THE DESCENDENT OF MAN: EXPLORING INTENTIONAL EVOLUTION OF ENHANCED PROSOCIALITY – BENEVOLUTIONEERING AND ITS SUBSUMIC PHILOSOPHICAL BASIS

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Approval of the Dissertation

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Doctor of Philosophy in Psychology

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Abstract

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Certain common behaviors and characteristics cause profound, unnecessary suffering and, unchecked, might lead to gravely dystopian futures or even human extinction. Prosociality involves positive sentiments for others and benefitting others. This dissertation considered whether, without significantly enhanced prosociality, dystopian fears are justified. Some studies predict enhancement technologies fundamentally altering brain, mind, consciousness, identity, volition, and essential phenomenological aspects of being human. Other studies predict enhancement disparities amplifying "man's inhumanity to man" (Burns, 1873, p. 26). Many scholarly treatments of moral enhancement technologies focus on ethical objections, rejecting notions that humanity should or could technologically modify human nature to improve the human condition. This theoretical dissertation purposed to explore conceptualizing development and species-wide implementation of plausible, beneficial, radically prosocial moral enhancement technologies.

Transhumanists anticipate employing or merging with technology to transcend present physiology and cognition. Some anticipate exponentially accelerating technological progress yielding resource ubiquities of material, energy, and time, creating utopian futures of abundance, bioenhancement, and immortality. Without scarcities and competition for finite

resources premising enterprise and enjoyment, could realizing the illusory nature of self-centered pursuits of achievement, status, happiness, and meaning yield unprecedented despair? Could treating common characteristics as curable disorders significantly reduce suffering? How could consensus be approached in identifying candidate characteristics as therapeutic targets for mitigation and discerning beneficial characteristics worth amplifying or adding? What kind of radical ontology, epistemology, and axiology would be required? These questions were explored in conceptualizing benevolutioneering, the intentional evolution of benevolent neuropsychology, and developing benevolutioneering's philosophical foundation, subsumism. Subsumism subsumes and regards all genuine perspectives, but not necessarily all propositions, as valid, infinitesimal puzzle pieces of boundless reality. Axiology and philosophy of consciousness determine how enhancement is distinguished from diminishment or even exanimation. This warrants concern for notions of value, consciousness, mind, free will, sociality, and related constructs among influential transhumanists, scientists, and engineers most likely to further transhumanist futures by contributing to rapid progress of relevant technologies.

Ideally, this dissertation will prompt research that nudges human enhancement trajectories toward prosociality. I found benevolutioneering imperative, plausible, and unachievably complex without near-future artificial ultra-intelligence. Benevolutioneering's highest hurdle, I conclude, is universal voluntary implementation.

Dedication

This dissertation is dedicated to my wife, Erin. Without her encouragement and generous support, this research would have been impractical and very unlikely.

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For their encouragement, patience, and guidance, I would like to express appreciation to my dissertation committee chairperson, Robert McAndrews, Ph.D., and to my dissertation committee members, Richard Sherman, Ph.D., and Marina Smirnova, Ph.D. I am grateful for all that I have learned from and because of each of you and from all my outstanding Saybrook professors.

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CHAPTER 1: INTRODUCTION

I remember the first time I noticed a person really enjoying hurting someone. I was 6. Because my mother left for work an hour before my first-grade schedule started, I waited each morning at our neighbor's house until it was time to walk to school. Our neighbor, a single mother, had three children. Her son was 8. Her daughters were 6 and 4. Shortly after I arrived that October morning, the 4-year-old awakened to find she had wet her bed. She came out into the living room in her soaked underpants with tears streaming down her cheeks. Sobbing, she went into the kitchen to ask her mother for help. Her mother screamed, "Oh, you filthy thing! You're old enough to know better than that! Now you're going to wear those stinky wet clothes all day every day until you grow up and stop acting like such a nasty little baby." She pulled the little girl's underpants down to her ankles, lifted her by one wrist, and slapped her hard five or six times on her bare bottom. As the little girl ran to her room crying while trying to get her underpants pulled back up, her mother erupted with joyful laughter while saying to her 8-year-old son, who was in the kitchen doubled over laughing, "I guess we're going to have to just spank her until her little butt falls off." I had a lump in my throat and had to try very hard to not start crying. I said, "I don't think she can help it. It's an accident. She wouldn't wet on purpose, would she?" Her mother swore at me and told me to mind my own business.

