man tries to take the place of his Creator."[199] The consequence for human hubris is well documented in Scripture as we have seen; one need only turn to Adam and Eve who chose to eat the forbidden fruit after the serpent sowed seeds of distrust: "for God knows that when you eat of it your eyes will be opened, and you will be like God."[200] Their disobedience led to a host of curses and, ultimately, expulsion from Eden. Transgressing divinely established boundaries is seen again in the Tower of Babel incident wherein God scatters a unified humanity aspiring to "make a name" for themselves.[201]

The Theological Commission, in its "Communion and Stewardship," goes on to issue a general warning: "Disposing of death is in reality the most radical way of disposing of life."[202] The transhumanist pursuit of posthumanhood and making death optional,[203] if not extinct, is in direct contradiction with Church teaching, even though it may seem that Scripture and tradition agree that death is an "enemy" to be overcome. Even though "[b]odily life itself is considered extremely precious throughout the whole of Christian tradition" and is inviolable because it belongs to God, "[b]odily life, nevertheless, is not a supreme or absolute good. It has genuine value only when it is spent in the service of God and

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relation to human beings and *their* purposes." See President's Council on Bioethics, Beyond Therapy: Biotechnology and the Pursuit of Happiness (Washington: PCB, 2003) 13.

[199] Congregation for the Doctrine of Faith, *Dignitas Personae* §27.

[200] Gen. 3.5.

[201] Gen. 11.1-9; Bandstra 82.

[202] International Theological Commission §93.

[203] Euthanasia involves the intentional hastening of death. Radical life extension involves the indefinite postponement of death, though not absolutely. Note that the latter implies and perhaps requires the former.

neighbour."[204] That is, even though an extended life is fathomable and not necessarily an evil in its own right, it must continuously be oriented in Christian virtue with eyes ultimately set on communion with God. This lends an urgency to order life accordingly.[205]

In the doctrine of the resurrection, the Christian tradition offers a subversive, and paradoxical, answer to the question of death. Death is "the enemy."[206] Death is terrifying.[207] Death is inevitable.[208] But, to be sure, only the dead can be resurrected. It is "[i]n death [that] God calls man to himself."[209] "I want to see God," says St. Teresa of Avila, "and, in order to see him, I must die."[210] Death is not merely a part of the human narrative, but it is transformed entirely by the promise of the resurrection to the extent that "the Christian can experience a desire for death" at the end of earthly life.[211] Here the distinction between Christian and transhumanist attitudes toward death cannot be made more plain. Although the Catechism teaches that death was contrary to God's original plan[212] and that humans *must* suffer "bodily death, from which man would have been immune had he not sinned,"[213] it takes on new meaning in the Christian context.

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[204] David Bohr, Catholic Moral Tradition, rev. ed. (Huntington: Sunday Visitor, 1999) 282; John Paul II, *Evangelium Vitae* §47.
[205] Catechism §1007.
[206] 1 Cor. 15.26.
[207] Ps. 55.4.
[208] Ps. 89.48; Eccles. 7.2.
[209] Catechism §1011; Nichols 135-136.
[210] Catechism §1011.
[211] Catechism §1011.
[212] Catechism §1008.
[213] Catechism §1018; Second Vatican Ecumenical Council, *Gaudium et Spes* §18.

Therefore, this is not simply a question of blindly accepting death at face value because it is "natural." In fact, the Catechism attempts to manoeuvre around this reductionism, albeit subtly, by using choice words: "*In a sense* bodily death is natural" and "death *seems* like the normal end of life" are good examples.[214] Indeed, in some instances, the Catechism, like the transhumanist credo, suggests that whether death is "natural" or not does not have significant import: "[e]ven though man's nature is mortal, God had destined him not to die,"[215] "for God created us for incorruption, and made us in the image of his own eternity."[216] Importantly, the agent of this change (that is, of transcending mortal human nature by rendering it immortal) can only ever be God.

Environment, Biotechnology, and Social Justice

The salient question for the Roman Catholic tradition is not *when* a quantitative change becomes a qualitative one,[217] but *what* the intention is that prompts the desire to induce a qualitative change (and, importantly, what the nature of that change is) so as to bring about a difference in quantity. That is, the Church's primary concern in this matter is why and how human nature is manipulated in order to yield increased life expectancy. The desire to increase life expectancy is not in itself ethically unsound. Otherwise the Church would have objected to the

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[214] Catechism §1006-1007.
[215] Catechism §1008.
[216] Wisd. 2.23.
[217] In any event, Augustine's reference to the "sudden and strange power of God" rules out this question. It is interesting to note that, in Genesis, early humans lived for several hundreds of years even though, they too, shared in our fallen nature. Recall, though, that God decides to reduce the life span to one hundred and twenty years. See Gen. 6.3. Does this mean that (1) radical life *reduction* produces a qualitative change in human nature? Would a *restoration* of significant longevity to what was known by the first generations after Adam and Eve be an affront against God's will?

better sanitation and heightened public health measures that added thirty years or so to human life expectancy at birth in the West over this past century alone.[218] Until now, most of these interventions were introduced, first and foremost, to optimize living conditions, which resulted in an augmented average life span.

Has an increase in human life expectancy over the course of history, from the Neolithic period to Classical Greece and Rome to the Middle Ages to modern times, transformed human nature? Transhumanists do not seem to think so; this is the very reason for which they desire a dramatic modification of the current parameters of the human condition. That is, humans have for too long lingered and languished in this evolutionary state and transhumanists aspire to take over the reins of this development to surmount the oppressive limitations of humanhood. Technological interventions in human and natural processes of the kind proposed by transhumanist philosophers do not simply *interfere* with, but *challenge* the Church's understanding of human personhood and *transgress* the limits of human dominion over the created order.

The Church neither sacralizes nor absolutizes nature, and so humans, as sharers "in the light of the divine mind," are free to exercise conditional and just dominion over the environment, which is considered to be "a common good, destined for all."[219] This dominion, the Catechism teaches, is "limited by concern for the quality of life of [one's] neighbor, including generations to come."[220] Furthermore, the Church does not scorn the responsible application of human

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[218] S. Jay Olshansky, Leonard Hayflick, and Bruce A. Carnes, "Position Statement on Human Aging," Journal of Gerontology 57A.8 (2002): B292.
[219] Pontifical Council for Justice and Peace §456; §461; §463; §466; §473; Second Vatican Ecumenical Council, *Gaudium et Spes* §15; Catechism §373.
[220] Catechism §2415.

genius as a rival to God's creative work but rejoices in technological progress.[221] In this vein, the Second Vatican Ecumenical Council reminds us that "the greater man's power becomes, the farther his individual and community responsibility extends."[222]

> *The Christian vision of creation makes a positive judgment on the acceptability of human intervention in nature, which also includes other living beings, and at the same time makes a strong appeal for responsibility*. In effect, nature is not a sacred or divine reality that man must leave alone. Rather, it is a gift offered by the Creator to the human community, entrusted to the intelligence and moral responsibility of men and women. For this reason the human person does not commit an illicit act when, out of respect for the order, beauty and usefulness of individual living beings and their function in the ecosystem, he intervenes by modifying some of their characteristics or properties. Human interventions that damage living beings or the natural environment deserve condemnation, while those that improve them are praiseworthy. *The acceptability of the use of biological and biogenetic techniques is only one part of the ethical problem*: as with every human behaviour, it is also necessary to evaluate accurately the real benefits as well as the possible consequences in terms of risks. In the realm of technological-scientific interventions that have forceful and widespread impact on living organisms, with the possibility of significant long-term repercussions, it is unacceptable to act lightly or irresponsibly.[223]

It would seem that the Church's approval of interventions to modify certain characteristics "out of respect for the order, beauty and usefulness of individual living beings and their function in the ecosystem" does not apply to humans in this context but only to the "non-rational things" of nature.

The Church teaches that humans can make use of the natural world. In fact, this helped give rise to modern science, our technological prowess, and with

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[221] Pontifical Council for Justice and Peace §457.
[222] Pontifical Council for Justice and Peace §457.
[223] Pontifical Council for Justice and Peace §473.

it the question at hand.[224] Although the Church sanctions the use of nature, the constant, unrestrained, and often arbitrary instrumentalization and mechanization of nature by technological means is an entirely erroneous conception and manifestation of the God-nature-human relationship.[225]

> *Such attitudes do not arise from scientific and technological research but from scientism and technocratic ideologies that tend to condition such research*. The advances of science and technology do not eliminate the need for transcendence and are not of themselves the cause of the exasperated secularization that leads to nihilism. With the progress of science and technology, questions as to their meaning increase and give rise to an ever greater need to respect the transcendent dimension of the human person and creation itself.[226]

This relationship is a "constitutive part of […] human identity,"[227] which is impoverished when "[*a*] *vision of man and things […] is sundered from any reference to the transcendent*" leading to "*the rejection of the concept of creation and to the attribution of a completely independent existence to man and nature*."[228] Therefore, the social nature of human beings, who are a communion of persons called to a supernatural end regardless of condition, status, or functionality,[229] does not simply require responsibility for others; interdependence is a defining feature of humanhood.[230]

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[224] This question cannot be answered until we settle on what the Pontifical Council for Justice and Peace means by "beneficial" and "praiseworthy" in the statement provided on the previous page.
[225] Pontifical Council for Justice and Peace §460; §462.
[226] Pontifical Council for Justice and Peace §462.
[227] Pontifical Council for Justice and Peace §452.
[228] Pontifical Council for Justice and Peace §464.
[229] Pontifical Council for Justice and Peace §149-151; Catechism §372; §367.
[230] "To be human means to be called to interpersonal communion." See John Paul II, ***Mulieris Dignitatem***, Vatican City: Libreria Editrice Vaticana, 1988, 20 July 2010 <http://www.vatican.va/holy_father/john_ paul_ii/apost_letters/documents/hf_jp-ii_apl_15081988_mulieris-dignitatem_en.html> §7.

As such, the Roman Catholic Church warns against the unbridled use of biotechnology in the "developed" world calling for international solidarity and the universal distribution of goods: "[i]t is indispensable to foster *the development of a necessary scientific and technological autonomy* on the part of [disadvantaged] peoples, promoting *the exchange of scientific and technological knowledge and the transfer of technologies to developing countries*."[231] Otherwise, as Paul VI notes in *Populorum Progressio*, "the needy nations grow more destitute, while the rich nations become even richer."[232] Here, the Church underscores "the grave moral responsibility toward those which are unable to ensure the means of their development."[233]

The Pontifical Council for Justice and Peace explains that "[t]he boundary and relation among nature, technology and morality are issues that decisively summon personal and collective responsibility with regard to the attitudes to adopt concerning what human beings are, what they are able to accomplish, and what they should be."[234] Accordingly, the appeal here is, largely, to technologies that can improve the basic food supply and health of disadvantaged populations.[235] So, there is something troubling about speaking of the indefinite prolongation of healthy human life (which is primarily an interest of the more affluent nations) while basic conditions for healthy human existence in the given life span are not being met in much of the world and life expectancy at birth in

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[231] Pontifical Council for Justice and Peace §475.
[232] Paul VI, *Populorum Progressio*, Vatican City: Libreria Editrice Vaticana, 1967, 18 Aug. 2009 <http://www.vatican.va/holy_father/paul_vi/encyclicals/documents/hf_p-vi_enc_26031967_populorum_en.html> §57.
[233] Catechism §2439.
[234] Pontifical Council for Justice and Peace §16.
[235] Pontifical Council for Justice and Peace §476.

many countries is still less than fifty years.[236] Although Stephen Post acknowledges the moral primacy of justice, he sees in this disparity an unavoidable truth: "the equalitarian concern […] has never been implemented as a limit on biotechnological ingenuity."[237]

As we have seen, if radical life extension can only be secured by a genetic intervention that changes what it means to be human, the Church will condemn it.[238] Recall that the International Theological Commission denies that humans have "full right of disposal over [their] own biological nature" and asserts that any such intervention to "yield a superhuman or being with essentially new spiritual faculties is unthinkable."[239] It is clear that the "spiritual life principle of man […] is not a product of human hands," but it is not as obvious, however, whether genetic modifications to yield a superhuman or being with essentially new *biological* faculties is thinkable, desirable, or permissible. Herein lies the distinction between therapeutic and non-therapeutic interventions as well as the Church's stance on enhancement technologies, sensitivity to the threat of a eugenic mentality, and warning that in the creation of a "new type of human

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[236] Life expectancy at birth in Zambia and Angola is less than 40 years. See Central Intelligence Agency, "Country Comparison: Life Expectancy at Birth," 2010, 17 July 2010 <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>

[237] Stephen G. Post, "Establishing an Appropriate Ethical Framework: The Moral Conversation around the Goal of Prolongevity," Journal of Gerontology 59A.6 (2004): 537.

[238] This reasoning is consistent with the Pontifical Academy for Life's comments on the moral legitimacy of xenotransplantation and the limits of modifying human identity. The Church forbids the transplantation of particular organs, such as the encephalon and gonads, which are "indissolubly linked with the personal identity of the subject because of their specific function, independently of their symbolic implications" and "inevitable objective consequences that they would produce in the recipient or in his descendants." See Pontifical Academy for Life, "Prospects for Xenotransplantation: Scientific Aspects and Ethical Considerations," 26 Sept. 2001, 4 Jan. 2008 <http://www.vatican.va/roman_curia/pontifical_academies/ acdlife/documents/ rc_pa_ acdlife_doc_20010926_xenotrapianti_en.html> §11.

[239] International Theological Commission §91.

being," as noted in *Dignitas Personae*, "one can recognize *an ideological element* in which man tries to take the place of his Creator."[240]

The Value of Ageing and a Reflection on Pilgrim Humanity

Ageing, the Roman Catholic Church teaches, is not a deficit model of existence. The contempt for old age rises out of a worldview that exalts human productivity, champions autonomy, deprecates fragility, and looks unfavourably on dependence.[241]

In his 1999 "Letter to the Elderly," John Paul II addresses "his elderly brothers and sisters" as "the guardians of our collective memory," "the privileged interpreters of that body of ideals and common values which support and guide life in society," and, since "time is a great teacher,"[242] the repositories of wisdom.[243] This, however, does not seem consistent with Benedict's dismal reflection on a humanity that manages to secure indefinitely prolonged life. Recall the pope's prediction: in becoming extraordinarily old, "there would be no more room for youth," "[c]apacity for innovation would die, and endless life would be no paradise, if anything a condemnation."[244] It is unclear here how repositories of wisdom can cease to be innovative. Perhaps the claim is that the interruption of generational succession by the demographic shift (that Benedict expects will

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[240] Congregation for the Doctrine of Faith, *Dignitas Personae* §27.

[241] John Paul II, "Letter to the Elderly," Vatican City: Libreria Editrice Vaticana, 1999, 11 Apr. 2004 <http://www.vatican.va/holy_father/john_paul_ii/letters/documents/hf_jp-ii_let_01101999_elderly_en.html> §9.

[242] John Paul II is quoting here from the 17th century French tragedian Pierre Corneille who wrote, in Sertorius: "Le temps est un grand maître, il règle bien des choses." See Pierre Corneille, Sertorius (Paris: Librairie Ch. Delagrave, 1881) II. 4.717; John Paul II, "Letter to the Elderly" §5.

[243] John Paul II, "Letter to the Elderly" §5; §10.

[244] Benedict XVI, "Easter Vigil" par. 1.

come with radical life extension) will necessarily stagnate innovation because a covenantal rift of this kind encumbers intergenerational dependency and exchange.

Whatever the case, there is a certain honour due the aged: "[y]ou shall rise before the aged, and defer to the old," Leviticus instructs.[245] The pope goes on to recall the esteem of old age and long life evidenced in Scripture and points to Abraham, Sarah, Moses, Zechariah, Elizabeth, Simeon, and Anna, among others, as examples of elderly persons who made valuable contributions in the autumn of their lives.[246]

> Old age is characterized by dignity and surrounded with reverence (cf. 2 Mac 6:23). The just man does not seek to be delivered from old age and its burden; on the contrary his prayer is this: "You, O Lord, are my hope, my trust, O Lord, from my youth . . . so even to old age and grey hairs, O God, do not forsake me, till I proclaim your might to all the generations to come" (Ps 71:5, 18). The ideal of the Messianic age is presented as a time when "no more shall there be . . . an old man who does not fill out his days" (Is 65:20).[247]

Before the reader sees in this description a utopian vision of old age, it is important to note that John Paul II was no stranger to suffering. By the time of writing his letter to the elderly in 1999, the pope's health was in decline. He was nearing eighty and was suffering from Parkinson's disease; he sustained injury to his shoulder and a broken femur after a number of falls a few years prior, underwent hip replacement surgery and an appendectomy in his early seventies, and was coping with degenerative arthritis. The "signs of human frailty which are clearly connected with advanced age," John Paul II writes, "become a summons

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[245] Lev. 19. 32.
[246] John Paul II, "Letter to the Elderly" §5-§7.
[247] John Paul II, *Evangelium Vitae* §46.

to the mutual dependence and indispensable solidarity which link the different generations."[248]

Importantly, the appeal made in *Evangelium Vitae* five years earlier "to preserve, or to re-establish where it has been lost, a sort of 'covenant' between generations" reminds us that relationality is not simply a requirement but a defining feature of humanhood.[249] That said, "[t]he elderly are not only to be considered the object of our concern, closeness and service. They themselves have a valuable contribution to make to the Gospel of life. Thanks to the rich treasury of experiences they have acquired through the years, the elderly can and must be sources of wisdom and witnesses of hope and love."[250] Transhumanists, though, argue that radical life extension could possibly increase that treasury of experience. "Imagine," Bostrom says, "such individuals – a Benjamin Franklin, a Lincoln, a Newton, a Shakespeare, a Goethe, an Einstein [and a Gandhi] – enriching our world not for a few decades but for centuries."[251] The question becomes: would the aged still be considered "sources of wisdom and witnesses of hope" if they were not subject to decay?

At the time when older persons experience a decrease in function and activity, they become, according to John Paul II, "all the more precious in the mysterious plan of Providence."[252] The problem, the former pontiff indicates, is the failure to appreciate life as a whole.[253] "The correct perspective is that of

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[248] John Paul II, "Letter to the Elderly" §10.
[249] John Paul II, *Evangelium Vitae* §94.
[250] John Paul II, *Evangelium Vitae* §94.
[251] Bostrom, "Transhumanist FAQ" 35.
[252] John Paul II, "Letter to the Elderly" §13.
[253] John Paul II, "Letter to the Elderly" §10.

eternity, for which life at every phase is a meaningful preparation."[254] In this way, John Paul II speaks of a "pilgrim humanity"[255] constantly oriented toward heaven; in this pilgrimage, "old age is the most natural time to look towards the threshold of eternity"[256] because "our pilgrim state cannot reach its end while history is still in motion."[257] "Faith thus illuminates the mystery of death and brings serenity to old age, now no longer considered and lived passively as the expectation of a calamity but rather as a promise-filled approach to the goal of full maturity."[258] As a result of this orientation, which is rooted in the suffering, death, and resurrection of Jesus, "death – tragic and disconcerting as it is – is redeemed and transformed; it is even revealed as a 'sister' who leads us to the arms of our Father."[259]

Accordingly, in anticipation of the decline that comes with age and the inevitability of death, John Paul II assures that "[t]he believer knows that his life is in the hands of God: 'You, O Lord, hold my lot' (cf. Ps 16:5), and *he accepts from God the need to die*: 'This is the decree from the Lord for all flesh, and how can you reject the good pleasure of the Most High?' (Sir 41:3-4)."[260]

> In our human condition touched by sin, death presents a certain dark side which cannot but bring sadness and fear. How could it be otherwise? Man has been made for life, whereas death – as Scripture tells us from its very first pages (cf. *Gen* 2-3) – was not a part of God's original plan but came about as a consequence of sin, as a result of "the devil's envy" (*Wis* 2:24). It is thus

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[254] John Paul II, "Letter to the Elderly" §10.
[255] John Paul II, "Letter to the Elderly" §18.
[256] John Paul II, "Letter to the Elderly" §14.
[257] Ratzinger xxi.
[258] John Paul II, "Letter to the Elderly" §16.
[259] John Paul II, "Letter to the Elderly" §15. Francis of Assisi refers to "sister bodily Death" in his "Canticle of Creatures." See Catechism §1014.
[260] John Paul II, *Evangelium Vitae* §46.

> understandable why, when faced with this dark reality, man instinctively rebels. […] However rationally comprehensible death may be from a biological standpoint, it is not possible to experience it as something "natural". This would contradict man's deepest instincts.[261]

Even though in death "life is changed, not ended,"[262] the concern for what constitutes the "natural" is recurrent. I turn here to Thomas Aquinas, whose contributions to Catholic moral theology, especially through his *Summa Theologica*, are important to this discussion. Of particular relevance is Aquinas's description of the nature of death in his treatment of human ends.

Thomas Aquinas, Self-Preservation, and Perfect Happiness

In the context of self-preservation and perfect happiness, I expect the Roman Catholic Church to draw on Aquinas' *Summa Theologica*, which is often referenced in the Church's teaching on contemporary ethical issues; the *prima secundae partis* in particular has much to lend to this discussion. In it, Aquinas asserts that humans have "in common with all substances" the natural drive to preserve the self.[263] But when it comes to the question of human happiness, self-preservation is merely a subordinate end.[264]

Although happiness can be had in mortal life for as long as a human desires and seeks it, such happiness can only ever be imperfect. Perfect happiness, however, is the complete fulfilment of all things in the beatifying vision of the

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[261] John Paul II, "Letter to the Elderly" §14.
[262] John Paul II, "Letter to the Elderly" §15.
[263] Aquinas IaIIae Q. 94, art. 2 *resp*. Recall the discussion of the Stoic doctrine of *oikeiōsis* in the second chapter.
[264] Aquinas IaIIae Q.2, art.5 *resp*.