More than half a century has passed since that morning. Each time I witness cruelty, spite, sadistic pleasure, schadenfreude, or apathetic disregard for those who suffer, my heart feels heavier. Frankl (1946/2006) exhorted, "For the world is in a bad state, but everything will become still worse unless each of us does his best" (p. 154). As a pastor, teacher, dean, fire fighter, emergency medical technician, and deputy sheriff, I have tried to significantly reduce meanness and relieve suffering. It has often felt like trying to empty the ocean with a teaspoon.

The magnitude of malevolence seems insurmountable when I consider the increasingly appreciated (Anomaly et al., 2020; Benson et al., 2019; Dutton & McNab, 2017; Whitbourne, 2019), even admired (Dutton, 2013; Hare, 1999), unloving spectrum from widespread everyday unkindness to psychopathy, massive greed, malice, and power concentrated in megacorporations, many succeeded within (Dutton & McNab, 2017; Hare, 1999; Templer, 2018; Whitbourne, 2018) and even led by (Babiak & Hare, 2006; Brown, 2017; Hare, 1999; Inc., 2014; Templer, 2018; Zetlin, 2014) narcissists and psychopaths, nations spending fortunes creating countless weapons each powerful enough to end millions of lives, unwillingness to stop destroying our planet's life-sustaining ecosystem before passing a point of no return, and governance grounded in xenophobia and blatant dishonesty. Although such challenges seem overwhelming, I do not believe that nothing can be done to significantly improve humanity's trajectory. And I cannot mind my own business. Arguably, history is punctuated by people who catalyzed paradigm shifts, after which human existence changed significantly.

Frankl (1946/2006) also said that "When we are no longer able to change a situation…we are challenged to change ourselves" (p. 112). Frankl did not, in that statement, say, "I am challenged to change only myself." It seems commendable for each of us to be the change we want to see in the world, as encouraged by the aphorism often misattributed to Gandhi but actually more similar to the thought of Lorrance (1974), who "described her unhappiness while employed at a high school in Brooklyn, New York…[then described how her] approach changed radically with a crucial insight about the most effective way to achieve change" (Quote Investigator, 2017, paras. 5, 7):

> For seven years I served my sentence and marked off institutional time; I complained, cried, accepted hopelessness, put down the rest of the faculty for all the things they didn't do, and devoted all my energies to trying to change others and the system. It came in on me loud and clear that I was the only one who could imprison (or release) me, that I was

> the only one I could do anything about changing. So I let go of my anger and negativism and made a decision to simply be totally loving, open and vulnerable all the time. One way to start a preventative program is to be the change you want to see happen. (Lorrance, 1974, p. 85)

My experiences in trying to make a difference by being the difference through teaching, serving as a peace officer, and pastoring have been in many ways like Lorrance's (1974) experience after she determined to individually be the change. And, not too dissimilarly, in 1913 Gandhi actually did say:

> We but mirror the world. All the tendencies present in the outer world are to be found in the world of our body. If we could change ourselves, the tendencies in the world would also change. As a man changes his own nature, so does the attitude of the world change towards him. This is the divine mystery supreme. A wonderful thing it is and the source of our happiness. We need not wait to see what others do. (Gandhi, 1964, p. 158)