Divine Essence that is granted in the world to come.[265] To be sure, nothing in the earthly realm can bring any one person to experience such completion; this "immanentization of the eschaton," so to speak, has been condemned by the Church:

> The supreme religious deception is that of the Antichrist, a pseudo-messianism by which man glorifies himself in place of God and of his Messiah come in the flesh. The Antichrist's deception already begins to take shape in the world every time the claim is made to realize within history that messianic hope which can only be realized beyond history through the eschatological judgment. The Church has rejected even modified forms of this falsification of the kingdom to come under the name of millenarianism, especially the "intrinsically perverse" political form of a secular messianism. The Church will enter the glory of the kingdom only through this final Passover, when she will follow her Lord in his death and Resurrection. [266]

"[E]very knowledge that is according to the mode of created substance," Aquinas ascertains, "falls short of the vision of the Divine Essence, which infinitely surpasses all created substance. Consequently neither man, nor any creature, can attain final Happiness by his natural powers."[267]

> It is impossible for any created good to constitute man's happiness. For happiness is the perfect good, which lulls the appetite altogether; else it would not be the last end, if something yet remained to be desired. Now the object of the will, i.e. of man's appetite, is the universal good; just as the object of the intellect is the universal true. Hence it is evident that naught can lull man's will, save the universal good. This is to be found, not in any creature, but in God alone; because every creature has goodness by participation. Wherefore God alone can satisfy the will of man, according to the words of Psalm 102:5: "Who satisfieth thy desire with good things." Therefore God alone constitutes man's happiness.[268]

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[265] Aquinas IaIIae, Q.3, art. 8, *resp;* IaIIae Q.4, art.5 *resp*; IaIIae Q.5, art.3 *resp*.
[266] Catechism §675-677.
[267] Aquinas IaIIae Q.5, art.5 *resp*.
[268] Aquinas IaIIae Q.2, art.8 *resp*.

Ultimately it is for God to transform human nature[269] into something that endures.[270] To this end, Aquinas not only cites the weakness of the human body as a hindrance to perfect earthly happiness, but also "the changeableness of fortune," "the imperfection and instability of knowledge and virtue," the subjection to "many unavoidable evils," and the "inordinate affection on the part of the appetite."[271] These are all things that transhumanists hope to overcome through radical life extension.

Though life is considered to be a gift from God, the mere extension of life for the purpose of having more of it does not sit well with Roman Catholic teaching; the doctrine on extraordinary or disproportionate means makes this plain.[272] Like the rising action of a narrative that leads up to, but never reaches, its climactic turn, an extended life, however virtuous, could only ever be a *prolonged* movement (recall Kirkpatrick's translation of *transumanar*) towards God and an indefinite postponement of communion with God. It comes down to two options: *mori aut morari* (that is, to die or to tarry).[273] To extend one's life, by Aquinas' account, is to choose imperfect over perfect happiness. Certain questions remain unresolved here: how long of a mortal life is too long? Was a life span like Methuselah's as much a curse as it was a blessing?

This aside, Aquinas makes a further contribution to the discussion, especially in regards to the matter of whether death is natural. Transhumanists

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[269] Aquinas IIaIIae Q.184, art.1.
[270] Ratzinger xix.
[271] Aquinas *Suppl* Q.75, art.1, *resp*; IaIIae Q.5, art.3 *resp*.
[272] Catechism §2278-2279.
[273] I thank Dr Douglas Farrow from the Faculty of Religious Studies, McGill University for this helpful expression.

deem the question about "naturalness" irrelevant, particularly when it concerns the identification of something as good or desirable.[274] Although the Catechism suggests that bodily death is a natural phenomenon that in many ways orients earthly life and lends a certain sense of urgency to it,[275] the "naturalness" makes it neither good nor desirable but inevitable. In fact, Aquinas claims that because death and "all consequent bodily defects" are retribution for original sin, that "God did not make death,"[276] and that punishment or evil cannot be considered natural, then death itself is not natural to humans.[277] In sum, we might say, then, that death is natural to the human condition, but not to human nature.

In addition, because the *form* of the human body is the rational soul, Aquinas argues that the human body is naturally incorruptible.[278] So corruption and defect are natural to the human body only in regards to the "inclinations of matter" and not to form, as the form of the human body is the rational soul and the rational soul is incorruptible. Aquinas speaks here of the body's "mixed temperament:"

> Whereas the fact that it is corruptible is due to a condition of matter, and is not chosen by nature: indeed nature would choose an incorruptible matter if it could. But God, to Whom every nature is subject, in forming man supplied the defect of nature, and by the gift of original justice, gave the body a certain incorruptibility […][279]

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[274] Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association, 2003, 16 July 2005 <http://www.transhumanism.org/resources/FAQv21.pdf> 36.

[275] Catechism §1006-1007.

[276] Wisd. 1.13.

[277] Aquinas IaIIae Q.85, art.5 *resp*; IaIIae Q.85, art.6 *contra*.

[278] Aquinas IaIIae Q.85, art.6 *contra*.

[279] Aquinas IaIIae Q.85, art.6 *resp*. Aquinas' description of a God who supplies both "the defect of nature" *and* "certain incorruptibility" is reminiscent of our discussion of God's aversion – in the Biblical texts – to absolute self-reliance. Here, God forms humankind in a state of wanting and

However corruptible, a well-disposed body is necessary for imperfect happiness as it pertains to the operation of virtue.[280] Perfect disposition of the body is necessary for perfect happiness, because "if [the] body be such, that the governance thereof is difficult and burdensome, like unto flesh which is corruptible and weighs upon the soul, the mind is turned away from that vision of the highest heaven."[281] To be sure, the body will obtain perfection because "from the Happiness of the soul there will be an overflow on to the body."[282]

If hypothetically the conditions of matter were to be manipulated in such a way as to grant incorruptibility to the human body, then this form of incorruptibility could, by definition, achieve its own perpetuity. Biologically, it is by this corruptible nature of the material that humans will die. Theologically, death is the result of original sin by which human nature "was stricken in the soul by the disorder among the powers" and "became subject to corruption, by reason of disorder in the body."[283] In this way, it is only by the resurrection that order can be restored; if death is not natural to humankind, then life must be. This reasoning leads to the conclusion that prolonging a mortal life tainted by sin, and hence corruptibility and death, beyond its fixed period is hardly desirable. Incorruptibility and life, natural to humankind, are the hope of the mortal and the lot of the resurrected made accessible through the necessity of death. "[T]he

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God is, ultimately, the only one who can provide for what is lacking. As in the account of Adam and Eve in Genesis 3, the Deity is offended when humans choose to seize what God does not freely give.

[280] Aquinas IaIIae Q.4, art.6 *resp*.

[281] Aquinas IaIIae Q.4, art.6 *resp*; here, Aquinas is quoting from Augustine's *De Genesi ad Litteram*.

[282] Aquinas IaIIae Q.4, art.6 *resp*.

[283] Aquinas IaIIae Q.85, art.5 *resp*.

Kingdom of God, salvation in its fullness," Ratzinger notes, "cannot be deprived of its connection with dying."[284]

It is in this spirit that John Paul II writes to the comfort of an aged audience: "I find great peace in thinking of the time when the Lord will call me: from life to life!"[285] In his second letter to the Church at Corinth, Paul does not merely *hope* in such things:

> For we know that if the earthly tent we live in is destroyed, we have a building from God, a house not made with hands, eternal in the heavens. For in this tent we groan, longing to be clothed with our heavenly dwelling – if indeed, when we have taken it off we will not be found naked. For while we are still in this tent, we groan under our burden, because we wish not to be unclothed but to be further clothed, so that what is mortal may be swallowed up by life. […] So if anyone is in Christ, there is a new creation: everything old has passed away; see, everything has become new![286]

It should not escape the reader's attention that Julian Huxley's aspiration for "man remaining man, but transcending himself"[287] is hardly novel in light of this passage. It is worth repeating, from the first chapter, that Huxley's transhumanism is a case in point of pouring old wine into new wineskins.[288] That is, the desire for a life made new (or transformed, glorified, transcended) is old, but the vessel of

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[284] Ratzinger 62. But Paul says that "we will not all die" (1 Cor. 15.51) and Christians believe that Jesus "will come again to judge the living and the dead." This insinuates that, at the end of time, those who are living will escape death and Jesus will "render to each man according to his works." See Catechism §678-682.

[285] John Paul II, "Letter to the Elderly" §17.

[286] 2 Cor. 5.1-4; 5.17.

[287] Julian Huxley, Knowledge, Morality, and Destiny: Essays (New York: Mentor, 1957) 17.

[288] Refer again to Jesus' parable in Luke 5.37-39: "And no one puts new wine into old wineskins; otherwise the new wine will burst the skins and will be spilled, and the skins will be destroyed. But new wine must be put into fresh wineskins. And no one after drinking old wine desires new wine, but says, 'The old is good.'"

that newness and the means to attain such a vessel are being described in various ways by science, technology, and religion.[289]

Veritatis Splendor on Ordering Objectivity to the Good

I turn here to John Paul II's *Veritatis Splendor* (the "Splendor of Truth") as I offer a summary of the main themes raised in this discussion and bring the chapter to a close.

Firstly, the Church makes clear that the pursuit of immortality in the here-and-now is impossible. The reason for this is twofold: (1) because of sin, death comes to all[290] and (2) God alone has the "sudden and strange power"[291] to grant incorruptibility to human nature and immortality to the whole person. In the end, death "opens the door to immortal life."[292]

Secondly, my findings suggest that the Church will evaluate radical life extension on whether or not it can order the self to the good. The Thomistic doctrine of natural law is central to Roman Catholic moral theology.[293] Aquinas argues that "whatever is a means of preserving human life, and of warding off its obstacle, belongs to the natural law,"[294] which is written on the human heart.[295] In

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[289] Actually, Ratzinger is not convinced that this can be described at all. "[T]he new world cannot be imagined. Nothing concrete or imaginable can be said about the relation of man to matter in the new world, or about the 'risen body.' Yet we have the certainty that the dynamism of the cosmos leads towards a goal, a situation in which matter and spirit will belong to each other in a new and definitive fashion." See Ratzinger 194.

[290] Catechism §1008

[291] Augustine XXII.14.

[292] Refer to the conclusion of Congregation for the Doctrine of Faith's Declaration on Euthanasia. Vatican City: CDF, 1980. 16 May 2009 <http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19800505_euthanasia_en.html>.

[293] John Paul II, *Veritatis Splendor* 44.

[294] Aquinas IaIIae, Q.94, art.2 *resp*.

[295] Rom. 2.15; John Paul II, *Veritatis Splendor* 12.

Veritatis Splendor, John Paul II reminds us that "[t]he rightful autonomy of the practical reason means that man possesses in himself his own law, received from the Creator. Nevertheless, *the autonomy of reason cannot mean* that reason itself *creates values and moral norms*."[296] Dependent then on God's law, "[t]he primary and decisive element for moral judgment is the object of the human act, which establishes whether it is *capable of being ordered to the good and to the ultimate end, which is God*."[297]

To be sure, self-preservation is a basic good even in "non-rational" nature and the radical prolongation of life is by definition an extension of this good. As such, this in itself is negotiable. Although an extended life can be spent charitably, cultivating virtue and gaining in wisdom,[298] it ultimately postpones communion with God and therefore puts off perfect happiness. Furthermore, if the means to achieve this end involve the use of illicit biological material or germ line modification (which raises the issue of the well-being of progeny) or are stirred by a eugenic mentality, the Church will prohibit radical life extension. In addition, if in the future we will somehow be able to secure indefinite postponement, then we will encounter another dilemma: how will humans bring about death when they grow tired of long life? The Church's teaching against euthanasia will be invoked here but the question of what constitutes "natural finality" in the context of radically extended life will be up for debate.

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[296] John Paul II, *Veritatis Splendor* 40.

[297] John Paul II, *Veritatis Splendor* 79.

[298] The opening chapters of Genesis reveal that long life did not necessarily motivate the early humans to cultivate virtue. Cain rises up and kills his brother out of jealousy and Lamech boasts to his wives about killing a younger man. See Gen. 4. In the end, God "was sorry that he had made humankind on the earth, and it grieved him to his heart" so a deluge is sent to blot them out. See Gen. 6.5-7.

Furthermore, the Congregation for the Doctrine of Faith's Declaration on Euthanasia reveals an important link between the overuse of technology and the overtreatment of illness on the one hand, and the fear of death on the other.[299] Transhumanists who look to secure extended life in a nonbiological substrate show disdain for the body, which sows the seeds of its own corruption. Although the physical dimension of the human person for Roman Catholics is not an absolute, it is nevertheless a non-disposable gift from God.[300]

Finally, the Church also shows concern for (1) the demographic shift that will be caused by radical life extension and its implications for intergenerational relationships, (2) the social injustice of limited technological accessibility, and (3) the ramifications for the Common Good, the whole person, and the environment. These issues will be taken up more fully in conversation with ethicists, biogerontologists, transhumanists, and Protestant theologians on whom I rely to provide the framework for the ethical analysis of the chapter that follows.

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[299] See Congregation for the Doctrine of Faith, Declaration on Euthanasia §2-4.
[300] Catechism §364; §2289.

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The Fear of Oblivion and the Desire for Immortality: The Ethics of Life Extension

Traditionally, the Roman Catholic Church seeks counsel before ruling on particular issues. It turns to the Pontifical Academies of Science, Social Science, and Life. These academic bodies, which are composed of scholars elected for their "high level of competency" "without distinction to religious denomination," are called "to face several challenges of modern society" and to serve as great centers of "'interdisciplinary dialogue' on ever more complex problems which influence man."[1] In this way, because the Church has yet to fully articulate its position on radical life extension, I look to a number of experts outside of the tradition who have mounted arguments, founded on many of the same principles that concern Roman Catholicism, for or against the significant prolongation of human life.

Ronald Cole-Turner has been especially active in shaping a progressive Protestant response to the prospect in question. Referring to a number of Christian principles that we discussed earlier (embodiment, continuity/discontinuity, transcendence, enhanced life, co-creation, and moral evaluation based on whether an action is ordered to the good), he concludes that although there are risks involved, there is "no essential conflict" or incompatibility between radical life extension and the Christian life.[2] Ethicist Margaret Somerville, also appealing to

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[1] Vatican, "Pontifical Academies for Science, Social Sciences, Life," 4 May 2010 <http://www.vatican.va/roman_curia/pontifical_academies/acdlife/documents/rc_pa_acdlife_pro_20051996_en.html> par. 6; 8.

[2] Ronald Cole-Turner, "Extreme Longevity Research: A Progressive Protestant Perspective," Religion and the Implications of Radical Life Extension, ed. Derek F. Maher and Calvin Mercer (New York: Palgrave Macmillan, 2009) 59.

similar concerns (about the value of the body, the significance of the natural, the relationship between generations, and the danger of creating superhumans), speaks with an ostensibly secular voice. Her reasons for rejecting radical life extension, and transhumanism on the whole, closely resemble those of the Roman Catholic tradition.

Todd Daly offers a useful framework for our ethical evaluation in his comparative discussion of transhumanism and religion. He outlines three primary areas of overlap wherein I engage Cole-Turner, Somerville, Nick Bostrom, and the Roman Catholic Magisterium on the matter of radical life extension. This interdisciplinary approach reveals the complexities involved in elucidating the ethics of significantly prolonging human life and serves to assist Roman Catholicism in the arduous task of thinking through this important issue.

Ronald Cole-Turner and Technological Redemption

Ronald Cole-Turner offers an assenting, though cautious, voice that brings to the foreground a number of similarities shared between (Protestant) Christianity and transhumanist philosophy.

Cole-Turner trusts that the promises of prolongevists will come to fruition within the next century and that "human beings will move incrementally and inevitably into a transhuman state."[3] Religion, he argues, "offers its own transhuman visions of human life in eternal and transcendent spheres" and even if "[r]eligion cannot save us from technology, […] it can humble our efforts to save

[3] Ronald Cole-Turner, "More Than Human: Religion, Bioethics, and the Transhuman Prospect," Continuity + Change: Perspectives on Science and Religion, Metanexus' 7th Annual Conference, U of Pennsylvania, Philadelphia, 5 June 2006, 2.

ourselves through technology."[4] Among the noted similarities between transhumanism and Christianity are the promise of "enhanced" and "abundant" life, the intrusion of death, and the notion of death as enemy.[5] Cole-Turner summons the familiar, and often central, concern of Christian ethics regarding biotechnology: the call to participate in God's creative work (what he refers to as "co-creation") and the corresponding threat of playing God. Although Christian traditions generally laud development and progress in science (as we have seen, the Catholic Magisterium calls science "an invaluable service to the integral good of the life and dignity of every human being"[6]), science and technology should always "be at the service of man and his integral development."[7]

Here, Cole-Turner looks to Saint Basil the Great, bishop of Caesarea in the fourth century, who, he believes, is in agreement with most theologians who understand medical technology as a reflection of God's providence.[8] It is worth quoting in full from Basil's *Long Rules*:

> Each of the arts is God's gift to us, remedying the deficiencies of nature, as, for example, agriculture, since the produce which the earth bears of itself would not suffice to provide for our needs; the art of weaving, since the use of clothing is necessary for decency sake, and for protection from the wind; and similarly for the art of building. The same is true, also, of the medical art. In as much as our body is susceptible to various hurts, some attacking from without and some from within by reason of the food we eat, and since the body suffers affliction from both excess and deficiency, the medical art has been vouchsafed us by God, who directs our

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[4] Cole-Turner, "More Than Human" 3.

[5] Cole-Turner, "More Than Human" 3-4.

[6] Congregation for the Doctrine of Faith, Instruction *Dignitas Personae* on Certain Bioethical Questions, Vatican City: CDF, 2008, 16 May 2009 <http://www.vatican.va/ roman_curia/ congregations/cfaith/ documents/rc_con_cfaith_doc_20081208_dignitas-personae_en.html> §3.

[7] John Paul II, *Evangelium Vitae*, Vatican City: Libreria Editrice Vaticana, 1995, 16 May 2009 <http://www.vatican.va/edocs/ENG0141/_INDEX.HTM> §81.

[8] Cole-Turner, "More Than Human" 4-5.

> whole life, as a model for the cure of the soul, to guide us in the removal of what is superfluous and in the addition of what is lacking. Just as we would have no need of the farmer's labor and toil if we were living amid the delights of paradise, so also we would not require the medical art for relief if we were immune to disease, as was the case, by God's gift, at the time of Creation before the Fall.[9]

Although Cole-Turner alludes to technology as "potentially an instrument of the redemption and transformation of creation,"[10] especially for humankind in its fallen state, he is quick to draw attention to the danger of fostering an absolute autonomy and self-reliance rooted in an understanding of technology as salvific. Basil brings this warning to point:

> So then, we should neither repudiate this art altogether nor should it behove us to repose all our confidence in it; but, just as in practicing the art of agriculture we pray God for fruits, and as we entrust the helm to the pilot in the art of navigation, but pray God that we may end our voyage unharmed by the perils of the sea, so also, when reason allows, we call in the doctor, but not leave off hoping in God.[11]

The sense of creatureliness and dependence on God is potentially lost, thus disrupting the Christian understanding of human persons as relational beings and disorienting the ultimate *telos* of communion with God. Even worse is the departure from living the *imago Dei* as creature and, instead, exalting the self as being on par with the Deity, particularly in regard to creative capacity. This echoes the enhanced anthropocentrism of Renaissance writers as described by David Kinsley, who narrow the image-imaged divide. Accordingly, the fifteenth century humanist philosopher Marsilio Ficino wrote:

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[9] Basil of Caesarea, Ascetical Works, trans. M. Monica Wagner (Washington, DC: Catholic U of America P, 1950) 330-331.
[10] Cole-Turner, "More Than Human" 5.
[11] Basil 336.

> [s]ince therefore man sees the order of the heavens, whence and where they move and by what measures and what they bring about, who will deny that he is endowed with a genius, as I would put it, that is almost the same as that of the Author of the heavens, and that man would be able to make the heavens in some way if he only possessed the instruments and the celestial material […]?[12]

To be sure, transhumanists show great disdain for passive acceptance, say by Christian anthropology, of creatureliness or limitation as natural features of the human condition. This also bodes well with functional theories of personhood, which are necessarily exclusive in their reduction of the human person to a mere collection of demonstrable capacities (for rationality, self-consciousness, suffering, or otherwise). Cole-Turner is convinced that the ostensibly anti-technology stance insinuated by "playing God" or the pro-technology impression of co-creatorship are ultimately unhelpful for practical ethics.[13] He explains that a good deal of the criticism coming out of Christian bioethical circles has largely focussed on "creation" issues, the morality of source, and etiology.[14] Instead, Cole-Turner contends that an evaluation of transhumanism from a Christian perspective must be situated in eschatology, especially when addressing questions about death and immortality.[15]

For transhumanism, ageing and death are framed as technological problems, but for Christianity the study of the last things is much more complex. Cole-Turner lists a number of Scriptural contexts that are significant for theological discussion about longevity and immortality. Firstly, he turns to the

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[12] David R. Kinsley, Ecology and Religion: Ecological Spirituality in Cross-Cultural Perspective (Upper Saddle River, NJ: Prentice-Hall, 1995) 126.
[13] Cole-Turner, "More Than Human" 5.
[14] Cole-Turner, "More Than Human" 5.
[15] Cole-Turner, "More Than Human" 5.

immunity from physical death that seems to have been the lot of the primordial couple and all of humankind after them until sin by disobedience rifted the human-God-nature relationship.[16] From this, Cole-Turner speaks of death as "not part of God's original intention but an intrusion that disrupts the original divine plan."[17] The formidable life span of the ten generations from Adam to Noah (including Methuselah, who dies just shy of a millennium)[18] to the capping of mortal life at one hundred and twenty years by God in his regret[19] marks the petering out of the original immortality (or, at least, exceedingly long life spans) that progressively amounts to the mere threescore and ten (or fourscore "by reason of strength") pronounced in the Psalms.[20] Cole-Turner reminds us of Hezekiah, a king of Judah, who, in the face of death by serious illness, implored God to look upon his goodness and spare him from death; an additional fifteen years of life was granted him.[21]

"But eternal life without death is precisely what Christianity *does not offer*, as if prolonging selfishness were a good thing," Cole-Turner explains.[22] "Christianity offers life, not by making us immortal but by making us new."[23] He

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[16] Second Vatican Ecumenical Council, Pastoral Constitution on the Church in the Modern World: *Gaudium et Spes*, Vatican City: Libreria Editrice Vaticana, 1965, 16 May 2009 <http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_cons_19651207_gaudium-et-spes_en.html> §18; Catechism of the Catholic Church (Ottawa: Canadian Conference of Catholic Bishops, 1994) §1008.
[17] Cole-Turner, "More Than Human" 6.
[18] Gen. 5.
[19] Gen. 6.3.
[20] Ps. 90.10.
[21] Isa. 38.1-6.
[22] Cole-Turner, "Extreme Longevity" 59.
[23] Cole-Turner, "Extreme Longevity" 59.

makes plain that "[t]he essential feature of that transformation is not longevity but a renewed relationship with God."[24]

In the New Testament, where reference to longevity is scant, Cole-Turner cites the resuscitation (or, better, *reanimation*) of Lazarus,[25] but we could likewise include the raising of Jairus' daughter[26] and the widow's son at Nain.[27] Indeed, these narratives can hardly be counted as endorsements of radical life extension. They are, instead, "proofs" of God's mercy, the effects of true faith, and, importantly, the temporariness of death. Jairus' daughter, Jesus says, "is not dead but sleeping."[28] Although Lazarus, the widow's son, and Jairus' daughter are excellent examples of restoration, the idea here is that these three have been returned to mortality and will once again submit to death, as is the fate of all mortals, in due time; that is, these stories are excellent examples of the *inadequacy* of reanimation/restoration/resuscitation. It is the resurrection of Jesus, the central tenet of Christianity,[29] in which death, "the last enemy to be conquered," is "swallowed up in victory."[30] Cole-Turner notes that "'[r]esurrection' is best seen, not as resuscitation but as transformation, glorification, and exaltation" wherein "[p]ersonal identity is preserved, but the material basis is changed in ways that cannot be described."[31] Here, he speaks to

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[24] Cole-Turner, "Extreme Longevity" 59.
[25] John 11.1-44.
[26] Mark 5.21-43.
[27] Luke 7.11-17.
[28] Mark 5.39.
[29] 1 Cor. 15.3
[30] 1 Cor. 15.26; 1 Cor. 15.54
[31] Cole-Turner, "More Than Human" 7.

the Roman Catholic Church's concern about continuity and discontinuity in the world to come.[32]

On this subject, Cole-Tuner identifies an important distinction between the transhumanist desire for biological immortality and the Church's desire for theological immortality. "Technology offers to give us what we want, or at least what most of us think we want – longer life, youthful bodies, greater health, and mental ability," he maintains, whereas "Christianity invites us to give up what we want, indeed to give up life itself, as the one condition for real life."[33] In the end, Cole-Turner argues that although there are risks with radical life extension technologies – which can provide for us "a self-preserving and self-isolating eternity" that "may in the end offer nothing but hell" – he does not detect an "essential conflict."[34] If the intention to significantly prolong human life is rooted in "a longing to serve or to grow further into the experience of spiritual transformation, then the use of these technologies might be an aid rather than a risk to a life of faith."[35] This is not a glowing recommendation of radical life extension, to be sure, but a cautious approval of a technology that has the *potential* to be ordered to the good.[36]

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[32] Cole-Turner, "Extreme Longevity" 57.
[33] Cole-Turner, "Extreme Longevity" 58.
[34] Cole-Turner, "Extreme Longevity" 59.
[35] Cole-Turner, "Extreme Longevity" 60.
[36] John Paul II, *Veritatis Splendor*, Vatican City: Libreria Editrice Vaticana, 1993, 16 May 2009 <http://www.vatican.va/edocs/ENG0222/_INDEX.HTM> §79.

Todd Daly and the Domestication of Death

Todd Daly identifies three areas where transhumanism and what he calls "orthodox Christian theology" intersect in the matter of life extension: (1) the conceptualization of death as enemy, (2) the dissatisfaction with the human condition, and (3) the idea of nature as a process of unfolding.[37]

The ambiguity of ageing and death in the Scriptures need not be expounded here. The psalmist makes reference to "the shadow of death" or of death as the "darkest valley."[38] As we have seen, Paul, in his first letter to the Church in Corinth, calls death "[t]he last enemy to be destroyed"[39] that will be "swallowed up in victory" when the perishable body puts on imperishability.[40]

Yet, there are references in the Bible to people who petition for death as an end to their suffering. Refer here to Job who, in the agony of having been "inflicted [with] loathsome sores […] from the sole of his foot to the crown of his head"[41] after his cattle, servants, and children are killed as test of his piety,[42] cries out to God: "Why is light given to one in misery, and life to the bitter in soul, who long for death, but it does not come, and dig for it more than for hidden treasures; who rejoice exceedingly, and are glad when they find the grave?"[43] But God does not concede to Job's suffering by granting death.

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[37] Todd Daly, "Life-Extension in Transhumanist and Christian Perspectives: Consonance and Conflict," Journal of Evolution & Technology 14.2 (2005): 57.
[38] Ps. 23.4.
[39] 1 Cor. 15.26; Daly, "Life-Extension" 71.
[40] 1 Cor. 15.54.
[41] Job 2.7.
[42] Job 1.13-19.
[43] Job 3.20-22.

There are also examples in the text of people welcoming death, particularly at the end of a full and virtuous life. In the Old Testament, the Wisdom of Solomon reads: "But the righteous, though they die early, will be at rest. For old age is not honoured for length of time, or measured by number of years; but understanding is grey hair for anyone, and a blameless life is ripe old age […]. Being perfected in a short time, they fulfilled long years; for their souls were pleasing to the Lord, therefore he took them quickly from the midst of wickedness."[44] In the New Testament, it was revealed to Simeon (called "the Righteous" or "the Elder") by the Holy Spirit that he would not see death before he had seen the Lord's Messiah.[45] When the child Jesus is brought to the Temple by Mary and Joseph, Simeon takes him in his arms and prays: "Master, now you are dismissing your servant in peace, according to your word; for my eyes have seen your salvation […]."[46] Importantly, Paul's letter to the Philippians are an excellent case in point: "It is my eager expectation and hope that I will not be put to shame in any way, but that by my speaking with all boldness, Christ will be exalted now as always in my body, whether by life or by death. For to me, living is Christ and dying is gain."[47] That is, with death comes deliverance.

Ratzinger finds the expression of this approach to death in the Litany of Saints, which makes the petition: "[*a*] *subitanea morte, libera nos, Domine*" 'from

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[44] Wisd. 4.7-9; 4.13-14.
[45] Luke 2.26.
[46] Luke 2.29-30.
[47] Phil. 1.20-21.

a death that is sudden and unprepared for, deliver us, O Lord.'[48] His discussion of this idea is relevant:

> To be taken away suddenly, without being able to make oneself ready, without having had time to prepare – this is the supreme danger from which man wants to be saved. He wants to be alert as he sets out on that final journey. He wants dying to be his own action. If one were to formulate today a Litany of the Unbelievers the petition would, no doubt, be just the opposite: a sudden and unprovided death grant to us, o Lord. Death really ought to happen at a stroke, and leave no time for reflection or suffering.[49]

However, these "'[d]eathist' stories and ideologies, which counsel passive acceptance, are no longer harmless sources of consolation," Bostrom warns.[50] "They are reckless and dangerous barriers to urgently needed action."[51] Here, Bostrom laments how the "*recurrent tragedy*" that is ageing has become "*a fact of life, a statistic.*"[52] There is an "urgent, screaming moral imperative" to put an end to human senescence since it is "the principal cause of an unfathomable amount of human suffering and death" and is, ultimately, what is keeping us from the "much greater level of personal development and maturity" that transhumanists look toward.[53] In the end, Bostrom expects that "a good many of death's apologists, if they were one day presented with the concrete choice between (A) getting sick, old, and dying, and (B) being given a new shot of life to stay healthy, vigorous and to remain in the company of friends and loved ones to participate in the

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[48] Joseph Ratzinger, Eschatology: Death and Eternal Life, 2nd ed., trans. Michael Waldstein, ed. Aidan Nichols (Washington: Catholic U of America P, 1988) 71.
[49] Ratzinger 71.
[50] Nick Bostrom, "The Fable of the Dragon-Tyrant," Journal of Medical Ethics 31.5 (2005): 276.
[51] Bostrom, "Fable" 276. See also Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association 2003, 16 July 2005 <http:// www. transhumanism.org/resources/FAQv21.pdf> 37.
[52] Bostrom, "Fable" 277.
[53] Bostrom, "Fable" 277. See also Tom Mackey, "An Ethical Assessment of Anti-Aging Medicine," Journal of Anti-Aging Medicine 6.3 (2003): 199.

unfolding of the future, would, when push came to shove, choose this latter alternative."[54]

There is no justice to be found in death, even if it is, as Daly notes, "indiscriminately cruel."[55] The transhumanist vision to harness control over death is to voluntarily render it discriminate. "If some people would still choose death," Bostrom writes, "that's a choice that is of course to be regretted, but nevertheless this choice must be respected."[56] Even though autonomy is a chief tenet in transhumanist ethics, it goes without saying that those unable to afford anti-death technologies will be forced to choose death. This problem, Bostrom argues, is not new and to call for a ban on innovations of this sort based on the problem of accessibility is misguided:

> If a society judges existing inequalities to be unacceptable, a wiser remedy would be progressive taxation and the provision of community-funded services such as education, IT access in public libraries, genetic enhancements covered by social security, and so forth. Economic and technological progress is not a zero sum game; it's a positive sum game. Technological progress does not solve the hard old political problem of what degree of income redistribution is desirable, but it can greatly increase the size of the pie that is to be divided.[57]

To be sure, there is an important distinction between transhumanist and Christian interpretations of "death as enemy." In the preceding chapter, I concluded that for Roman Catholicism death is natural to the human condition but not to human nature, for even though death is introduced into human history through sin, "God created us for incorruption, and made us in the image of his

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[54] Bostrom, "Transhumanism FAQ" 37.
[55] Daly, "Life-Extension" 74.
[56] Bostrom, "Transhumanism FAQ" 37.
[57] Bostrom, "Transhumanism FAQ" 21.

own eternity."[58] Death is an enemy in the Christian tradition, Daly explains, because "it separates us from God."[59] But Paul, in his letter to the Romans, is convinced that "neither death, nor life, nor angels, nor rulers, nor things present, nor things to come, nor powers, nor height, nor depth, nor anything else in all creation, will be able to separate us from the love of God in Christ Jesus our Lord."[60] Daly recognizes that this is because death, for Christians, is a "*defeated* enemy."[61]

Nevertheless, Christian theocentrism continues to repudiate death because death is the consequence of sin and sin is an offense against God, which "wounds the nature of man and injures human solidarity."[62] Death is inevitable because by sin death comes to all.[63] Given that it is through the death and resurrection of Jesus that Christians hope for eternal life, the disposal of death becomes the disposal of life.[64]

Herein lies the Roman Catholic Church's apprehension to "sickness and death […] becoming purely technological problems to be handled by the appropriate institution."[65] Daly reminds us that in the Christian tradition death is defeated by Christ, not by technology.[66] Of course, this is not indicative of an

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[58] Wisd. 2:23.
[59] Daly, "Life-Extension" 71.
[60] Rom. 8.38-39.
[61] Daly, "Life-Extension" 71, italics mine.
[62] Catechism §1849-§1850.
[63] Catechism §1008.
[64] International Theological Commission, "Communion and Stewardship: Human Persons Created in the Image of God," 2004, 18 Aug. 2008 <http://www.vatican.va/roman_curia/congregations/cfaith/cti_documents/rc_con_cfaith_doc_20040723_communion-stewardship_en.html> §93.
[65] Ratzinger 70.
[66] Daly, "Life-Extension" 71.

outright rejection of technology. After all, its responsible use has improved the quality of human life and alleviated the suffering of many.[67] However, there can be no technological redemption of a "human nature deprived of original holiness and justice."[68] Benedict XVI speaks to this more fully in *Caritas in Veritate*:

> Produced through human creativity as a tool of personal freedom, technology can be understood as a manifestation of absolute freedom, the freedom that seeks to prescind from the limits inherent in things. The process of globalization could replace ideologies with technology, allowing the latter to become an ideological power that threatens to confine us within an *a priori* that holds us back from encountering being and truth. Were that to happen, we would all know, evaluate and make decisions about our life situations from within a technocratic cultural perspective to which we would belong structurally, without ever being able to discover a meaning that is not of our own making. The "technical" worldview that follows from this vision is now so dominant that truth has come to be seen as coinciding with the possible. But when the sole criterion of truth is efficiency and utility, development is automatically denied. True development does not consist primarily in "doing". The key to development is a mind capable of thinking in technological terms and grasping the fully human meaning of human activities, within the context of the holistic meaning of the individual's being. […] Technology is highly attractive because it draws us out of our physical limitations and broadens our horizon. *But human freedom is authentic only when it responds to the fascination of technology with decisions that are the fruit of moral responsibility*. Hence the pressing need for formation in an ethically responsible use of technology. Moving beyond the fascination that technology exerts, we must reappropriate the true meaning of freedom, which is not an intoxication with total autonomy, but a response to the call of being, beginning with our own personal being.[69]

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[67] Stephen Garner, "Transhumanism and Christian Social Concern" Journal of Evolution & Technology 14.2 (2005): 37.

[68] Pontifical Council for Justice and Peace, Compendium of the Social Doctrine of the Church, Vatican City: Libreria Editrice Vaticana, 2004, 16 July 2008 <http://www.vatican.va/roman_ curia/pontifical_councils/justpeace/documents/rc_pc_ justpeace_doc_20060526_compendio-dott-soc_en.html# SECRETARIAT OF STATE> §115; Garner 37.

[69] Benedict XVI, Encyclical Letter *Caritas in Veritate* on Integral Human Development in Charity and Truth, Vatican City: Libreria Editrice Vaticana, 2009. 11 June 2010 <http://www.vatican.va/ holy_father/benedict_xvi/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate_en.html> §70.

That is, freedom is only authentic when technology orders the self to the good and to its proper end, which is God.[70] The Church reminds us that our freedom "is profoundly shaped by our being and by its limits."[71] In this way, humankind is not to serve technology; technology is to serve humankind.[72]

In the Roman Catholic Church's defense of human dignity and in the value it gives to human limitedness, *Bostrom* detects only "*fine phrases and hollow rhetoric*;"[73] Ruth Macklin has similarly argued that "dignity is a useless concept."[74] Although Brent Waters agrees that "[i]t remains unclear what the dignity is that is being threatened, and why it is paramount that, whatever it is, it should be protected against extensive transformation," he adds an important caveat: "proponents of a posthuman future fail to make a convincing case, because they also assert a religious claim on philosophical and ideological grounds."[75] As a result,

> their proposal lacks conceptual clarity and teleological precision to demonstrate why transforming humans into posthumans constitutes a moral imperative, or is at least a worthwhile goal that should be pursued. It is far from clear what a posthuman future might be like,

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[70] John Paul II, *Veritatis Splendor*, Vatican City: Libreria Editrice Vaticana, 1993, 16 May 2009 <http://www.vatican.va/edocs/ENG0222/_INDEX.HTM> §79.

[71] Benedict XVI, *Caritas in Veritate* §68.

[72] Refer to the Congregation for the Doctrine of Faith's forward to *Donum Vitae*: Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation; Replies to Certain Questions of the Day, Vatican City: CDF, 1987, 16 May 2009 <http://www.vatican.va/ roman_ curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en. html> Introduction §2.

[73] Bostrom, "Fable" 277.

[74] Ruth Macklin, "Dignity is a Useless Concept," British Medical Journal 327.7429 (2003): 1419-1420. Margaret Somerville argues that this may be true of the concept of *extrinsic* dignity (which is conferred on a person), but not to *intrinsic* dignity (which one has by virtue of being human). See The Ethical Imagination: Journeys of the Human Spirit (Toronto: Anansi, 2006) 120; 123. Incidentally, this discussion about extrinsic and intrinsic dignity parallels the reflection on personalism and physicalism that was taken up in the preceding chapter.

[75] Brent Waters, From Human to Posthuman: Christian Theology and Technology in a Postmodern World (Aldershot: Ashgate, 2006) 69.

> and what normative, social and political objectives would be pursued in the process."[76]

"It is not clear," Waters explains, "if the *posthuman* lionized by proponents and vilified by critics is the same creature." That said, the Roman Catholic Church could never fathom "the ultimate end and fulfillment of the deepest human longings, the state of supreme, definitive happiness"[77] as attainable in some posthuman future that, uninterested in communion with God, remains attached to the temporality and limitedness of earthly existence. The Pontifical Council for Justice and Peace asserts that:

> *[t]he human person, in himself and in his vocation, transcends the limits of the created universe, of society and of history: his ultimate end is God himself*, *who has revealed himself to men in order to invite them and receive them into communion with himself*. "Man cannot give himself to a purely human plan for reality, to an abstract ideal or to a false utopia. As a person, he can give himself to another person or to other persons, and ultimately to God, who is the author of his being and who alone can fully accept his gift."[78]

Even though transhumanists see no merit in maintaining humanhood in the transition to posthumanhood,[79] the prospect is to manifest itself in this time and place. On this note, the Roman Catholic understanding of biographical and biological continuity in the resurrection seems to have more of an affinity with Julian Huxley's description of transhumanism as "man remaining man, but trans-

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[76] Waters 69.

[77] Catechism §1024.

[78] Pontifical Council for Justice and Peace §47.

[79] Bostrom does not rule out the possibility of the continuity of personhood, even in the case of mind uploading. Although "[i]t is a matter of debate under what conditions personal identity would be preserved," Bostrom affirms that "[a] widely accepted position is that you survive so long as certain information patterns are conserved, such as your memories, values, attitudes, and emotional dispositions, and so long as there is causal continuity so that earlier stages of yourself help determine later stages of yourself." See Bostrom, "Transhumanism FAQ" 17.

cending himself, by realizing new possibilities of and for his human nature"[80] than with contemporary transhumanist philosophy.

A Penchant for the Natural and the Challenge of Technologizing Personhood

I do not wish to repeat the discussion given to the characterization of death as, at once, natural and unnatural that was developed in the preceding chapter. However, some attention must be given here to the primacy of "the natural" in ethics.

To begin, Daly suggests that transhumanism is the "latest manifestation of the desire inherent in all of nature […] to transcend the human condition"[81] and Bostrom sees no moral reason not to intervene in nature and to improve it as we have been doing since the dawn of civilization.[82] In fact, "since we are part of nature," he insists, "everything we do and create is in a sense natural too."[83]

Unlike Christian anthropology, which elevates humanhood in its imaging of God, transhumanist philosophy is not convinced that there is anything innate in

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[80] Julian Huxley, Knowledge, Morality, and Destiny: Essays (New York: Mentor, 1957) 17.

[81] Daly, "Life-Extension" 72. As we have seen in the first chapter, the desire to transcend the human condition by radically prolonging human life is not exclusive to transhumanism. Daly explores the historical antecedents in biomedicine that underlie current interest in pursuing radical life extension, borrowing from Gerald Gruman's A History of Ideas About the Prolongation of Life (New York: Springer, 2003) and Thomas R. Cole's The Journey of Life: A Cultural History of Aging in America (Cambridge: Cambridge UP, 1992). He gives particular attention to the influence of Christianity on the "prolongevitist prognostications" of René Descartes, Francis Bacon, and a number of American health reformers, such as William Alcott, Sylvester Graham, and Orson S. Fowler, who identified an important link between longevity and morality, and between progress and providence. See Daly, "Life-Extension" 59-64; John Hedley Brooke, "Visions of Perfectibility," Journal of Evolution & Technology 14.2 (2005): 3. In the end, "[t]heir struggle to reconcile belief in the afterlife with the pursuit of a longer earthly life left unanswered the question as to whether life extension was a goal compatible within a Christian worldview […]." See Daly, "Life-Extension" 64.

[82] Bostrom, "Transhumanism FAQ" 35.

[83] Bostrom, "Transhumanism FAQ" 35.

humans that makes us special. This discord, Margaret Somerville claims, is "at the heart of our disagreements about the ethics of using the new technoscience to alter human nature."[84]

"[I]f there is no essential human nature," Somerville contends, "then no technologizing of that nature is dehumanizing. In other words, such a rejection serves to legitimate the technological project, because then humans do not have a nature that must be safeguarded, but a history that can be rewritten for the future through technological interventions. It is a powerful endorsement of the technological imperative […]."[85]

To be sure, transhumanists do not reject the concept of "the natural" outright; human nature is, as Bostrom describes it, "a work-in-progress, a half-baked beginning[86] that we can learn to remold in desirable ways."[87] For transhumanists, the technologization of human nature is *intentionally* dehumanizing; as we have seen, the posthuman is a future being whose "basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards."[88] This dehumanization is not as dismal as Somerville describes it. In exchange for our current regrettable state, transhumanists believe that the emergence, and subsequent convergence, of nanotechnology, biotechnology, information technology, and cognitive science

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[84] Somerville, Ethical Imagination 169.
[85] Somerville, Ethical Imagination 97.
[86] Daly is right to suggest that the Christian tradition would find such a description of "the beginning" to be rather problematic. One need only refer to the first account of Creation (Gen. 1.1-2.4a) here. See Daly, "Life-Extension" 73.
[87] Nick Bostrom,"Transhumanist Values," 2003, 28 July 2005 <http://www.nickbostrom.com/ethics/values.pdf> 1.
[88] Bostrom, "Transhumanism FAQ" 5.