What impressed me, though, about Frankl's (1946/2006) phrase, "We are challenged to change ourselves" (p. 112), was that it is indeed we who "are challenged to change ourselves" (p. 112), not just me. I did not hear Frankl's statement calling me to change only myself. Gandhi's recognition that, by changing ourselves, by changing our nature, we change the tendencies of the world, could be followed by considering how the world could be changed if humanity somehow profoundly changed its own nature. Arguably, for the first time in history we are rapidly developing tools that make it realistic for us to consider actually intentionally revising human nature. How will our world change if humanity lets go of anger and negativism and intentionally revises human nature to be profoundly more "loving, open and vulnerable all the time" (Lorrance, 1974, p. 85)? That is the essence and substance of the possibly plausible endeavor conceptualized and explored herein.

I wrestled for several years with a growing conviction that our species urgently needs radical paradigm shifts in the ways we regard and treat one another and our planet's ecosystem. I was still wrestling with that conviction when I watched the film, *Transcendent Man* (Ptolemy,

2011), a documentary about Ray Kurzweil's vision of imminent exponentially increasing growth of information technologies resulting in humanity very soon transcending biological limitations by reprogramming their own DNA and blending with ultra-advanced nanomachinery to bring about any and all desired changes in every aspect of human existence. I began exploring the possibility of humanity becoming, by technological means, profoundly more prosocial, radically benevolent, even while dramatically increasing human freedom.

Researching and brainstorming conceptual notions and potential componentry of even remotely plausible neuropsychological, psychophysiological, endocrinological, neurogenetic, and other approaches to enhancing prosociality while increasing human freedom, I learned of a Brazilian man who, after suffering a stroke, was diagnosed with what was labeled pathological generosity (Ferreira-Garcia et al., 2014; Kean, 2015). He was intractably compelled to share more money and other important resources with others than he wanted to keep for himself.

Strokes are, of course, unintentional and indiscriminate. It is rare for a stroke to result in any changes generally regarded as improvements or enhancements. Occasionally, though, as with other types of brain injury, a stroke's residual effects include what could be considered beneficial, especially if such changes could somehow be adjusted for extent. Note that the term beneficial is inescapably axiological. Nevertheless, since it is possible, albeit extremely improbable, that a stroke can inadvertently bring about desirable change, among other, almost always unfortunate effects, it is possible to conceive of using ultra-precise nanotechnological interventions to intentionally and extremely more precisely bring about only desired changes exactly to desired extents. Imagine, in addition to developing a procedure to precisely enhance generosity to exactly a desirable extent, simultaneously developing more than 10,000 additional procedures, each enhancing, to exactly a desired extent, an extremely precise aspect of a

particular prosocial, even benevolent, characteristic. Exploration characterized in this dissertation has considered evidence suggesting that technologies enabling interventions that would increase prosociality might not be impossible. Additionally, exploration characterized in this dissertation has involved considering evidence that some technologies capable of enabling such interventions are being developed and implemented so rapidly that it is becoming difficult to determine quickly enough which kinds of modification could prove beneficial and ultimately desirable and to discern quickly enough which kinds of modification could prove harmful.

Benefit and harm are tricky concepts. What an individual or cultural group considers beneficial or harmful depends on values, and people's values quite often differ in important ways. Certain characteristics are important for thriving in society today. Some characteristics important for thriving in society millennia or even centuries ago are no longer helpful and are now even necessarily prohibited. A presently impractical, self-defeating extent of generosity could very well be extremely beneficial in a future society of equally generous citizens. Can we get there from here? If so, how? Will we? Should we? What if we do? What if we don't?