(NBIC) will usher in the posthuman age and bestow upon enthusiasts the potential:

> to reach intellectual heights as far above any current human genius as humans are above other primates; to be resistant to disease and impervious to aging; to have unlimited youth and vigor; to exercise control over their own desires, moods, and mental states; to be able to avoid feeling tired, hateful, or irritated about petty things; to have an increased capacity for pleasure, love, artistic appreciation, and serenity; to experience novel states of consciousness that current human brains cannot access. It seems likely that the simple fact of living an indefinitely long, healthy, active life would take anyone to posthumanity if they went on accumulating memories, skills, and intelligence.[89]

Ironically, then, the technologization of human nature, especially in the form of radical life extension, becomes *super*humanizing to the extent that it secures that "much greater level of personal development and maturity."[90] But what transhumanists call superhuman, others identify as *infra*human, if human at all;[91] a difference in terms, Somerville notes, that is rooted in how we understand "nature" and "the natural." As we have seen, the Roman Catholic Church teaches that although humans have a transcendent dimension and a supernatural

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[89] Bostrom, "Transhumanism FAQ" 5.

[90] Bostrom, "Fable" 277.

[91] Certain descriptions of posthumanhood are clearly disconnected from humanhood altogether; when transhumanism seeks to abandon our humanity, it falls away from secular humanism. Bostrom envisages that "[p]osthumans could be completely synthetic artificial intelligences, or they could be enhanced uploads, or they could be the result of making many smaller but cumulatively profound augmentations to a biological human. The latter alternative would probably require either the redesign of the human organism using advanced nanotechnology or its radical enhancement using some combination of technologies such as genetic engineering, psychopharmacology, anti-aging therapies, neural interfaces, advanced information management tools, memory enhancing drugs, wearable computers, and cognitive techniques." See Bostrom "Transhumanism FAQ" 5-6. Although Somerville sees, in her mind's eye, the replacement of *Homo sapiens* by these redesigns (which she calls *Techno sapiens*), transhumanists argue that "the goal is not to replace existing humans with a new breed of super-beings, but rather to give human beings (those existing today and those who will be born in the future) the option of developing into posthuman persons." See Somerville, Ethical Imagination 177 and Bostrom, "Transhumanism FAQ" 31.

vocation,[92] they also have a "natural finality" and are "bound to the immanent teleology laid down by nature."[93] Here, Brent Walters finds the transhumanist agenda wanting:

> If human good is the measure, however, then it is inconceivable – on humanistic grounds – that we should aspire to become anything other than human. Aspiring to become posthuman is tautological, because it seeks to annihilate both the measure and what is measured. If it is good for humankind to become posthuman, then it follows that it is bad if humans remain human [although Bostrom argues that a person's choice to remain unenhanced should be respected], and any anthropocentric standard is rendered meaningless. To assert that humans should become posthuman requires the invocation of a higher or transcendent good that trumps the anthropocentric standard. What remains unclear in transhumanist literature is the source of this transcendent good that humans should pursue, for as their neologism indicates humans constitute a transitional species.[94]

Nevertheless, Bostrom asserts that "whether something is natural or not is irrelevant to whether it is good or desirable."[95]

> In many particular cases, of course, there are sound practical reasons for relying on "natural" processes. The point is that we cannot decide whether something is good or bad simply by asking whether it is natural or not. Some natural things are bad, such as starvation, polio, and being eaten alive by intestinal parasites. Some artificial things are bad, such as DDT-poisoning, car accidents, and nuclear war […]. The important thing is not to be human but to be humane […]. The attributes of our species are not exempt from ethical examination in virtue of being "natural" or "human." Some human attributes, such as empathy and a sense of fairness, are positive; others, such as tendencies toward tribalism or groupishness, have left deep scars on human history. If there is value in being human, it does not comes from being "normal" or "natural," but from having within us the raw material for being humane: compassion, a sense of humor, curiosity, the wish to be a

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[92] John Paul II, *Evangelium Vitae* §2.

[93] Pius XII, "The Moral Limits of Medical Research and Treatment," Address to the First International Congress on the Histopathology of the Nervous System, 14 Sept. 1952, 4 Apr. 2007 <http://www.papalencyclicals.net/Pius12/P12PSYCH.HTM> §13.

[94] Waters 78.

[95] Bostrom, "Transhumanism FAQ" 36.

> better person. Trying to preserve "humanness," rather than cultivating humaneness, would idolize the bad along with the good.[96]

Somerville finds this position to be ethically problematic. In The Ethical Imagination, she claims that "[w]e have no option […] but to choose between an ethics primarily grounded in nature or primarily grounded in technology,"[97] as if the two could be teased apart. Somerville's intention, though, becomes clear; she proposes the adoption of a "basic presumption in favour of the natural"[98] because "nature in itself is an inherent good."[99] As such, Somerville devotes much attention to delineating the dangers of denying the natural. She recognizes the difficulty in defining the concept, but begins with the conviction that "the biological is an essential substrate of the natural, including human nature, and in some instances the natural might be no more than the biological. But the natural, again including human nature, also encompasses the realities, some of them physical ones, that emerge from the interaction of biology and culture […]."[100] Indeed, technology can be used to alter both the biological and cultural components of human nature.[101]

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[96] Bostrom, "Transhumanism FAQ" 35; 36.

[97] Does the choice to make use of a certain technology in order "to repair nature when it fails" stem from an ethics grounded in nature *or* in technology? See Somerville, Ethical Imagination 97.

[98] Somerville, Ethical Imagination 95.

[99] Somerville, Ethical Imagination 114.

[100] Somerville, Ethical Imagination 96-97.

[101] Somerville, Ethical Imagination 98. Assisted reproductive technologies in particular can be used, intentionally or otherwise, to simultaneously manipulate these two components. Refer to the case of Sharon Duchesneau and Candy McCullough, a deaf American couple, who sought out a deaf sperm donor (in the end, they turned to a friend with five generations of congenital deafness in his family) in order to increase the prospect of having a deaf child. In this regard, deafness is not perceived as a disability, but as cultural identity. See BBC News, "Couple 'Choose' to Have Deaf Baby," 8 Apr. 2002, 16 Jan. 2010 <http://news.bbc.co.uk/2/hi/health/1916462.stm>.

However, in the presumption in favour of the natural, Somerville advocates application of the precautionary principle "when we are in doubt about whether an intervention or its outcome falls within the definition of the natural."[102]

> In the past when our powers to change the natural were extremely limited, we allowed intervention until it was shown to be harmful. I believe that the new powers science and technology have given us make this no longer an acceptable approach.[103]

Manipulating the genes in order to "repair nature when it fails"[104] is one thing, Somerville argues. A presumption that favors the natural could justify an intervention to treat a disease, but could never justify, say, the enhancement of intelligence when there is no indication of mental disorder or illness nor would it consent to the reprogramming of genes to retard ageing.[105] Here, Somerville is cautious about the ethics of radical life extension and brings to the fore at least three concerns: having "up to four concurrent generations capable of being in charge" at any one time,[106] our changing relationship to our bodies as a consequence of a technoscience born to pro-youth culture, and the devaluing of ageing.[107] "If death is part of the natural order," transhumanists retort, "so too is

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[102] Somerville, Ethical Imagination 105. Somerville insists that what is natural also depends on the *means* to achieve the outcome of a particular technological intervention. See Ethical Imagination 105.

[103] Somerville, Ethical Imagination 106.

[104] Somerville, Ethical Imagination 97.

[105] Somerville, Ethical Imagination 106; 180.

[106] Tom Mackey argues that "the idea that the old must die so that they do not hog up resources that are needed by the young is callously ageist and may facilitate intergenerational hostility." However, Mackey's appeal for a common humanity wherein "ageist distinctions are eschewed" is achieved by warding off ageing ("an accident of biology") altogether. See his "Ethical Assessment" 196-197.

[107] Somerville, Ethical Imagination 180-181. Francis Fukuyama predicts that "political, social, and intellectual change will occur much more slowly in societies with substantially longer average life spans" because of the multiple generations in active function at any given time. Francis

the human desire to overcome death;" a desire that is firmly rooted in human history.[108]

Somerville's resistance to tampering with the germline, or, as she notes, with 850 million years of evolution,[109] is analogous to current Roman Catholic Church teaching that not only sees in such interventions unforeseeable, and thus uncontrollable, risk, but transgression of the creatureliness of humanhood and the violation of the freedom of future persons. Likewise, Somerville maintains that genetic manipulation of the human embryo constitutes "an injustice of one generation imposing its will over another generation" that, ultimately, "interferes with the intrinsic being of a person" who is bereft of a certain freedom and equality because of his or her contingent origin.[110] Unlike those transhumanists who contend that human nature is infinitely malleable, Somerville is convinced that "some elements that constitute the natural in human nature are intrinsic to it and, therefore, non-negotiable. Even if we have the power to change them, we should not do so."[111] "[P]rotecting the beyond-nature part of us," Somerville says, referring to our transcendent dimension, "also requires protecting the nature part of us,"[112] which is, ultimately, ours to hold on trust from generations past for the

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Fukuyama, Our Posthuman Future: Consequences of the Biotechnology Revolution (New York: Farrar, Straus & Giroux, 2002) 66. See also Audrey R. Chapman, "The Social and Justice Implications of Extending the Human Life Span," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 356-358.

[108] Bostrom, "Transhumanism FAQ" 36.

[109] Somerville, Ethical Imagination 143.

[110] Somerville, Ethical Imagination 145.

[111] Somerville, Ethical Imagination 99.

[112] Somerville, Ethical Imagination 158. Somerville insists on the need for individuals, indeed for all of humankind, to be protected "against being designed." See The Ethical Imagination 196.

generations to come.[113] The Pontifical Council of Justice and Peace, shares this contention, but situates it specifically within a theocentric worldview, insisting that "[i]n no case […] is the human person to be manipulated for ends that are foreign to his own development, which can find complete fulfilment only in God."[114] In response to the transhumanist desire to gain control over human evolution, the Church turns, once again, to the centrality of the natural law tradition and the folly of absolute autonomy. In *Caritas in Veritate* ("Charity in Truth), Benedict XVI states:

> [n]ot only are other persons outside our control, but each one of us is outside his or her own control. *A person's development is compromised, if he claims to be solely responsible for producing what he becomes*. By analogy, the development of peoples goes awry if humanity thinks it can re-create itself through the "wonders" of technology, just as economic development is exposed as a destructive sham if it relies on the "wonders" of finance in order to sustain unnatural and consumerist growth. In the face of such Promethean presumption, we must fortify our love for a freedom that is not merely arbitrary, but is rendered truly human by acknowledgment of the good that underlies it. To this end, man needs to look inside himself in order to recognize the fundamental norms of the natural moral law which God has written on our hearts.[115]

As Daly indicates, it is the slow pace of evolution that warrants an immediate intervention on the part of humans.[116] So, for transhumanists, "there is no point *waiting* for anything, there is no reason to hope for a future redemption because we are our own redeemers."[117] For Christians, there *is* reason to hope for a future redemption, but this does not translate into apathy. After all, Christians are called

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[113] Somerville, Ethical Imagination 199; 216.
[114] Pontifical Council for Justice and Peace §133.
[115] Benedict XVI, *Caritas in Veritate* §68.
[116] Daly, "Life-Extension" 73.
[117] Daly, "Life-Extension" 73. Transhumanists attach to this ideology a certain sense of urgency. See Bostrom, "Fable" 277.

to collaborate with God in completing the work of Creation.[118] But, as Rowan Williams, the Archbishop of Canterbury, demarcates, "the creative life, death and resurrection of Jesus manifests a creator who works in, not against, our limits, our morality […]."[119] Ultimately, Daly notes, "Christians are called to the fields of medicine and technology to help fight sickness and disease as a demonstration of Christ's incarnational activity, yet with the understanding that the ultimate redemption of our bodies will be accomplished at the resurrection of the dead."[120]

Here, Daly, relying heavily on the work of Cole-Turner, bases his argument on the concept of *creatio continua*; a notion that is comparable to a point in the Catechism of the Catholic Church, which teaches that the world, and all that is therein, was created *in statu viae* (that is, in a state of journeying).[121] Oddly, Daly suggests that the image of "a new heaven and a new earth" that follows the passing of the first heaven and the first earth, at least as it is described in the Book of Revelation,[122] "questions the continuity of our current trajectory and life of our solar system."[123] This is somewhat in conflict with Ratzinger, who argues that inasmuch as an image of heaven that "integrate[s] it totally into the world, as some kind of upper story" is false, so, too, is an image of heaven that denies its relation with our world.[124] Although both transhumanism and Roman Catholicism share a want to transcend our current state – either because it is

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[118] Catechism §306-307; §378.
[119] Rowan Williams, On Christian Theology (Malden, MA: Blackwell, 2000) 76; Daly, "Life-Extension" 73.
[120] Daly, "Life-Extension" 73.
[121] Catechism §302.
[122] Rev. 21.1.
[123] Daly, "Life-Extension" 73-74.
[124] Ratzinger 237.

limiting or fallen[125] – the means (and motivation) to achieve such a thing are significantly different.

"When combined with the new technoscience," Somerville warns, "the search for perfection in ourselves, our children, our pets, our death – 'the perfect death' through euthanasia and assisted suicide – is fraught with ethical dangers, and nowhere more so than when we believe perfection lies in going beyond being human."[126] According to John Hedley Brooke, both transhumanism and Roman Catholicism have "visions of perfectibility."[127] However, transhumanists desire the perfection of mind and body in the here-and-now, which can only be attained if we are extracted from the ordinariness and limitedness of the current human state. This, in actuality, could amount to the rejection of embodiment[128] altogether, especially when transhumanists entertain the possibility of uploading the mind into a non-biological substrate (to secure what Ludwig Feuerbach refers to as "the immortality of the thinking part of us"[129]) or promote other means that converge humans and machines.

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[125] As such, the Church also shares a certain contempt for what humans have become. The Pontifical Council speaks about "the *miserable* state of the human condition marred by sin, but redeemed by God's love." See Pontifical Council for Justice and Peace §381. In addition, Paul writes: "But our citizenship is in heaven, and it is from there that we are expecting a Saviour, the Lord Jesus Christ. He will transform the body of our humiliation so that it may be conformed to the body of his glory […]" (Phil. 3.20-21). This, of course, must be read alongside the image of God and life-as-gift motifs that, at the same time, give this earthly existence its value and makes the ordinariness of life extraordinary.

[126] Somerville, Ethical Imagination 190-191.

[127] Brooke, "Visions" 1-12.

[128] Bostrom refutes this. He argues that "[a]n upload could have a virtual (simulated) body giving the same sensations and the same possibilities for interaction as a non-simulated body." See Bostrom, "Transhumanism FAQ" 18. In addition, Thomas Cole and Barbara Thompson suggest that "[l]inguistically, the term *anti-aging* wants to pry us loose from our bodies." See Thomas R. Cole and Barbara Thompson, "Anti-Aging: Are You for It or against It?" Generations 25.4 (2001-2002): 7.

[129] In his Lectures on the Essence of Religion, Ludwig Feuerbach discusses the distinction among early philosophers who sought "the immortality of the thinking part of us" and alludes to

> Bodily existence and computer simulation might be the same, cybernetic mechanism and biological organism are merely constructs of the same basic elements, and robot teleology and human goals merge. The rational mind becomes the definition of the person and the body is seen merely as a temporary vessel for the mind – possessed so to speak. Identity derived from the body, such as gender, race and ethnicity is rejected, as markers of bodily difference are removed.[130]

Waters suggests that the concepts of autonomy and freedom, which transhumanists value, "presuppose delineated and enduring borders that define and differentiate one individual [embodied identity] from another;" since posthumanhood requires that these borders become temporary and malleable, autonomy and freedom are ultimately lost.[131] This disdain for embodiment is also problematic for Roman Catholicism because the physical dimension of the human person "shares in the dignity of 'the image of God'"[132] and is "a sign and place of relations with others, with God and with the world."[133] Moreover, Roman Catholics look to the "perfection" of *virtue*, or moral excellence, in the here-and-now; as we have seen, the Catechism teaches against the idolization of *bodily* perfection.[134] It is the consummation of the whole person, Daly reminds us, that will come in the resurrection. As such, Paul claims that

> those who live according to the flesh set their minds on the things of the flesh, but those who live according to the Spirit set their minds on the things of the Spirit. To set the mind on the flesh is death, but to set the mind on the Spirit is life and peace. For this reason the mind that is set on the flesh is hostile to God; it does not submit to

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Christianity's concern for the "survival of the whole." See Ludwig Feuerbach, Lectures on the Essence of Religion, trans. Ralph Manheim (New York: Harper & Row, 1967) 13.

[130] Garner 31.

[131] Waters 78.

[132] Catechism §364.

[133] John Paul II, *Evangelium Vitae* §23.

[134] Catechism §2289.

> God's law – indeed it cannot, and those who are in the flesh cannot please God.[135]

That is, those who live "according to the flesh […] will die,"[136] because in the flesh one is a "slave to the law of sin."[137] Leander Keck suggests that by "flesh," Paul is not simply referring to the physical self, "as a source of the passions (e.g., covetousness)," but also to the domain of the body.[138] "Wretched man that I am!" Paul exclaims, "[w]ho will rescue me from this body of death?"[139] The answer for Christians can only be found in Christ. "I am the resurrection and the life," Jesus proclaims, "[t]hose who believe in me, even though they die, will live, and everyone who lives and believes in me will never die."[140]

The Christian mandate to "[b]e perfect, therefore, as your heavenly Father is perfect,"[141] allows for a possible convergence of sacred and secular understandings of perfectability in the context of personhood. This, though, is far from imaging the ideal form of an anthropomorphized Deity. To be sure, the New Testament is silent about the physical attributes of God made flesh in the person of Jesus. Perfectability in this tradition is counter-cultural and can be synopsised in Paul's ecstatic experience in which the Lord responds to his appeals from torment: "My grace is sufficient for you, for [my] power is made perfect in weakness."[142] Such is a perfection that is to be sought in voluntary poverty, in

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[135] Rom. 8.5-8.
[136] Rom. 8.13.
[137] Rom. 7.25.
[138] Leander E. Keck, "The Letter of Paul to the Romans," HarperCollins Study Bible, ed. Wayne E. Meeks, NRSV (New York: HarperCollins, 1993) 2125-2126.
[139] Rom. 7.24.
[140] John 11.25-26.
[141] Matt. 5.48.
[142] 2 Cor. 12.9.

humility, in the emulation of divine generosity and holiness; it is the perfection of charity grounded in the denial of the self as opposed to its exaltation.[143] Jesus says, "[i]f you wish to be perfect, go, sell your possessions and give the money to the poor, and you will have treasure in heaven; then come, follow me."[144]

This cannot be further from the ideal of perfection that is pursued by transhumanists whose disdain for the non-functional, non-optimal, imperfect body paves the way for a particular system of ethics that invites a new classist distinction between the enhanced and unenhanced; for transhumanists, perfection is both escapist and accessible in the here-and-now.

In addition, the Church affirms the biological and biographical continuity of the whole person after death. That is, in the resurrection, even in his glorified body, we still speak of "man remaining man, but transcending himself;"[145] in the person's supernatural vocation, human nature is *restored* and not obliterated. For transhumanists, the "[p]reservation of personal identity […] is not everything."[146] Bostrom acknowledges that "if the mode of being of a posthuman being is radically different from that of a human being, then we may doubt whether a posthuman being could be the same person as a human being, even if the posthuman being originated from a human being."[147] The question remains: at what point does enhancement, or the introduction of new capacities, jeopardize the continuity of personhood.

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[143] Matt. 19.21; Lev. 19.2; Catechism §1968.
[144] Matt. 19.21.
[145] Huxley, Knowledge 17.
[146] Bostrom, "Transhumanist Values" 6.
[147] Bostrom, "Transhumanist Values" 5.

Therefore, the Church is open to a malleability of a certain degree and kind. Its paradoxical conception of the human person as, at once, sinful *and* redeemed, mortal *and* immortal, material *and* immaterial, in the world *and* not of it reveals that human nature, because of sin, free will, and divine grace, constitutes a spectrum. Although transformation is central to the Christian tradition,[148] the attempt to radically alter human nature (which is not necessarily the same as improving upon the human condition) so that earthly life is no longer in *statu viae* toward a perfection that can only be achieved in God, obliterates this paradoxical and dynamic quality of being human.[149] A posthuman, blissfully suspended at the zenith of functionality, will find no need to reach for the heavens. The theological anthropology of the Christian tradition sees in the transhumanist vision only empty promise. The human heart, upon which the desire for God is inscribed, is restless until it rests in its Origin; "[o]nly in God," the Catechism teaches, "will he find the truth and happiness he never stops searching for."[150]

Rooting the Natural in Nature

For Somerville, respect for nature and the natural requires a certain connection to

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[148] Conversion, Baptism, the transfiguration, transubstantiation in the Eucharist, and the resurrection are important examples of transformation in Christianity.

[149] Zygmunt Bauman is convinced that this paradox, especially regarding our awareness of mortality and our want to transcend it, is, as Ulf Görman puts it, "the ultimate pre-requisite for human culture and creativity." See Ulf Görman, "Never Too Late to Live a Little Longer? The Quest for Eternal Life and Immortality – Some Ethical Considerations," Future Perfect? God, Medicine and Human Identity, ed. Celia Deane-Drummond and Peter Manley Scott (London: T & T Clark International, 2006) 143; 152; Zygmunt Bauman, Mortality, Immortality and Other Life Strategies (Cambridge: Polity P, 1992).

[150] Catechism §27; §30. Diogenes Allen makes clear that, for Christians, "[h]owever good this life is and may become, it is still far less good than eternal life." See Diogenes Allen, "Epilogue: Extended Life, Eternal Life: A Christian Perspective," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 388-389.

nature and the natural,[151] which, she believes, is repudiated in the core transhumanist value of exploring and pursuing posthumanhood;[152] that is, an indifference to human nature is rooted in an indifference to nature itself. In the same way, Waters reflects on the radical transformation of humans, whose flourishing as posthumans will require less dependence on natural ecologies and processes; as such, there remains no sense of urgency for protecting the environment unless it contributes to flourishing and not simply to human survival.[153]

> [I]ndependence from ecological processes is achieved by shifting human dependence from nature to artifice. In deploying technology to become progressively less dependent on natural processes, humans will be using artifacts of their own design, and therefore subject to their control. Yet the eventual success of the posthuman project is predicated on the evolution of artificial life that is superior to humans, and therefore not under their control. Dependence is not so much overcome as displaced; natural necessity is exchanged for an artificial counterpart.[154]

There is some truth to this. Although Bostrom claims that transhumanist technologies could be more ecologically sound than those we have now and that

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[151] Somerville, Ethical Imagination 111. Fukuyama agrees that "[t]here are good prudential reasons to defer to the natural order of things and not to think that human beings can easily improve on it through casual intervention […]. [E]volution may be a blind process, but it follows a ruthless adaptive logic that makes organisms fit for their environments." See Our Posthuman Future 97-98. Furthermore, Hans Jonas makes an interesting case in favour of this connection between humans and nature. He argues that continued metabolism, which denotes an exchange of matter with the environment, is a reclaiming of life, "which ever reasserts the value of Being against its lapsing into nothingness." See Hans Jonas, "The Burden and Blessing of Mortality," Hastings Center Report 22.1 (1992): 34-36.

[152] Somerville, Ethical Imagination 113; Bostrom, "Transhumanist Values" 5-6. In addition, Bostrom discusses a number of "derivative transhumanist values," including: morphological freedom, autonomy, philosophical fallibilism, pragmatism, peace, international cooperation, diversity, the respect for all sentient beings, the importance of saving lives (through life extension, cryonics, and anti-ageing research), a rejection of the idea of hubris, as well as the improvement of understanding and intelligence. See Bostrom, "Transhumanist Values" 8-10.

[153] Waters 138.

[154] Waters 138-139.

"humans and our artifacts and enterprises are part of the extended biosphere,"[155] his vision of sustainability confirms the concern about separating humans from nature that both Somerville and Waters have brought to the fore. Bostrom looks to technology for salvation from the current eco-crisis. He is a champion of molecular nanotechnology in particular because it is:

> an anticipated manufacturing technology that will make it possible to build complex three-dimensional structures to atomic specification using chemical reactions directed by nonbiological machinery. In molecular manufacturing, each atom would go to a selected place, bonding with other atoms in a precisely designated manner. Nanotechnology promises to give us thorough control of the structure of matter.[156]

Assuming absolute dominion over the material world in this way is reminiscent of the Baconian depiction of nature as "holding secrets from man, as keeping back from him knowledge which should be his."[157] Here, humankind is not invested in its connection with the natural world; it is detached and aloof.[158] Deep ecologists would argue that this shallow ecological perspective is rooted in an anthropocentrism that does not seek a change in human consciousness regarding, for instance, the intrinsic value of nature, the place of humans in the natural order, or the destructive economic paradigm that fuels the commodification of nature and its overconsumption. Interestingly, among the various circumstances that contribute to the current eco-crisis, the Foundation for Deep Ecology includes:

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[155] Bostrom, "Transhumanism FAQ" 38.
[156] Bostrom, "Transhumanism FAQ" 9.
[157] Cameron Wybrow, "The Bible, Baconism, and Mastery over Nature: The Old Testament and Its Modern Misreading," diss., McMaster U, 1990, 292-293; Kinsley, Ecology 128.
[158] Kinsley, Ecology 129-130.

> [t]echnology worship and an unlimited faith in the virtues of science; the modern paradigm that technological development is inevitable, invariably good, and to be equated with progress and human destiny. From this, we are left dangerously uncritical, blind to profound problems that technology and science have wrought, and in a state of passivity that confounds democracy.[159]

Bostrom pledges that, with the development of molecular nanotechnology, "we will not only have clean and efficient manufacturing of almost any commodity, but we will also be able to clean up much of the mess created by today's crude fabrication methods."[160] Ultimately, though, the transhumanist answer to a number of major environmental problems fuelling the eco-crisis is found in disconnecting humankind from the natural world. For example, Bostrom assures that:

> [n]anotechnology would […] eventually make it economically feasible to build space-based solar plants, to mine extraterrestrial bodies for ore and minerals, and to move heavy industries off-earth. The only truly long-term solution to resource shortage is space colonization.[161]

Although he is not convinced that radical life extension will have much of an effect on reproductive rates and overpopulation,[162] Bostrom proposes space colonization as a potential option. Since the number of people that the Earth can "sustain at a comfortable standard of living is a function of technological development,"[163] mastery over the material world through heightened

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[159] Foundation for Deep Ecology, "Mission Statement," 14 Sept. 2009 <http://www.deepecology.org/mission.htm> par. 4.
[160] Bostrom, "Transhumanism FAQ" 29.
[161] Bostrom, "Transhumanism FAQ" 38.
[162] Bostrom, "Transhumanism FAQ" 29-30.
[163] Bostrom, "Transhumanism FAQ" 28. Bostrom acknowledges that this also depends on how resources are distributed.

technologization and migration to some habitable extraterrestrial space are the only conceivable solutions.

The Medicalization of Culture and Morality

In Health, Healing, and Religion: A Cross-Cultural Perspective, David Kinsley argues that the "semantic expression of the medicalization of culture is more than merely metaphoric."[164] As a result, a variety of dimensions and features of the human condition, including ageing and death, have become medically problematized in such a way that we might speak of these as being deviant.[165] According to Daly, "[t]he science of genetics tells us, in part, how our nature can be viewed as defective;"[166] in a general way, the genetic defects that we all inherit, Ronald Cole-Turner argues, "supports the traditional theological notion of the disordered self."[167] As such, "genetic engineering" for Cole-Turner "opens redemptive possibilities for human action" that do not only carry therapeutic potential, but as a metaphor of God's creative activity in which we participate will lay bare "new dimensions of existence."[168]

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[164] David R. Kinsley, Health, Healing, and Religion: A Cross-Cultural Perspective (Upper Saddle River: Prentice, 1996) 179.
[165] Kinsley, Health 178-179.
[166] Daly, "Life-Extension" 65.
[167] Ronald Cole-Turner, The New Genesis: Theology and the Genetic Revolution (Louisville, KY: Westminster/John Knox P, 1993) 87.
[168] Cole-Turner, New Genesis 97; 98. Cole-Turner implies, more than once, that God's creative activity *depends* on human innovation. See, for instance, New Genesis 98; 104; 108. However, he goes on to issue a warning: "[t]he grave danger we face is that our discontent with nature so easily turns to protest against the creator for having made us to be less than we think we should be. We find ourselves less healthy, less strong, less perfect than we think we have a right to be." See Ronald Cole-Turner, "Biotechnology: A Pastoral Reflection" Theology Today 59.1 (2002): 45.

Health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[169] becomes the *summum bonum* of humankind, or what Kinsley calls a "secular salvation"[170] of sorts. The medicalization of ageing, however, adheres to the "ageing as dis-*ease*" tenet of transhumanism. The (bio)medicalization of ageing is well documented[171] as is the conceptualization of ageing as disease.[172] Indeed, some have argued that if ageing is classified as a disease, "it holds out the prospect of a cure."[173] Others are content with the understanding of ageing as a natural process, not unlike adolescence, that can be (and is) a target for medical intervention (though not with the aim to cure) without needing to be declared a "disease."[174]

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[169] World Health Organization, Constitution of the World Health Organization, 7 Apr. 1948, 3 Dec. 2009 <http://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf> 1.

[170] Kinsley, Health 178.

[171] C. L. Estes and E. A. Binney, "The Biomedicalization of Aging: Dangers and Dilemmas," The Gerontologist 29 (1989): 587-596. Leon Kass is convinced that "victory over mortality is the unstated but implicit goal of modern medical science […]." See Leon Kass, "L'Chaim and Its Limits: Why Not Immortality?" The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 307.

[172] See Richard C. Adelman, "The Alzheimerization of Aging," The Gerontologist 35.4 (1995): 526-532; Leonard Hayflick, "Anarchy in Gerontological Terminology," The Gerontologist 42.3 (2002): 416-421; Leonard Hayflick, "Has Anyone Ever Died of Old Age?" Has Anyone Ever Died of Old Age?: 55th Annual Scientific Meeting of the Gerontological Society of America, ed. Robert N. Butler (New York: International Longevity Center-USA, 2002) 1-4; Harry Moody, "Dying from Old Age: Two Horns of a Dilemma," Has Anyone Ever Died of Old Age?: 55th Annual Scientific Meeting of the Gerontological Society of America, ed. Robert N. Butler (New York: International Longevity Center-USA, 2002) 5-9.

[173] Nancy Harding and Colin Palfrey, The Social Construction of Dementia: Confused Professionals? (London: Jessica Kingsley, 1997) 139.

[174] John Vincent, "Ageing Contested: Anti-Ageing Science and the Cultural Construction of Old Age," Sociology 40.4 (2006): 687-688. In this way, the attempt to cure ageing is comparable to an attempt to cure, say, child development because both are natural processes. See Leonard Hayflick, "Anti-Aging Medicine: Hype, Hope, and Reality," Generations 25.4 (2001-2002): 20-21.

However, Arthur Caplan contests the assumption that ageing is a natural process and refutes the claim that ageing is an inherent part of human nature;[175] he considers it unreasonable not to define ageing as a disease when "what goes on during the aging process closely parallels the changes that occur during paradigmatic examples of disease."[176] Our conceptualizations of normalcy and naturalness largely determine what constitutes "disease" and what necessitates medical intervention; they not only feature prominently in discussions about prolongevity, as we have seen, but are at the forefront of deliberations about euthanasia and physician-assisted suicide.[177]

In fact, the transhumanist consideration of ageing as a deficit model of existence is very much in line with this reasoning. Transhumanists argue that ageing is not only incapacitating (especially when it is equated with disease) or dysfunctional (which becomes grounds for institutionalization and, perhaps, retirement), but deviant as it is an impediment to human thriving and, ultimately, the harbinger of death. In The Immortalist, Alan Harrington, in true transhumanist fashion, regards ageing and death as "no longer acceptable" and "turns for 'salvation' to 'medical engineering and nothing else,' insisting that 'our messiahs will be wearing white coats.'"[178]

Kinsley is convinced that the very process of medicalization is wrought with moral underpinnings as judgments are made about what conditions should be

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[175] Arthur Caplan, "An Unnatural Process: Why It Is Not Inherently Wrong to Seek a Cure for Aging," The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 283.
[176] Caplan, "Unnatural Process" 280.
[177] Caplan, "Unnatural Process" 274-275.
[178] qtd. in Lasch, "Aging in a Culture without a Future," Hastings Center Report 7.4 (1977): 43.

identified as deviating from some socially recognized norm.[179] Transhumanism engages in this type of moral arbitration with the ageing process by reconstructing (or revisioning) what *should* be considered normative based on new developments in medicine and biotechnology. "As deviant," Kinsley explains, "the condition is considered undesirable, a condition from which the 'patient' should seek relief."[180] Transhumanists are adamant about empowering "patients" (that is, persons who allow things to happen to them); this sense of agency over passivity necessarily assumes that ageing is neither (or eventually will not be) inevitable nor preferable by any common-sensed individual. Christopher Lasch is not convinced. "Neurotic in its psychological origins and inspiration, superstitious in its faith in medical deliverance," he declares, "the prolongevity movement expresses in characteristic form the anxieties of a culture that believes it has no future."[181]

Transhumanism and the Spectre of Ageing

In As You Like It, Shakespeare describes what has famously been called the "Seven Ages of Man" through the melancholic monologue of the discontented Jaques, a lord whose dreary outlook shows contempt for human life as an inglorious and predictable drama performed, as it were, in an ordered succession

[179] Kinsley, Health 180; 183.
[180] Kinsley, Health 183.
[181] Lasch 44.

of seven acts. The last scene, that of old age, is described as "second childishness and mere oblivion, / Sans teeth, sans eyes, sans taste, sans everything."[182]

Similarly, Isaac Asimov wrote, in his 1967 collection of speculative essays entitled Is Anyone There?, that our brain is only useful to human society until we are thirty-five.[183] William Osler, the physician *par excellence* in the English-speaking world of his time, was of the same mind. His valedictory address at the Johns Hopkins University School of Medicine in February of 1905, delivered just before taking up the prestigious Regius Professorship in Medicine at Oxford (offered by Edward VII no less), would become a blemish on an otherwise illustrious career. In it, Osler hails the contributions of young minds in the academy, contending that "[t]he effective, moving, vitalizing work of the world is done between the ages of twenty-five and forty – these fifteen golden years of plenty, the anabolic or constructive period, in which there is always a balance in the mental bank and the credit is still good."[184] He laments the "comparative uselessness of men above forty years of age"[185] and suggests "the incalculable benefit it would be in commercial, political and in professional life" should people be retired at sixty.[186]

In addition, Osler makes a playful (though inaccurate) reference to Anthony Trollope's ostensibly satirical dystopian piece called The Fixed Period[187]

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[182] William Shakespeare, As You Like It, ed., George Lyman Kittredge (Boston: Ginn, 1939) 2.7.165-166.
[183] Isaac Asimov, Is Anyone There*?* (Garden City, NY: Doubleday, 1967) 236.
[184] William Osler, *Aequanimitas*: With Other Addresses to Medical Students, Nurses and Practitioners of Medicine, 2nd ed. (London: H. K. Lewis, 1926) 398.
[185] Osler 397.
[186] Osler 398-399.
[187] See Anthony Trollope, The Fixed Period, 2 vols. (London: William Blackwood, 1882).

that tells of a certain college from which the citizens of fictional Britannula, once reaching sixty years of age, would retreat for a year of contemplation before being euthanized (by chloroform, according to Osler).[188] He calls this an "admirable scheme" because "the history of the world shows that a very large proportion of the evils may be traced to the sexagenarians – nearly all the great mistakes politically and socially, all of the worst poems, most of the bad pictures, a majority of the bad novels, not a few of the bad sermons and speeches."[189]

Although Osler constantly dismissed the reference as a poor attempt at humor (perhaps as a means to appease colleagues and students on the occasion of his departure), he stood by his claims about the futility of old age, while recognizing that he himself was already fifty-five years old.[190] The media sensationalized the speech, which became known as "The Fixed Period Controversy," alleging that Osler advocated the use of chloroform to extinguish old age. In fact, Charles G. Roland reports that "the verb 'to oslerize' had a brief vogue as a synonym for 'to kill by chloroforming.'"[191]

As biological shortcomings that require fixing, Bostrom includes: ageing, disease, feeble memories and intellects, a limited emotional repertoire, and an inadequate capacity for sustained well-being.[192] At the same time, the World Transhumanist Association assures that it "will be coordinating and seeking

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[188] Osler 399.
[189] Osler 399. Osler does not deny that there are exceptions to this rule.
[190] Osler viii; Charles G. Roland, "Sir William Osler," Dictionary of Canadian Biography Online, 2000, 5 Apr. 2009 <http://www.biographi.ca/009004-119.01-e.php?BioId=41753> par. 18; Laura Davidow Hirshbein, "William Osler and *The Fixed Period*: Conflicting Medical and Popular Ideas About Old Age," Archives of Internal Medicine 161 (2001): 2075.
[191] Roland par. 18.
[192] Bostrom, "Transhumanist Values" 7.

consultation with groups that promote more universal access to health care, and with senior citizens groups and organizations of the disabled to help them challenge ageist and ableist attitudes that discourage the full utilization of health technology."[193] However, for a movement that seeks to weed out ageism and ableism, the emphasis on enhancing functionality exponentially (and steering away from the "half-baked beginning"[194] that is human nature) could lend to a certain contempt for frailty, vulnerability, disability, and dependency; functional definitions of personhood often list these as criteria for disqualification from the moral category of person.[195]

Transhumanism expects to stomp out these "isms" by using technology to fix, or eliminate, the biological shortcomings that rouse attitudes of prejudice to begin with; the idea is that ageism and ableism will wane once the human condition is relieved of ageing and disability respectively. In any event, our conceptions of age/ageing and disability would have to change if the transhumanist project comes to fruition. The former will have to consider exceptional longevity and its many implications regarding, among other things, reproduction, distributive justice, economics, social security, suicide, education, and retirement as well as its potential exacerbation of the current overpopulation problem. The latter will be reinterpreted based on revised ideas about what constitutes "normal" ability and function. Although transhumanists are steadfast

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[193] World Transhumanist Association, "Senior Citizens, 2008, 4 Nov. 2009 <http://www.transhumanism.org/index.php/wta/communities/seniorcitizens/> par. 3.

[194] Bostrom, "Transhumanist Values" 1.

[195] Transhumanism espouses a personalist definition of the human person. In its "Campaign for the Rights of the Person," Humanity+ clearly makes a distinction between personhood and humanness. See Humanity+, "Campaign for the Rights of the Person," 17 May 2010 <http://humanityplus.org/projects/campaign-for-the-rights-of-the-person/>.

about protecting autonomy, those who freely choose to forgo enhancement technologies will form a new category of disability and a new type of "interaction between features of a person's body and features of the society in which he or she lives."[196] Waters reminds us that "[w]hen an old species is forced to compete with a new superior one, the former must either adapt or become extinct."[197]

Words matter. The underlying ethics of two social movements, often considered singular in purpose, is wrapped up in the language of "anti-ageing" and "prolongevity." The prefix of the former presumably suggests an undesirable condition, whereas that of the latter indicates an ideal. Very few[198] will speak of "pro-ageing" in any way that identifies integrity, dignity, worth, and the preservation of personhood beyond the arbitrarily sanctioned age – sixty-five years – at which humans are no longer considered functional.[199]

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[196] The World Health Organization defines "disabilities" as "an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Thus disability is a complex phenomenon, reflecting an interaction between features of a person's body and features of the society in which he or she lives." See World Health Organization, "Disabilities," 2010, 8 Aug. 2010 <http://www.who.int/topics/disabilities/en/>.

[197] Waters 64.

[198] That beauty knows no age is the recent motto of the Dove "pro-age" campaign. See Dove, "Too Young to Be Old: Dove Pro-Age," 14 Mar. 2008, 3 Aug. 2009 <http://www.dove.us/#/CFRB/ arti_CFRB.aspx[cp-documentid=7051118]>.
see www.doveproage.com/

[199] The suspension of mandatory retirement in all Canadian provinces and territories only came to pass in July 2009, although there are provisions in the legislation that do allow for forced retirement due to substandard physical ability. Furthermore, in March 2009, the European Court of Justice ruled that compulsory retirement at 65 in the United Kingdom was not in breach of European Union law insofar as the enforcement could be legitmated by the UK court. See CBC News, "Mandatory Retirement Fades in Canada," 20 Aug. 2009, 4 July 2010 <http://www.cbc.ca/canada/story/2009/08/20/mandatory-retirement-explainer523.html> and Hilary Osborne, "British Compulsory Retirement Age Can Stay at 65, Says European Court," The Guardian 6 Mar. 2009, 4 July 2010 <http://www.guardian.co.uk/money/2009/mar/06/retirement-age-ruling>.

Enter ageism: a systematic form of discrimination against the elderly as a homogeneous group of physical and mental incompetents.[200] The cultural interpretation of advanced age as a time of decline, regression, pathology, and immaturity leads to stigma, social isolation, infantilization, and dehumanization.[201] Some philosophers argue that individuals' moral claim to life is fundamentally dependent on their capacity for higher mental function.[202] To be a person of full moral status, that is, one must possess self-consciousness, rationality, a sense of the future, a sense of continuity over time, and the ability to suffer. Functional perceptions of personhood operate on an "all-or-none" or hierarchical (to the extent that one's degree of function, utility, and performance determines human worth) principle, imposing a conditionality on human dignity that is directly proportional to the proper functioning of the optimal body.[203] In this way, ageing is not simply regarded as a biological deficiency, but a threat to identity (perhaps even existence).

Nancy Harding and Colin Palfrey argue that the major premise of the sociology of the ageing body is that the body is inextricably linked to identity.[204] Here, though, we are to do away with the simplistic notion of the body as a biological machine and, instead, recognize it as "an unfinished biological and

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[200] Rory H. Fisher, "The Health Care System and the Elderly," Bioethics Update 3.1 (2003): 1. See also Robert Butler, "Age-Ism: Another Form of Bigotry," The Gerontologist 9.4 (1969): 243–246.

[201] Karen A. Lyman, "Living with Alzheimer's Disease: The Creation of Meaning Among Persons with Dementia," Journal of Clinical Ethics 9.1 (1998): 51; Cory Andrew Labrecque, "Transcending the Functional Self: A Discourse on the Continuity of Personhood in Degenerative Dementia" 2-3.

[202] Here, I include: Helga Kuhse, Allen Buchanan, James W. Walters, Michael Tooley, and Peter Singer.

[203] Labrecque 6.

[204] Harding and Palfrey 127.

social phenomenon which is transformed, within certain limits, as a result of its entry into, and participation in, society."[205] If self-identity is bound up with the body, which in itself is amenable to change through social relations, then societal attitudes toward the ageing body play an important role in the preservation of personhood;[206] hence the importance of this present discussion of transhumanism, a philosophy that considers ageing to be a deficit model of existence.

It comes as no surprise that the dominant materialistic worldview of our time views the human body as ultimately significant (personhood is often bestowed only on those with optimally functioning bodies); it is all that we have and it is what it all happens to. Paul, in his first letter to the Church at Corinth, renders a popular verdict on this matter, calling the body "a temple of the Holy Spirit,"[207] which the Church has interpreted as grounds for the body having a share in the dignity of the *imago Dei*.[208] Whereas the spiritual soul is immortal, the perishable body is destined for glorification at the Resurrection when it is believed to be reunited with its animating principle.[209] To speak of a "cult of the body," particularly in the context of a material worldview obsessed with corporeal image, certain bodies (such as those marginalized by functional definitions of personhood) are looked upon with contempt. The aged and the disabled body, for instance, are the antithesis of the image of bodily perfection, which exalts youth and optimal functionality. This mechanistic vision of the body, characteristic of transhumanism, is certainly not novel; indeed, it has been very much a part of the

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[205] C. Shilling, The Body and Social Theory (London: Sage, 1993) 12.
[206] Harding and Palfrey 139; Labrecque 12.
[207] 1 Cor. 6.19.
[208] Catechism §364.
[209] Catechism §366.

biomedical model (though many, such as George Engel who champions the biopsychosocial model,[210] have sought to correct it).

"Ageism reflects a deep seated uneasiness on the part of the young and middle-aged – a personal revulsion to and distaste for growing old, disease, disability; and a fear of powerlessness, 'uselessness', and death."[211] If, as Harding and Palfrey argue, "[t]he ageing body is feared, for it shows that all humankind's investment in the body is ultimately useless,"[212] then all the more urgent, transhumanists will argue, is our need to develop technological interventions to preserve the body from ageing or to escape the confines of the human body altogether. Instead of countering ageism, the transhumanist philosophy condemns ageing as an absolute affront to the autonomy that we so champion today as chief of the bioethical principles. Their agenda thrives on an endemic fear of powerlessness fostered by functional definitions of personhood that find prominence in the scientific and philosophical literature. The aim to eliminate ageing by "youthenizing" the elderly (that is, those who *choose* to be "youthenized") is nothing short of the absorption of what is thought to be "deviant" into what is deemed to be "norm" (or ideal) that is a hallmark of discrimination. To be sure, the "anti-ageing" sentiment as expounded here becomes all too "anti-human."[213]

The divide between transhumanism, the anti-ageing movement, and prolongevity on one side and "conservative" biogerontology on the other is made

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[210] George L. Engel, "The Need for a New Medical Model: A Challenge for Biomedicine," Science, New Series 196.4286 (1977): 129-136.
[211] Butler, "Age-Ism" 243.
[212] Harding and Palfrey 139.
[213] Cole and Thompson 7.

transparent here. Although the latter affirms that "[i]t is an inescapable biological reality that once the engine of life switches on, the body inevitably sows the seeds of its own destruction,"[214] there is no explicit denial that future research might very well secure a certain retardation of this "inevitable" decline and the extension of quality life. The former is convinced that the day has dawned.[215]

Engaging "Techno-Optimists" and "Radical Mortalists" on the Ethics of Prolongevity

In his comparative study of transhumanist and Christian perspectives on radical life extension, Daly notes that:

> [t]he question of whether we *can* slow aging is being gradually replaced by the question of whether we *should* slow aging. The battle lines are typically drawn between transhumanists on the one hand, and those with religious convictions on the other. Yet, the line of separation is not that clear. Certainly, while the significant; if not indefinite expansion of the human lifespan is a key tenet in transhumanist philosophy, one need not be a transhumanist to be in favor of a longer, healthier life. Similarly, one's religious convictions need not rule out the indefinite expansion of earthly life. Nor does this require transhumanist philosophy to be antithetical to belief in God or other theistic convictions.[216]

Here, Daly reports that the debate is often ill-framed in terms of "techno-optimists"[217] of the transhumanist camp versus the "radical mortalists" who

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[214] S. Jay Olshansky, Leonard Hayflick, and Bruce A. Carnes, "No Truth to the Fountain of Youth," Scientific American 14.3 (2004): 99.

[215] Olshansky, Hayflick, and Carnes, "No Truth" 98-102.

[216] Daly, "Life-Extension" 58.

[217] Bostrom rejects this description and argues that any "thoughtful transhumanist" recognizes the potential harms that may come with the irresponsible use of technology, such as the extinction of intelligent life and the widening of social inequalities. See Bostrom, "Transhumanist Values" 1-2.

oppose prolongevity.[218] This latter categorization comes from Ronald Bailey, who includes Leon Kass, Daniel Callahan, and Francis Fukuyama among its ranks.[219]

In an interview for MIT's Technology Review, Emily Singer questioned Leonard Hayflick about a provocative session entitled "Ageing Is No Longer an Unsolved Biological Problem" that was organized for the Nineteenth World Congress of Gerontology and Geriatrics in Paris on July 6, 2009. Singer asked Hayflick what the implications of his understanding about the biological cause of ageing were for a *solution* to ageing. His response was terse, but telling: "Why would you want to do that?"[220] Hayflick suggests that not enough thought has been given to the social, political, and economic ramifications of radically extending human life; he is particularly attentive to the ethical havoc that such developments will wreak on the intergenerational dimension of human society.[221]

Moreover, Hayflick anticipates problems that will come with the unjust distribution of radical life extension technologies should they become available. He is certain that these will first go to the researchers who developed them, followed by the rich and powerful; quite possibly, they may never reach any one

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[218] Daly, "Life-Extension" 58-59. Steven Horrobin claims that the classic division between liberals and conservatives begins to fade in the matter of radical life extension with a significant representation of the former, who are often considered to be "pro-choice," advocating caution and restriction and the latter, often characterized as "pro-life," resisting the extension of human life altogether. See Steve Horrobin, "Immortality, Human Nature, the Value of Life and the Value of Life Extension," Bioethics 20.6 (2006): 280-281.

[219] Ronald Bailey, "Forever Young: The New Scientific Search for Immortality," Reason Magazine Aug. 2002, 7 July 2008 <http://reason.com/archives/2002/08/01/ forever-young/> 6.

[220] Leonard Hayflick, "Can Aging Be Solved? Gerontology Pioneer Leonard Hayflick Discusses the Biological Causes of Aging," interview with Emily Singer, Technology Review 1 July 2009, 10 Mar. 2010 <http://technologyreview.com/ biomedicine/22954/ page1/>.

[221] Hayflick, "Can Aging Be Solved?" See also Leonard Hayflick, "The Future of Ageing," Nature 408 (2000): 269.

else.[222] In any event, if these technologies were to be made universally accessible, then we would have to come to terms with not only radically extending the lives of those who will continue to contribute to human civilization,[223] but also to those who will continue to threaten it, like "the antisocial killers, tyrants and those guilty of genocide."[224] This is in addition to the incalculable consequences of overpopulation that will undoubtedly be heightened by these technologies, "from the indiscriminate destruction of the planet to mass starvation, wars, economic inequities, and health failures."[225] Ultimately, Hayflick contends, "our society must learn that ageing and youth should be valued equally if for no other reason than the youth in developed countries have an excellent chance of experiencing the phenomenon that they may now hold in such low esteem."[226]

One of the basic conditions for realizing the transhumanist vision is technological accessibility. Although "[i]t would be sub-optimal if the opportunity to become posthuman were restricted to a tiny elite," Bostrom explains, "[w]ide access does not argue for holding back," but, instead, "underlies the moral urgency" of the transhumanist project which accentuates individual freedom and choice.[227]

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[222] Hayflick, "Future of Ageing" 269. Christine Overall calls for "affirmative prolongevitism," which looks to increase the life expectancy of disadvantaged populations. See Christine Overall, "Longevity, Identity, and Moral Character: A Feminist Approach." The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 287.

[223] "Imagine what might have become of a Beethoven or a Goethe," Bostrom envisions, "if they had still been with us today." See Bostrom, "Transhumanist Values" 3.

[224] Hayflick, "Future of Ageing" 269. See also Fukuyama, Our Posthuman Future 65.

[225] Leonard Hayflick, How and Why We Age (New York: Ballantine, 1994) 339.

[226] Hayflick, "Future of Ageing" 269.

[227] Bostrom, "Transhumanist Values" 7-8.

> Humans differ widely in their conceptions of what their own perfection or improvement would consist in. Some want to develop in one direction, others in different directions, and some prefer to stay the way they are. It would neither be morally unacceptable for anybody to impose a single standard to which we would all have to conform. People should have the right to choose which enhancement technologies, if any, they want to use. In cases where individual choices impact substantially on other people, this general principle may need to be restricted, but the mere fact that somebody may be disgusted or morally affronted by somebody else's using technology to modify herself would not normally a legitimate ground for coercive interference. Furthermore, the poor track record of centrally planned efforts to create better people (e.g. the eugenics movement and Soviet totalitarianism) shows that we need to be wary of collective decision-making in the field of human modification.[228]

How society will go about restricting individual "free use" of these technologies (if, and when, this use threatens the common good) while being "wary of collective decision-making" regarding human modification is a question that is not addressed in the transhumanist literature. If, according to the Catechism, the common good presupposes respect for the human person, looks to "the exercise of the natural freedoms indispensable for the development of the human vocation," requires social well-being and the stability of a just order, and recognizes the neighbour as "another self,"[229] then human activity that does not promote the integral dignity of persons, the quality of living conditions, and "the meeting in solidarity of peoples" is neither in tune with the social nature of the human person nor in accordance with God's plan.[230]

In this way, the Church warns against *social* sins "committed against the justice due in relations between individuals, between the individual and the

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[228] Bostrom, "Transhumanist Values" 8.
[229] Catechism §1907-1909; §1931.
[230] Pontifical Council for Justice and Peace §35.

community, and also between the community and the individual."[231] The Pontifical Council for Justice and Peace asserts that "[t]he human person cannot find fulfillment in himself, that is, apart from the fact that he exists 'with' and 'for' others;"[232] as social beings, humans can neither live nor develop their potential unless they relate to others.[233]

As such, "[t]he principle of the common good, *to which every aspect of social life must be related* if it is to attain its fullest meaning, stems from the dignity, unity and equality of all people."[234] Only a society that has the common good as its primary goal can properly be at the service of the human being and no one is exempt from cooperating in its development.[235] Scientists, technicians, politicians, and legislators who work in the field of biotechnology must account for these criteria of justice and solidarity,[236] the Church says, and maintain the common good at the forefront of decision-making regarding its use.[237] At the same time, the Pontifical Council makes clear that:

> *[t]he common good of society is not an end in itself; it has value only in reference to attaining the ultimate ends of the person and the universal common good of the whole of creation*. God is the ultimate end of his creatures and for no reason may the common good be deprived of its transcendent dimension, which moves beyond the historical dimension while at the same time fulfilling it. This perspective reaches its fullness by virtue of faith in Jesus'

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[231] Pontifical Council for Justice and Peace §118.
[232] Pontifical Council for Justice and Peace §165.
[233] Pontifical Council for Justice and Peace §110.
[234] Pontifical Council for Justice and Peace §164, italics mine. See also Benedict XVI's discussion of the common good in his Encyclical Letter *Caritas in Veritate* on Integral Human Development in Charity and Truth,Vatican City: Libreria Editrice Vaticana, 2009, 11 June 2010 <http://www.vatican.va/holy_father/ benedict_xvi/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate_en.html> §7.
[235] Pontifical Council for Justice and Peace §165; §167.
[236] Pontifical Council for Justice and Peace §474.
[237] Pontifical Council for Justice and Peace §478-479.

> Passover, which sheds clear light on the attainment of humanity's true common good. Our history – the personal and collective effort to elevate the human condition – begins and ends in Jesus: thanks to him, by means of him and in light of him every reality, including human society, can be brought to its Supreme Good, to its fulfilment. A purely historical and materialistic vision would end up transforming the common good into a simple *socio-economic well-being*, without any transcendental goal, that is, without its most intimate reason for existing.[238]

In the end, "[e]xcessive economic and social disparity between individuals and peoples of the one human race is a source of scandal and militates against social justice, equity, human dignity, as well as social and international peace."[239] This is consistent with *Dignitas Personae* in which the Congregation for the Doctrine of Faith articulates the Church's stance regarding human enhancement and genetic modification. The teaching is worth repeating here:

> Some have imagined the possibility of using techniques of genetic engineering to introduce alterations with the presumed aim of improving and strengthening the gene pool. Some of these proposals exhibit a certain dissatisfaction or even rejection of the value of the human being as a finite creature and person. Apart from technical difficulties and the real and potential risks involved, such manipulation would promote a eugenic mentality and would lead to indirect social stigma with regard to people who lack certain qualities, while privileging qualities that happen to be appreciated by a certain culture or society; such qualities do not constitute what is specifically human. This would be in contrast with the fundamental truth of the equality of all human beings which is expressed in the principle of justice, the violation of which, in the long run, would harm peaceful coexistence among individuals. Furthermore, one wonders who would be able to establish which modifications were to be held as positive and which not, or what limits should be placed on individual requests for improvement since it would be materially impossible to fulfil the wishes of every single person. Any conceivable response to these questions would, however, derive from arbitrary and questionable criteria. All of this leads to the conclusion that the prospect of such an intervention would end sooner or later by

[238] Pontifical Council for Justice and Peace §170.
[239] Catechism §1938.

> harming the common good, by favouring the will of some over the freedom of others. Finally it must also be noted that in the attempt to create *a new type of human being* one can recognize *an ideological element* in which man tries to take the place of his Creator. In stating the ethical negativity of these kinds of interventions which imply *an unjust domination of man over man,* the Church also recalls the need to return to an attitude of care for people and of education in accepting human life in its concrete historical finite nature.[240]

On this note, Bostrom explains that transhumanists wish to "de-emphasize" enhancements that are merely positional (such as those that gain competitive advantage through, say, an increase in athletic prowess), but emphasize those (such as enhanced health or cognition) that will intrinsically benefit the individual or society.[241] Francis Fukuyama, in Our Posthuman Future, does not dispute the potential gains that will come to a society with, say, higher average intelligence. But there are, he warns, deeply problematic implications of enhancement:

> People want smarter kids so that they will get into Harvard, for example, but competition for places at Harvard is zero-sum: if my kid becomes smarter because of gene therapy and gets in, he or she simply displaces your kid. My decision to have a designer baby imposes a cost on you (or rather, your child), and in the aggregate it is not clear that anyone is better off. This kind of genetics arms race will impose special burdens on people who for religious or other reasons do not want their children genetically altered; if everyone around them is doing it, it will be much harder to abstain, for fear of holding their own children back.[242]

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[240] Congregation for the Doctrine of Faith, *Dignitas Personae* §27.

[241] Bostrom, "Transhumanism FAQ" 22. Bostrom's interest in the benefit of society at large and concern about wider access to the technologies in question so that "everybody should have the opportunity to become posthuman" resonates well with what some have called "democratic transhumanism." At the same time, his emphasis on individual autonomy and reference to freedom from undue regulation is characteristic of "libertarian transhumanism." See Garner 30-31; Bostrom, "Transhumanist Values" 7-9.

[242] Fukuyama, Our Posthuman Future 97. For this, and a number of other reasons, Fukuyama has called transhumanism one of "the world's most dangerous ideas." See Francis Fukuyama, "The World's Most Dangerous Ideas: Transhumanism," Foreign Policy 144 (2004): 42-43.

However, this, in itself, is the privileging of certain traits over others in the same, equally problematic way that certain philosophers have attempted to assign "arbitrary and questionable criteria" to the definition of personhood. Bostrom affirms that transhumanism "strongly reject[s] the racialist and classist assumptions" on which the pre-WWII eugenic movement in Europe and the United States were based.[243] Nonetheless, his want for "a world in which autonomous individuals may choose to remain unenhanced or choose to be enhanced"[244] introduces a new kind of classism; a bioradical platform such as this can only amplify the segregation of peoples. Scholars of religion will note that this is, by no means, a point of divergence between transhumanism and religion. Long have the religions engendered comparable distinctions between priest and layperson, teacher and student, learned and unlearned, chosen and non-chosen, righteous and unrighteous, believer and non-believer, "us" and "other."

To be sure, the Church's moral tradition encourages the use of *therapeutic* procedures in order to heal or to promote a person's well-being.[245] In addition, Hayflick, like many of his contemporaries who share a common opinion about prolongevity, is adamant about increasing "active longevity free from disability and functional dependence."[246] This is at the root of his frustration about the minimal financial support provided by the NIA for research on the basic processes of ageing even though these processes increase

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[243] Bostrom, "Transhumanism FAQ" 21.
[244] Bostrom, "Transhumanism FAQ" 4.
[245] Congregation for the Doctrine of Faith, *Donum Vitae*: Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation; Replies to Certain Questions of the Day, Vatican City: CDF, 1987, 16 May 2009 <http://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19870222_respect-for-human-life_en.html> §I.3.
[246] Hayflick, "Future of Ageing" 269.

vulnerability to age-associated diseases and, thus, merit greater commitment on part of funding agencies. Bostrom detects a certain hypocrisy in those who simultaneously critique the radical prolongation of life and encourage efforts to combat the diseases of ageing to extend active health-span:

> Opponents of prolongevity, however, fail to offer a convincing explanation of why it would be ethically acceptable for society to be spending vast amounts on researching and curing particular diseases in an effort to extend healthy life for people in rich countries and yet unacceptable to conduct research into the biology of aging in order to develop more effective interventions to achieve the same aim.[247]

Hayflick is "apprehensive about extending average life expectation beyond one hundred once the leading killers are resolved because the result would be disease-free, but nonetheless functionally weaker, still inexorable aging people."[248] The old will become really old, "condemned to the vicissitudes of a continuing aging process."[249] Transhumanists, however, assure us that this is not what they have in mind when encouraging the pursuit of significantly prolonging human life. "When transhumanists seek to extend human life," Bostrom asserts, "they are not trying

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[247] Nick Bostrom, "Recent Developments in the Ethics, Science, and Politics of Life Extension," Aging Horizons 3 (2005): 30.

[248] Hayflick, How and Why We Age 335. An interesting allusion to this concern is found in the Homeric Hymn to Aphrodite which tells the story of Eos, goddess of the dawn, falling in love with Tithonos, a mortal. She asks Zeus to bestow immortality on the man, but forgets to ask for perpetual youth as well. Consequently, Tithonos lives forever, "[b]ut when hateful old age was pressing hard on him, with all its might, and he couldn't move his limbs, much less lift them up […] she put him in her chamber, and she closed the shining doors." See Gregory Nagy, trans., Homeric Hymn to Aphrodite, 14 Jan. 2010 <http://www.uh.edu/~cldue/texts/aphrodite.html> 233-234; 236. The hymn suggests that even the gods shrink back from ageing. Transhumanists and anti-ageing researchers are convinced that we should do the same by, at the very least, maintaining beauty and vigor over the span of extended life.

[249] Hayflick, How and Why We Age 335.

to add a couple of extra years at a care home spent drooling at one's shoes. The goal is more healthy, happy, productive years."[250]

In 2003, the President's Council on Bioethics,[251] chaired at the time by Leon Kass, released a report, called Beyond Therapy: Biotechnology and the Pursuit of Happiness, that took up a "fundamental inquiry into the human and moral significance of developments in biomedical and behavioral science and technology" with the intention of facilitating "a greater understanding of bioethical issues."[252] The Council, in its ethical analysis of age-retardation and the radical extension of healthy human life, reflects on the appeal and the drawbacks, however wrought with uncertainty, of remaining "in our prime" for a lengthened period of time.

The Council recognizes that with a significant increase in life span comes greater freedom from constraints of time, more opportunities, and, perhaps, reduced existential angst about dying.[253] At the same time, since "[a]ll our activities are, in one way or another, informed by the knowledge that our time is limited," the Council acknowledges the possibility of weakened commitment and less of an engagement with the things of life.[254] "Foreseeable death" heightens a

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[250] Bostrom, "Transhumanism FAQ" 34.

[251] In 2009, Barack Obama replaced the President's Council on Bioethics with The Presidential Commission for the Study of Bioethical Issues.

[252] President's Council on Bioethics, Beyond Therapy: Biotechnology and the Pursuit of Happiness (Washington: PCB, 2003) xv.

[253] The Council understands that this might not necessarily be so. "The technological struggle against aging and decline would be less prepared for and less accepting of death, and the least willing to acknowledge its inevitability. […] In an era of age-retardation, we might in practice therefore live under an even more powerful preoccupation with death, but one that leads us not to commitment, engagement, urgency, and renewal, but rather to anxiety, self-absorption, and preoccupation with any bodily mishap or every new anti-senescence measure." See President's Council 190.

[254] President's Council 187-188.

sense of urgency and aspiration, because "the spur of our finitude" motivates accomplishment.[255] Here, the Council defers to nature in its favourable view of human imperfection. "The human being in his or her natural wholeness is not a perfect being;" this, in itself, "gives rise to our deepest longings and our greatest accomplishments."[256]

Although findings are not yet consensual, the Council reports that "age-retardation techniques tested in animals […] appear to result in very significant decreases in fertility" and that "without some presentiment of our mortality, there might be less desire for renewal;" this could result in a population of greater average age and reduced birthrate.[257] In addition, age-retardation and life extension technologies "make aging both more manipulable and more controllable as explicitly a human project, and partially sever age from the moorings of nature, time, and maturity."[258] Beyond the individual, the implications of this prospect for the community are also vast:

> Consequences will likely be apparent at every level of society, and in almost every institution. Among the more obvious may be effects on work opportunities, new hires, promotions and retirement plans; housing patterns; social and cultural attitudes and beliefs; the status of traditions; the rate and acceptability of social change; the structure of family life and relations between the generations; and political priorities and choices, and the locus of rule and authority in government. The experiences of the past century offer us some clues in this regard, though the effects of

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[255] President's Council 188.
[256] President's Council 201.
[257] President's Council 188-189; 196. The concern for renewal was repeated by Benedict XVI in his "Papal Homily at Rome's San Lorenzo International Youth Centre," Vatican City: Libreria Editrice Vaticana, 2008, 16 July 2009 <http://www.vatican.va/holy_father/ benedict_xvi/ homilies/2008/documents/hf_ben-xvi_hom_20080309_xxv-csl_en.html> par. 16-18.
[258] President's Council 191.

> significant increases in lifespan would likely be more radical than those we have seen as a result of twentieth-century advances.[259]

Again, we see deep concern for the effects of these technologies on the intergenerational dynamic that fuels economy, progress, social responsibility, and self-realization.[260] "The neediness of the very young and the very old puts roughly one generation at a time at the helm," but radical life extension may very well result in generation after generation remaining "in their prime for many decades."[261] This obstruction of the cycles of succession, the Council contends in, might also slow the cycles of innovation;[262] this is in complete agreement with the concerns of Benedict XVI that were discussed in the previous chapter. On the contrary, Caplan is convinced that policymakers will be able to contend with this, making sure that "a fair proportion of resources are devoted to the young, that seniority on the job does not become stasis in the workplace, and that we do not use medical technology overaggressively once life has become a burden or simply too painful to endure."[263] It goes without saying that policymakers will also have to grapple with the important question of how exceedingly long lived persons will be able to support themselves financially.

Interestingly, the Council brings to the fore an important consideration that touches upon Bostrom's charge of hypocrisy: "if there is merit in the suggestion that too long a life, with its end out of sight and mind, might diminish its worth,

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[259] President's Council 193.

[260] Recall Benedict XVI, "Easter Vigil Homily," Vatican City: Libreria Editrice Vaticana, 2010, 11 June 2010 <http://www.vatican.va/holy_father/benedict_xvi/homilies/2010/ documents/ hf_ben-xvi_hom_20100403_veglia-pasquale_en.html> par. 1.

[261] President's Council 194.

[262] President's Council 195.

[263] Caplan, "Unnatural Process" 272. See also Mackey, "Ethical Assessment" 194.

one might wonder whether we have already gone too far in increasing longevity."[264] Insisting that this is most certainly not an appeal to decrease the current life span, the Council poses the question: "[m]ight we be cheating ourselves by departing from the contour and constraint of natural life (our frailty and finitude), which serve as a lens for a larger vision that might give all of life coherence and sustaining significance?"[265]

In line with the Council's report, Kass extols the virtues of mortality and denounces the oblivion of immortality in a separate text entitled "L'Chaim and Its Limits."[266] Although his position is transparent,[267] it is not always clear that Kass makes the distinction between the radical extension of life and the pursuit of immortality. "[T]o argue that human life would be better without death is," he submits, "to argue that human life would be better being something other than human."[268] Even then, "[n]ot even an unlimited amount of 'more of the same' will satisfy our deepest aspirations."[269] Transhumanists would not find these contentions to be overly problematic, to be sure. However, there is dissonance regarding the significance of limitation. Kass perceives human finitude as a

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[264] President's Council 198.
[265] President's Council 200.
[266] Kass, "L'Chaim" 304-320.
[267] There is a parallel here between Kass' position and that of C. S. Lewis. Lewis, who Post calls "an early anti-posthumanist," champions the natural law tradition in The Abolition of Man and sets his theory to fiction in That Hideous Strength. A comparison between these two texts and transhumanist philosophy would make for a very interesting study. See Stephen G. Post, "Decelerated Aging: Should I Drink From a Fountain of Youth?" The Fountain of Youth: Cultural, Scientific, and Ethical Perspectives on a Biomedical Goal, ed. Stephen G. Post and Robert H. Binstock (Oxford: Oxford UP, 2004) 76; C. S. Lewis, The Abolition of Man (New York: HarperCollins, 2001); C. S. Lewis, That Hideous Strength: A Modern Fairy-Tale for Grown-Ups (New York: Simon & Schuster, 1996.)
[268] Kass, "L'Chaim" 311.
[269] Kass, "L'Chaim" 316.

blessing that "has evolved as part of our nature."[270] Whereas vulnerability and mortality are necessary for nobility and moral excellence, he insists, the desire for agelessness is "an expression of a childish and narcissistic wish incompatible with devotion to posterity.[271]

Audrey Chapman agrees that radically extending human life will have dramatic consequences for social relationships; "[h]uman societies," she affirms, "are built around expectations of a life cycle of limited duration."[272] We are reminded here of John Paul II's appeal, in *Evangelium Vitae*, "to preserve, or to re-establish where it has been lost, a sort of 'covenant' between generations," which underscores relationality as a defining feature of human personhood.[273]

Critically engaging biogerontology, philosophy, bioethics, transhumanism, and Roman Catholicism in conversation about the ethical implications of significantly prolonging human life brings to light a number of important concerns, such as: the moral primacy of nature, normalcy, and the natural; intergenerational equity and distributive justice; personhood and the common good; as well as freedom of choice and social responsibility. The focus here, on radical life extension, served, in part, as a meeting point for transhumanism and Roman Catholicism. Despite the differences we have detected over the course of this study, the similarities between the two in the matters of transcendence, immortality, death, and suffering, for instance, have prompted a number of scholars to ask whether transhumanism itself *is* a religion.

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[270] Kass, "L'Chaim" 312.
[271] Kass, "L'Chaim" 314; 317.
[272] Chapman, "Social and Justice" 341.
[273] John Paul II, *Evangelium Vitae* §94.

5

Transhumanism as a Secular Religion?

Saint Bede's *Historia Ecclesiastica Gentis Anglorum*, completed in 731 CE, dutifully earned him the title of "Father of English Church History."[1] In the text, one of King Edwin of Northumbria's chief men speaks to the counselors there summoned to decide whether the nation should embrace the Christian religion:

> Your Majesty, when we compare the present life of man on earth with that time of which we have no knowledge, it seems to me like the swift flight of a single sparrow through the banqueting-hall where you are sitting at dinner on a winter's day with your thanes and counsellors. In the midst there is a comforting fire to warm the hall; outside, the storms of winter rain or snow are raging. This sparrow flies swiftly in through one door of the hall, and out through another. While he is inside, he is safe from the winter storms; but after a few moments of comfort, he vanishes from sight into the wintry world from which he came. Even so, man appears on earth for a little while; but of what went before this life or what follows, we know nothing. Therefore, if this new teaching has brought any more certain knowledge, it seems only right that we should follow it.[2]

Douglas Hall, in his "Confessing Christ in a Post-Christendom Context," argues that this passage represents "the anthropological presupposition of all authentic soteriology."[3] Indeed, there is something appealing about the transcendent – that which lies outside of the familiar, the ordinary, the warmly lit banquet hall, so to speak – as it is described here. Perhaps Karl Marx was referring to just this when he called religion "the sigh of the oppressed creature, the heart of a heartless

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[1] J. Robert Wright, A Companion to Bede: A Reader's Commentary on *The Ecclesiastical History of the English People* (Grand Rapids: Eerdmans, 2008) 1.

[2] Douglas John Hall, "Confessing Christ in a Post-Christendom Context," Address to the 1999 Covenant Conference, Covenant Network of Presbyterians, Atlanta, 5 Nov. 1999, 17 Jan. 2009 <http://covenantnetwork.org/sermon&papers/hall1.html> par. 29.

[3] Douglas John Hall, "Confessing Christ" par. 30.

world […] the opium of the people."[4] To be sure, many have argued that the most important social function of religion is the preservation of self and society as well as the tempering of our dissatisfaction with the injustice of human finitude and the fear of oblivion.

Cromwell Crawford is convinced that "though fears of old age and death are normal, these ancient fears are intensified because we live in a materialistic society that has deprived itself of religion."[5] Christopher Lasch, before him, also linked this exaggerated fear with the lack of religion but adds a disinterest in posterity and the dominant narcissism that consumes contemporary society.[6] In a secular worldview bereft of religion, then, there is nothing outside of the king's dining room, which is why transhumanists are preoccupied with making certain that the banquet is both sumptuous and long-lived. Nevertheless, Bostrom hopes in the "serious possibility of there being something very precious outside the human sphere."[7] Note here the melange of religious and secular elements even though Bostrom, as we shall see, has adamantly rejected attempts to identify transhumanism as a religion.

The previous chapter engaged transhumanism and religion in an ethical discussion about radical life extension; this particular context allowed for the exposure of a number of similarities and differences rooted in each one's account

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[4] Karl Marx, Critique of Hegel's 'Philosophy of Right,' trans. Annette Jolin and Joseph O'Malley, ed. Joseph O'Malley (Cambridge: UP, 1970) 131.
[5] S. Cromwell Crawford, Hindu Bioethics for the Twenty-First Century (Albany: State U of New York P, 2003) 181.
[6] Christopher Lasch, "Aging in a Culture without a Future," Hastings Center Report 7.4 (1977): 43.
[7] Nick Bostrom,"Transhumanist Values," 2003, 28 July 2005 <http://www.nickbostrom.com/ethics/values.pdf> 3.

of human nature and the human condition. In this closing section, I look at how some authors are struggling to classify transhumanism. Although many agree that transhumanism functions as "religion" in a number of ways, they disagree about whether or not the phenomenon actually *is* a religion.

To be sure, the significance of this discussion is greater in scope than my interest in the ethics of radical life extension. That said, the classification of transhumanism is important here for a variety of reasons, including its acceptability as a credible and insightful partner in the conversation – with religion, medicine, and other disciplines – about how to define the moral contours of a technoculture that is on the rise.

Dependency, Transcendence, and the Illusion of Immortality

The desire for transcendence, as we have seen, is shared by transhumanism and Roman Catholicism alike. Both speak of immortality (and the need for a "more perfect substrate,"[8] or enhanced bodily form, to accommodate the immortal self) as a seminal feature of this transcendence. For Roman Catholics, eternal life constitutes perfect happiness in communion with God. For transhumanists, it is a pre-requisite for the exploration of the posthuman realm. For the former, death becomes the lot of the living through sin. For the latter, it is a bane of human existence. In spite of this, Bostrom admits,

> [t]hat people should make excuses for death is understandable. Until recently there was absolutely nothing anybody could do about it, and it made some degree of sense then to create comforting philosophies according to which dying of old age is a

[8] Ronald Cole-Turner, "More Than Human: Religion, Bioethics, and the Transhuman Prospect," Continuity + Change: Perspectives on Science and Religion, Metanexus' 7th Annual Conference, U of Pennsylvania, Philadelphia, 5 June 2006, 7.

> fine thing ("deathism"). If such beliefs were once relatively harmless, and perhaps even provided some therapeutic benefit, they have now outlived their purpose. Today, we can foresee the possibility of eventually abolishing aging and we have the option of taking active measures to stay alive until then, through life extension techniques and, as a last resort, cryonics. This makes the illusions of deathist philosophies dangerous, indeed fatal, since they teach helplessness and encourage passivity.[9]

Ludwig Feuerbach, an atheist German philosopher of the early nineteenth century, is convinced that "[i]f man did not die, if he lived forever, if there were no such thing as death, there would be no religion."[10] In fact, his convictions are clear: "God is prerequisite to immortality; without God, there can be no immortality. […] Without God the belief in immortality has no support, no beginning, no foundation, in short, no principle. Immortality is a suprasensory, fantastic wish and thought […]."[11] Transhumanism, then, presents an interesting challenge to Feuerbach's repudiation of religion because even though its worldview is not theocentric, its agenda is largely motivated by the prospect of immortality. According to Feuerbach, God appears to be first and immortality second insofar as God is the "instrument" of immortality.[12] Transhumanists have no need for the first, because they believe that human innovation will eventually provide alternative means to secure (virtual) immortality in the here-and-now.[13]

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[9] Nick Bostrom, "The Transhumanism FAQ: A General Introduction Vers. 2.1," World Transhumanist Association, 2003, 16 July 2005 <http://www.transhumanism.org/resources/FAQv21.pdf> 37.

[10] Ludwig Feuerbach, Lectures on the Essence of Religion, trans. Ralph Manheim (New York: Harper & Row, 1967) 33.

[11] Feuerbach, Lectures 266.

[12] Feuerbach, Lectures 267.

[13] This is reminiscent of the passage from Marsilio Ficino cited in the previous chapter. Recall his description of humankind as "endowed with a genius […] that is almost the same as that of the Author of the heavens, and that man would be able to make the heavens in some way if he only possessed the instruments and the celestial material[…]." See David R. Kinsley, Ecology and Religion: Ecological Spirituality in Cross-Cultural Perspective (Upper Saddle River, NJ: Prentice-Hall, 1995) 126.

"Anyone who wishes to surmount death, the consequence of natural necessity," Feuerbach writes, "must also surpass its cause, nature itself. And anyone who does *not wish to end* in nature *cannot begin with nature*, but only with God."[14] Although this need to disconnect from nature in order to overcome it may be true for transhumanism, our discussion of the biological and biographical continuity of the human person in the "new heavens and the new earth" makes it impossible for the Roman Catholic tradition to divorce itself completely from the world that is known. This contradicts those critics who contend that the other-worldly orientation of Christianity disqualifies it from investing in environmental preservation. "Far from diminishing our concern to develop this earth," the Catechism teaches, "the expectancy of a new earth should spur us on, for it is here that the body of a new human family grows, foreshadowing in some way the age which is to come."[15] Humankind begins and ends in nature ("you are dust, and to dust you shall return"[16]). Humankind begins and (never) ends in God.

Feuerbach contests Christianity's bold promise to fulfill the "imaginary" and "unattainable" desires of the human heart. Immortality and the desire for "omniscience" and "absolute perfection" can only ever be illusions, he says:

> By promising man eternal life, it deprived him of temporal life, by teaching him to trust in God's help it took away his trust in his own powers; by giving him faith in a better life in heaven, it destroyed his faith in a better life on earth and his striving to attain such a life.[17]

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[14] Feuerbach, Lectures 272.
[15] Catechism of the Catholic Church (Ottawa: Canadian Conference of Catholic Bishops, 1994) §1049.
[16] Gen. 3.19.
[17] Feuerbach, Lectures 281. Christianity's commitment to social justice, for instance, seriously challenges this claim.

On the contrary, Feuerbach is "perfectly reconciled" to the thought of his finitude and mortality[18] arguing that there even comes "a time […] when man desires death," especially when he has "lived out his life."[19] In this way, his reasoning shows greater compatibility with the Roman Catholic tradition than it does with transhumanism in maintaining that "limitations […] are necessary determinations of the human essence, which cannot be dissociated from it […]."[20] Nevertheless, his contempt for *religion* is made plain:

> Religious institutions, customs and articles of faith continue to be held sacred even when they stand in the most glaring contradiction to man's more advanced reason and ennobled feelings; even when the original justification and meaning of these same institutions and conceptions are long forgotten. We ourselves are living amid this same repugnant contradiction between religion and culture; our religious doctrines and usages also stand in the most glaring contradiction to our present cultural and material situation; our task today is to do away with this loathsome and disastrous contradiction. Its elimination is the indispensable condition for the rebirth of mankind, the one and only condition for the appearance of a new mankind, as it were, and for the coming of a new era [which] requires – if we wish to retain the word – a *new religion*![21]

It should not be lost on readers that Feuerbach's proposition closely parallels Huxley's call for a radical re-organization of belief: a humanist evolution-centred religion, like transhumanism, that still needs divinity,[22] although without God. Its emphasis on the *trans*natural (as opposed to *super*natural) elicits a certain connection to nature.

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[18] Feuerbach, Lectures 36.
[19] Feuerbach, Lectures 277-278.
[20] Feuerbach, Lectures 277.
[21] Feuerbach, Lectures 216-217.
[22] Recall, from the first chapter, that Huxley employs the term "divinity" to designate those phenomena which "introduce us to a realm beyond our ordinary experience." See Julian Huxley, Essays of a Humanist (London: Chatto and Windus, 1964) 223.

Feuerbach maintains that dependence on nature is the "fundamental truth" in all religion.[23] "[M]an's dependence on nature," he insists, "is therefore the ground and beginning of religion, while freedom from his dependence, in both a rational and irrational sense, is the ultimate aim of religion."[24] At the same time, he suggests that the Christian tradition denies this dependency.[25] This, however, is unreasonable, especially for a religion that tells of a Creator who fashions humanity from the earth in order to till it.[26] Both Feuerbach and Somerville share a presumption in favour of the natural, which is why the former goes on to criticize theism and the latter, technoscience because of their negation of nature, the world, and humankind: "*in the face of God, the world and man are nothing*."[27]

However, Christian anthropology, as we have seen, does not merit this charge;[28] transhumanism, which deems "the natural" to be irrelevant (problematic even) and chases after *post*humanhood, better fits the bill. Instead, it would seem that Feuerbach's argument should be taken up against certain secular manifestations of religion which, contingent on technology (a form of dependence I would think),[29] bewail the constraints of nature and so seek emancipation from it. For transhumanism to be considered a "new religion," by Feuerbachian

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[23] Feuerbach, Lectures 37.

[24] He also calls "the divinity of man" the ultimate end of religion. See Feuerbach, Lectures 207.

[25] Feuerbach, Lectures 35-36.

[26] Gen. 2.7; 2.15.

[27] Feuerbach, Lectures 282-283.

[28] I do not deny that one can find elements in the Christian tradition and Scripture that encourage the desacralization of nature and the elevation of humans above the natural world as Lynn White famously pointed out in "The Historical Roots of Our Ecologic Crisis," Science 155.3767 (1967): 1203-1207. However, these could never amount to the *negation* of nature of which humans are part. See also Kinsley, Ecology 103-124.

[29] "At the dawn of history," Feuerbach recounts, "religion was man's only means of bending nature to his aims and desires." See his Lectures 207. In this day, we have secured other means of manipulating the natural world.

standards, one would have to make a case for the equivalence of dependence on technology (and on the intelligent beings responsible for creating technology) and dependence on nature. The question, though, is much more complex than this.

Introducing Secular Religion

When we speak of religious freedom, religion as the identity of persons, the province and place of religion in the academy (and its funding), and even how the courts award benefits and exemption to those groups that fit the bill, we become alert to the ubiquity (or obscurity) of religion and the need to classify it, if not simply for the sake of pragmatics. We cannot afford to throw up our arms to the growing complexity and intricacy of "religion" by postulating, as does the philosopher G. E. Moore in his study of the "good" in the *Principia Ethica*, that, in the end, we are dealing with the indefinable[30] or by following the logician Willard Van Orman Quine, who argued that to define something is to learn how to avoid it.[31] Even to adopt the passive colloquial "I know it when I see it" expression on the matter leaves scholars and religious people alike ill-equipped to define what it is that they study, practice, identify as a source of the self, and/or give their lives for.

Are the features ordinarily associated with or characteristic of religion common *only* to those primal or world traditions that have been granted the status of religion and not, say, to other ostensibly secular philosophies or movements such as human rights, Communism, Marxism, humanism, existentialism, or

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[30] G. E. Moore, *Principia Ethica* (Amherst: Prometheus, 1988) 9-10.

[31] I thank Dr. Maurice Boutin at the Faculty of Religious Studies, McGill University for bringing this to my attention.

atheism? Harvey Cox argues that "[t]his is really not secularization. Whatever it is, it's not your normal nineteenth century expression of religion, either. It's very fascinating but it's hard to see what it is."[32]

A number of scholars are detecting new worldviews that blend religious and secular features. Indeed, some thirty years after The Secular City,[33] Cox began writing about this overlap. Having pronounced the death of secularization as the controlling metaphor of our day, his attention turned to the *transformation* of religion (that could neither be identified as secularization nor as the "traditional" expression of religion).[34]

This transformation has not gone unnoticed. Edward Bailey, responding to the challenge and difficulty of defining religion, especially at a time when a number of secularization theories were emerging, had already begun, as of 1968, an extensive study of what he then referred to as "secular religion." He describes it in this way:

> [*S*]*ecular* can be defined with remarkable ease: as the opposite of religion (whatever that is, in any particular situation). Thus *religion* refers to a whole way of life, in small-scale societies (before that way is spelled out, for voluntary groups, in a religious Rule). Subsequently, in historical societies it refers to that willed program of commitment that is, ideally, expressed in the whole of life. When that program no longer takes the form of a traditional religion (as, for instance, in the case of humanism), then the program itself may be described as a "secular religion." "Secular religion" is, therefore, a natural way of describing ordinary human life: either as that way of life that is expressed in religion, or as that way of life in which religion is expressed. The conceptual need to reestablish the secular ramifications of what appertains to a

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[32] Bob Harvey, The Future of Religion: Interviews with Christians on the Brink (Ottawa: Novalis, 2001) 44.
[33] See Harvey Cox, The Secular City: Secularization and Urbanization in Theological Perspective (New York: Macmillan, 1965).
[34] Bob Harvey 41-48.

> religious order, or to a hierarchical church, or to a transcendent sacred, only proves the symbiotic relationship of the religious and the secular. Thus even a "secular" form of religion will still need its "extramural" forms of expression – if it is to be called a religion at all.[35]

Although Bailey points to the common conception of "secular" as the antonym of "religion,"[36] he appreciates that the two realities are inseparable. Etymology is insightful here. According to Bailey, it is the genitive case, *saeculum* or "*of* the age or world," that captures what is frequently understood by "secular."[37] Without question, the sense of this worldliness is equally important for "religion." However, it is the ablative case that best describes that which distinguishes "religion" from "secular." *In saeculo*, means "*in* the age or world." Religion, as we have seen, is *in* the world, but not *of* it.[38] That is, while religion seeks to engage humans with and in the world, it also looks to transcend this worldliness.

In this way, Bailey went on to fine-tune his classification of secular religion and began referring to the phenomenon as "the implicit religion of contemporary society" or, better, the implicit religiosity of the secular.[39] He hypothesizes that any thing *might* be religious (this does not necessarily imply

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[35] Edward Bailey, "Secular Religion," Encyclopedia of Religion and Society, ed. William H. Swatos, Jr., 20 Aug. 2009 <http://hirr.hartsem.edu/ency/Secular.htm> par. 2-3.

[36] Edward I. Bailey, "The Implicit Religiosity of the Secular: A Martian Perspective on the Definition of Religion," Defining Religion: Investigating the Boundaries between the Sacred and Secular, ed. Arthur L. Greil and David G. Bromley (Oxford: Elsevier Science, 2003) 60.

[37] Bailey, "Implicit Religiosity" 60. Compare this to Mircea Eliade's reference to the "profane" as "a desacralization of human existence." See Mircea Eliade, The Sacred and the Profane: The Nature of Religion. Trans. Willard R. Trask. San Diego: Harcourt, 1959) 204.

[38] Of course, my reference here (to John 15.19; 17.14-18) is Christian since this dissertation has largely focussed on the Roman Catholic tradition. That said, the this-worldly *and* other-worldly orientation is an important characteristic of the world's religions.

[39] Bailey, "Implicit Religiosity" 55. See also Edward Bailey, "The Implicit Religion of Contemporary Society: An Orientation and Plea for Its Study," Religion 13 (1983): 69-83; Edward Bailey, "The Implicit Religion of Contemporary Society: Some Studies and Reflections," Social Compass 37.4 (1990): 483-498.

that all things *are* religious) and that, in the end, there is a mutual compatibility between religiousness and secularity[40] because "most of experience is neither very or particularly or officially or unquestionably sacred *or* profane. It is somewhere in between."[41]

Other scholars have also begun to situate particular worldviews as lying somewhere along a continuum between religion and secularity. For instance, Thomas Luckmann has written on *invisible* religion,[42] Roland Robertson on *surrogate* religion,[43] Arthur Greil on *quasi*-religion,[44] and James Dittes and Roberto Cipriani on *secular* religion.[45] Given that there exists an extensive amount of literature addressing the problem of defining religion, I limit my study to only those authors such as Nick Bostrom, Margaret Somerville, and Brent Waters, who have specifically entertained, either positively or negatively, the idea of transhumanism as a religion.

Cryonics as Secular Religion

In an interesting attempt to solicit committed Jews and Christians, the majority clientele of the Western market, cryonicists at the Alcor Life Extension

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[40] Edward Bailey, The Secular Quest for Meaning in Life: Denton Papers in Implicit Religion (Lewiston, NY: Edwin Mellen P, 2002) 9.
[41] Bailey, "Implicit Religiosity" 65.
[42] See Thomas Luckmann, The Invisible Religion: The Problem of Religion in Modern Society (New York: Macmillan, 1967).
[43] See Roland Robertson, The Sociological Interpretation of Religion (New York: Schocken, 1970).
[44] See Arthur L. Greil, "Exploration Along the Sacred Frontier: Notes on Para-Religions, Quasi-Religions, and Other Boundary Phenomena," in The Handbook on Cults and Sects in America, ed. David G. Bromley and Jeffrey K. Hadden (Greenwich, CT: 1993); Arthur L. Greil and T. Robbins, eds., Between Sacred and Secular: Research and Theory on Quasi-Religion (Greenwich, CT: JAI, 1994). This is in addition to the Greil and Bromley text that we have already referred to.
[45] See James E. Dittes, "Secular Religion: Dilemma of Churches and Researchers," Review of Religious Research 10.2 (1969): 65-81; Roberto Cipriani, "Religiosity, Religious Secularism and Secular Religions," International Social Science Journal 46.2 (1994): 277-284.

Foundation appeal to a supposed congruity between their philosophy and that of the religions: "[c]ryonics, like heart surgery, is a scientific approach to extend human life that does not violate any religious beliefs or their principles. The morality of cryonics is based upon the sanctity of human life, and the ethical imperative of continuing care of unconscious patients for whom there is still hope."[46] Like transhumanism, cryonicists are convinced that ageing is a regrettable condition (dis-ease is the sense implied here) that, eventually, will be reversible and treatable. Nevertheless, Alcor appeals to the religions' attitude toward long life as a blessing; it fails to recognize, however, that longevity, as presented in the sacred texts, is, at best, a *mixed* blessing.

The cryonicists bring to the foreground the account of Elisha's resurrection of the Shunammite woman's son in the Second Book of Kings as biblical testimony (that is, *religious* validation) of both cryonics and modern resuscitation technology:

> When Elisha came into the house, he saw the child lying dead on his bed. So he went in and closed the door on the two of them, and prayed to the LORD. Then he got up on the bed and lay upon the child, putting his mouth upon his mouth, his eyes upon his eyes, and his hands upon his hands; and while he lay bent over him, the flesh of the child became warm. He got down, walked once to and fro in the room, then got up again and bent over him; the child sneezed seven times, and the child opened his eyes. Elisha summoned Gehazi [his servant] and said, 'Call the Shunammite woman.' So he called her. When she came to him, he said, 'Take your son.' She came and fell at his feet, bowing to the ground; then she took her son and left.[47]

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[46] Alcor Life Extension Foundation, "Christianity and Cryonics: Questions and Answers," 2007, 20 Aug. 2007 <http://www.alcor.org/Library/html/christianityandcryonics.html> par. 1.
[47] 2 Kings 4.32-37.

Even though I do not agree with those cryonicists who interpret this passage of the prophet "warming" the child back to life (after being made cold in death) as God's explicit intention for the cryopreservation of humans,[48] this does raise another interesting argument that Alcor often brings to the fore for further proof of the commensurability between this "science" and religion – perhaps to attract a skeptical, but theistic clientele: that if cryonics technology is someday perfected, God meant it to be, and that religion does not retard science or scientific progression.[49] This argument is problematic, at best. Suffice it to say that it would be unreasonable to conceive of a God, who is love,[50] sanctioning human progress in nuclear or bio-warfare technology (even for the expressed purpose, say, of learning about physico-chemical properties).

Steve Bridge, former president of the Alcor Foundation, trifles with the idea of cryonics as a secular religion:

> It is my personal belief that all human religions most likely have evolved from our primitive fears of death and of the power of nature. I suspect there is a space in our brains that requires religion to fill it. It may be natural or it may be trained, but the near universality of the religious impulse seems to suggest that humans have an evolved need for religion, which they will fill by learning or by invention. Cryonics itself is only a technology, not a religion. However, I will admit that for me cryonics is part of a philosophical approach (which includes immortalism, life extension, space travel, and other ideas) that fills the psychological space in my brain previously used for religion. It performs well in one of the primary roles of religion: to help people stay sane in the knowledge that death comes to everyone.[51]

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[48] The ordination of life and death by God alone is clear in Judaic, Christian, and Islamic literature.

[49] Steve Bridge, "Why a Religious Person Can Choose Cryonics," 2007, 20 Aug. 2007 <http://www.alcor.org/Library/html/frozensouls.html> par. 18; 8.

[50] 1 John 4.16.

[51] Bridge par. 37-38.

Here we can identify two elements that are important for the conceptualization of secular religion: a phenomenon that is (1) professedly nonreligious and (2) shares a number of the same *functions* that we ordinarily attribute to religion. Although Bridge's objective was not to provide a definition for secular religion, it is interesting that in his attempt to show the commensurability between cryonics and religion, he instead goes on to validate cryonics by harnessing the potency (and authority) of religion.

Transhumanism as Secular Religion

"All religious systems – in practice if not in theory – have had to make some concessions to the frailties of human nature."[52] In this, Patrick Hopkins finds the locus of communication and comparability between religion and transhumanism, which "begin conceptually as reactions to a particular deflationary description of the human condition."[53] Although Hopkins re-emphasizes the sharp distinction between the philosophy (sometimes called a "cultural movement") and "religion," which is made plain in the transhumanist platform, he nevertheless goes on to argue that "transhumanism can be *religious*, in the sense that people can incorporate transhumanist methods and ideals into their religious aims."[54] Here, Hopkins makes the mistake of diluting the integrity of the incorporated object, as if to say that transhumanist methods and ideals, once grafted into the religious

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[52] William A. Lessa and Evon Z. Vogt, Reader in Comparative Religion: An Anthropological Approach, 2nd ed. (New York: Harper & Row, 1965) xii.
[53] Patrick D. Hopkins, "Transcending the Animal: How Transhumanism and Religion Are and Are Not Alike," in Journal of Evolution & Technology 14.2 (2005): 13.
[54] Hopkins, "Transcending the Animal" 13.

experience, shed their transhumanist identity (which is professedly not "religious") to somehow become "religious."

Gregory Jordan suggests, though, that "[t]he evolution of religions is characterized by variations on old themes as well as the introduction of new themes."[55] Although many transhumanists perceive religion as, for the most part, a constant hindrance to biological and technological progression, the tenets and structure of transhumanism have an uncanny resemblance to those of the world's religions. In addition to transcendence, the yearning for eternity, and the ideal of perfection (more bodily in orientation than the perfection of virtue common to the religions), which we have already seen, other features include salvation with/in science (here, from disease, disability, ageing, inborn lack of talent), concern for and liberation from the blight of suffering, and a certain apocalyptic/eschatological flavour evident in "The Singularity."[56]

Nevertheless, Hopkins notes that even though many religious analogs can be found in transhumanist philosophy and ideology, the shared desire for transcendence being chief among them, incompatibility between religion and transhumanism can easily be located in the choice of *method*[57] and the realm where self-realization will come to perfection. According to Hopkins, whereas the religions might list "belief/faith (accepting propositions, taking attitudes)," "obedience (to moral codes or rituals)," and "practices (meditation, music, etc.)"

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[55] See Gregory E. Jordan, "Apologia for Transhumanist Religion," Journal of Evolution & Technology 15.1 (2006): 55.

[56] Recall, from the first chapter, that the Singularity is a "hypothetical point […] [w]ithin a very brief time (months, days, or even just hours)" when the world will be "transformed almost beyond recognition." See Bostrom, "Transhumanism FAQ" 19.

[57] Hopkins, "Transcending the Animal" 22. Instead of "methods of transcendence," I think "means to achieve transcendence" better captures what Hopkins' is trying to say.

as ways to achieve transcendence, transhumanists will point to technology as the way to overcome the limitations, banality, and ordinariness of the human condition.[58] In any case, these "methods of transcendence" are as different between transhumanism and religion as they are between the world's religions themselves. [59]

To be sure, the subject of transhumanism as religion remains contentious, even in transhumanist circles. Whereas some scholars are interested in introducing a conversation between religion and transhumanism,[60] others are ready to offer an "apologia for transhumanist religion."[61] The World Transhumanist Association, however, is clear:

> Transhumanism is a philosophical and cultural movement, not a religion. Transhumanism does not offer answers about the ultimate purpose and nature of existence, merely a philosophical defense of humanity's right to control its own evolution. Consequently the transhumanist philosophical stance is compatible with humanist interpretations of the world's religions. On the other hand, transhumanism is generally a naturalistic outlook and most transhumanists are secular humanists. Although scientific rationalism forms the basis for much of the transhumanist worldview, transhumanists recognize that science has its own fallibilities and imperfections, and that critical ethical thinking is essential for guiding our conduct and for selecting worthwhile aims to work towards. Religious fanaticism, superstition, and intolerance are not acceptable among transhumanists.[62]

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[58] Hopkins, "Transcending the Animal" 22-23.

[59] Hopkins, "Transcending the Animal" 22-23.

[60] See Heidi Campbell and Mark Walker, "Religion and Transhumanism: Introducing a Conversation," Journal of Evolution & Technology 14.2 (2005): i-xv.

[61] Jordan 55-72.

[62] World Transhumanist Association, "People of Faith," 2008, 4 Nov. 2009 <http://www.transhumanism.org/index.php/WTA/communities/religious/> par. 1-2.

Bostrom makes a similar pronouncement, although the reader will detect in his words a more nuanced understanding of what is meant by "religion" in this discussion:

> While not a religion, transhumanism might serve a few of the same functions that people have traditionally sought in religion. It offers a sense of direction and purpose and suggests a vision that humans can achieve something greater than our present condition. Unlike most religious believers, however, transhumanists seek to make their dreams come true in *this* world, by relying not on supernatural powers or divine intervention but on rational thinking and empiricism, through continued scientific, technological, economic, and human development. Some of the prospects that used to be the exclusive thunder of the religious institutions, such as very long lifespan, unfading bliss, and godlike intelligence, are being discussed by transhumanists as hypothetical future engineering achievements.[63]

The *functional* compatibility of religion and transhumanism is frequently underscored by philosophers working in the field, but Bostrom and the World Transhumanist Association affirm that even though transhumanism may function as a religion, it is not one. Although Somerville alludes to the possibility of classifying transhumanism as a "secular religion," she seems to share Bostrom's conclusion.

> Transhumanism is not just a new concept; more accurately, it is a new world view, or perhaps even a secular religion […]. For the transhumanists, the power of technoscience allows a new form of transcendence and transformation: going beyond and transforming ourselves by becoming posthuman. We can see transhumanism as an expression of the longing for transcendence and, through that, transformation. Transhumanists seek this experience and outcome through science, and we must therefore acknowledge a link between science, transcendence, and transformation just as there is a link between religion, transcendence, and transformation. In this respect, science and religion are playing the same role and

[63] Bostrom, "Transhumanism FAQ" 46. This assumption that religious believers cannot also be rational thinkers is offensive, yet not uncommon.

> facilitating the same human experience. One might even say that sometimes science functions as a "religion."[64]

A parallel can also be drawn between Somerville's argument and David Kinsley's discussion of "modern medicine as secular religion."[65] Although "[m]odern medicine largely defines itself as nonreligious, even antireligious, when it comes to its philosophy […]," Kinsley refers to it as a "secular religion" because modern medicine "relies on techniques, symbolism, and rituals for part of its efficacy" in such a way that one might "think of it as having implicit religious (or at least symbolic) dimensions."[66] In this sense, a secular religion is a phenomenon that professes itself not to be religion, but shares many of the same *functions* that we ordinarily attribute to religion.[67]

Contrary to Bostrom's rejection of transhumanism as religion, Brent Waters claims that "[t]he transhumanists' frequent appeals to unfettered reason, rejection of all dogma, and atheistic materialism do not make their faith-based movement any less religious."[68] He argues that proponents of posthumanism address questions about what endures after psychological enhancement or

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[64] Margaret Somerville, The Ethical Imagination: Journeys of the Human Spirit (Toronto: Anansi, 2006) 175-176.

[65] David R. Kinsley, Health, Healing, and Religion: A Cross-Cultural Perspective (Upper Saddle River: Prentice, 1996) 177.

[66] Kinsley, Health 151.

[67] As such, this is a *functional* definition of secular religion rather than a *substantive* one. See Bailey's discussion of these two approaches in Edward I. Bailey, "The Implicit Religiosity of the Secular: A Martian Perspective on the Definition of Religion," Defining Religion: Investigating the Boundaries between the Sacred and Secular, ed. Arthur L. Greil and David G. Bromley (Oxford: Elsevier Science, 2003) 55-57.

[68] Brent Waters, From Human to Posthuman: Christian Theology and Technology in a Postmodern World (Aldershot: Ashgate, 2006) 80.

uploading or what the "post" in "posthuman" actually entails "by offering implicitly religious answers."[69]

> This turn perhaps accounts for both the shrill denunciation of traditional religion and fervent evangelism on behalf of technoscience, as well as their eagerness to wrap themselves in the mantels of profane humanism and late liberalism as a means of demonstrating their irreligion. This move, however, is not a deceptive strategy disguising a hidden agenda. The strident rhetoric and urgent desire to be coupled with liberal humanism may signify an unacknowledged unease with the leap of faith that transhumanists are undertaking.[70]

In the end, like religion, transhumanists also engage in talk about "hopes" and "beliefs." Waters is not convinced that transhumanism is merely something that can be compared to religion. He is in agreement with Jordan, who contends that pro-technological transhumanism-associated philosophies "have created the right conditions for the development of a new type of religion."[71] Waters elaborates on this point:

> The prospect of becoming posthuman is *not* a profane, postmodern alternative to a modern paradigm, mired and encumbered by primitive and un-exorcized religious beliefs. Rather, posthuman discourse represents idiosyncratic religious sentiments that have been forged in postmodern and historicist rhetoric which retains, albeit in a highly eclectic structure, a providential and progressive grammar. Posthumanism is *not* a postmodern alternative to lingering religious beliefs, but is itself a contending postmodern religion.[72]

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[69] Waters 78-79. This echoes Bailey's notion of implicit religiosity that was discussed earlier.
[70] Waters 79.
[71] Jordan 56. Recall our discussion of Huxley and Feuerbach on this matter.
[72] Waters 79.

Jordan states that a number of "prominent characteristics of prototypical religion" can, in some way, be found in transhumanism.[73] Among other things, he explains: how belief in (or aspiration to become) "god-like beings" is not foreign to transhumanism;[74] that even though transhumanists do not, as far as we can tell, engage in ritual activity, they do possess "symbolic representations of shared meaning in the form of […] art" and dapple in distinctive practices (like cryonics);[75] how "[a]n all-encompassing scientific epistemology, combined with theories of sufficient provisional explanatory powers, may soon give rise to a comprehensive world view;"[76] that transhumanists have developed a system of values;[77] that transhumanist faith in the future is rooted in the "belief in the 'possibility and desirability' of developing advanced technologies to 'improve the human condition;'"[78] that transhumanism possesses a "profoundly religious vision of the transcendent;"[79] and that transhumanism may also stir religious feelings of "absolute dependence" on technology.[80] Interestingly, Jordan calls for the development of transhumanist religious language so that transhumanists are given "the tools they need to better communicate their message to others."[81] This largely mimics the ongoing debate about whether or not the interdisciplinarity of

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[73] Jordan borrows this list of characteristics from G. D. Alles, but does not go on to explain what he means by "prototypical religion." The implication, though, is that he is referring to the world's religions. See Jordan 56-60.
[74] Jordan 58-59.
[75] Jordan 59.
[76] Jordan 59-60.
[77] Jordan 60.
[78] Jordan 62.
[79] Jordan 63.
[80] Jordan 59. Recall that, for Feuerbach, dependence (on nature) is the "fundamental truth" in all religion. See Feuerbach, Lectures 37.
[81] Jordan 71.

bioethics should require the development of a *lingua franca* in the field so that religion (among others) might shed its particularity in order to engage the issues at hand using a universal language of some sort.[82]

In the end, Waters and Jordan share a similar intention: "portraying transhumanism as a religious movement is not intended to discredit it in the eyes of a so-called secular world. To the contrary, it is precisely its religious trappings that make it a force to be taken seriously by theologians."[83] Incidentally, this is the very reason for which a chapter on transhumanism as secular religion can find itself in a dissertation that is concerned, first and foremost, with the prospect of radical life extension and its ethical implications. If what we speak of here is a "contending postmodern religion" replete with its own eschatological and soteriological claims, then it stands alongside (or against) the visions of other religious traditions – in this case, Roman Catholicism – "in respect to how theology might inform a technological transformation of nature and human nature."[84] At issue here is not *whose* moral vision is more appealing or more credible – although this is an interesting and important question – but whether the classification of these newly formulated worldviews as *contending* "postmodern religions" or "secular religions" is merely antagonizing or insightful vis-à-vis how we will go about shaping the emerging technoculture.[85]

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[82] See Cory Andrew Labrecque, "Transcending the Functional Self: A Discourse on the Continuity of Personhood in Degenerative Dementia," M.A. thesis, McGill University, 2004, 50-71.

[83] Waters 80.

[84] Waters 79; 92.

[85] In particular, the fifth and sixth chapters of Waters' From Human to Posthuman address some of the concerns noted here.

Another objective here is to press the task, entrusted to academics and practitioners alike, of determining that which constitutes "religion" lest we leave the province of religion (and the study thereof) without structure, purpose, or border. Is it enough to agree that religious functions can be detected in secular life? Is secular religion a useful category at all?

"[W]e are just at the beginning of a new age of religious searching," Charles Taylor writes, "whose outcome no one can foresee."[86] The authors discussed over the course of this chapter recognize that transhumanism is an emergent worldview that brings together religious *and* secular elements. Further research in this area would not only require a proper definition of religion and secularity[87] that does not limit itself "to *either* the forms *or* the effects,"[88] but also the construction of a clear typology that accounts for the many shades of combination with transhumanism being a good case in point.

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[86] Charles Taylor, A Secular Age (Cambridge: Belknap P, 2007) 535.

[87] Edward Bailey opines that we would be better off looking for "definitions (in the plural) of what is meant by "religious" (adjectivally), rather than religion (substantively)." See his "Implicit Religiosity" 58.

[88] Bailey, "Implicit Religiosity" 59.

Conclusion

This dissertation has provided a critical analysis of the impact of "accelerating advances" in technology[1] on religion, with particular attention given to the prospect and ethics of radical life extension. Engaging transhumanism, biogerontology, and Roman Catholicism in the matter of transcendence, human dominion, personhood, the significance of "nature" and "the natural," the common good, and social justice gives way to an important conversation about what it means to be human in a biotechnological age, especially at a time when ethics struggles to keep pace with scientific progress.[2]

As the search for the significant prolongation of the human health span continues to become an important and promising scientific venture, I share the sense of urgency expressed by Derek Maher and Calvin Mercer who are convinced that the time is ripe for heightened public and academic attention to the vast implications of anti-ageing and prolongevity research. The interdisciplinary nature of this work necessitates a wide range of thinkers to join in conversation seeing as the potential to improve the human condition and modify human nature as we know it will require that we, as individuals in community, become more transparent about how we define humanhood. Our future, human or posthuman, will depend on it.

To conclude, I borrow the words of Ronald Cole-Turner. In The New Genesis, he argues that, metaphorically, God himself "works through humans

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[1] Gregory E. Jordan, "Apologia for Transhumanist Religion" Journal of Evolution & Technology 15.1 (2006): 55.

[2] Margaret Somerville, The Ethical Canary: Science, Society and the Human Spirit (Toronto: Penguin, 2000) 279-284.

[and natural processes] to achieve intentional genetic change."[3] In his pastoral reflection on biotechnology, written about a decade later, Cole-Turner seems less ardent:

> No one knows now what we will learn to do, but it is pretty clear what we want. We are anxious, competitive, offended by age and decline, unable to accept loss. These needs drive our technology, shape its agenda, and ultimately pervert its moral meaning. What begins as a technology to relieve human pain becomes a technology to relieve the pain of being human.[4]

[3] Ronald Cole-Turner, The New Genesis: Theology and the Genetic Revolution (Louisville, KY: Westminster/John Knox P, 1993) 109.
[4] Ronald Cole-Turner, "Biotechnology: A Pastoral Reflection," Theology Today 59.1 (2002): 45.

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