Motivation

If human enhancement's progress rate parallels technology's progress rate and technology's progress rate increases exponentially, then slopes of the functions of both rates could become very nearly vertical. Although it is possible to imagine linear or sinusoidal progress rates, exponential progress rates can be neither ruled out nor easily imagined. Healthy life span, sensation, cognition, connectivity, and functional ability are among categories of anticipated human enhancement. Future technology could facilitate local, instantaneous fabrication of all imaginable material objects, utilizing only ubiquitous ambient material and energy (Kaku, 2011a, 2011b). This could lead to unimaginable abundance (Diamandis & Kotler, 2012; Drexler, 2013). Technologies such as bionics, nanoengineering, nanorobotics, and DNA

programming could open door after door to forms of human modification limited only by imagination. In an upward spiral, even the powers of human imagination could be subject to exponential enhancement. Hyper-connectivity could involve networks of enhanced human brains. Other consciousness-impacting technologies could interface the human brain with artificially intelligent machines (Gay, 2015), making possible true human-machine hybridization. Modifications might not all be additive. Structural and functional aspects of the modern human being could be modified, rearranged, augmented, combined, replaced, or eliminated outright. What are the possibilities of neuropsychological modification technologies? Will human consciousness, phenomenology, morphology, sociality, and spirituality be fundamentally altered? Would enhanced humanity experience less suffering and more joy? Would that be beneficial? Would it be better to avoid human enhancement? Is it possible to prevent human enhancement?

With ever-increasing capabilities to best and defeat one another, will humanity perpetuate its arguably increasingly contentious rat race of zero-sum competitive interaction in commerce, ecology, entertainment, government, medicine, jurisprudence, education, aesthetics, science, sexuality, race, religion, and war? Will it even really matter very much if humanity does exactly that? It has been widely believed that competition played a key role in facilitating the systematic organization and animation of matter (Gardner, 2007). It could be asserted that, somehow, through a complex dialectic of competition and cooperation, increasingly cooperative competition helped to facilitate the establishment of human civilization (Flescher & Worthen, 2007; Pfaff, 2015). Refinements in that dialectic, in which humanity has been moving from cooperative competition toward competitive cooperation could be viewed as now facilitating uptrending (Pinker & Mack, 2014) social progress (Huizinga, 2016; Suits et al., 2014). Might

profoundly accelerating rates of change with exponential progress in information technology and human enhancement reveal that our social progress slope is asymptotically approaching a horizontal line? In other words, might such a revelation demonstrate that, within our longstanding competition-cooperation paradigms, humanity's social progress curve is flattening out, reflecting diminishing returns? Might human social improvement be approaching a time of vanishingly slow progress or even loss of progress? These are some of the questions that are explored throughout this dissertation.

It might be relatively common among progressives to desire progress in connection with beliefs that more prosocial societies that tend to benefit humanity involve, for the most part, increased assistance for people who are less fortunate, increased fair play, and more effective regulation of various arenas in which competitive activity takes place. Imagine, though, when the reign of competitive cooperation has run its course, the difficulty in finding agreement about where, on the under-taxonomied continuum of prosociality, competitive cooperation's successor might be found.

Theoretical Situatedness and Practical Relevance of this Exploration

It is important to develop adequate theoretical bases to guide increasingly rapidly unfolding challenges presented by application of unprecedentedly powerful technologies, particularly emerging biotechnologies, which continue to be applied to every type of attempted human enhancement as soon as those new technologies are developed. We are just entering a phase in which we can, for the first time, actually rewrite our own operating system and that of all other species, programming DNA, to intentionally and rapidly essentially modify any and every essential characteristic. There is no way to be certain what might stem from such willful changes. Humanity's capacities for adaptation to major changes involve systems that have until now afforded long periods of time spanning many generations within which to unknowingly

adapt. The era humanity is now entering affords no such luxury of gradual adaptation. Humanity's adaptability and mechanisms for change have also long benefitted from the safety net of numerous relatively isolated and insulated separate populations with very limited or even no frequent interaction between widely spaced groups. This has allowed the luxury of developing in circumstances that are predominately self-referencing and only occasionally interacting. Such isolation and insulation of monocultures has long been important to many aspects of human existence. Among those aspects of human existence that long benefited from relative cultural isolation were such critical life functions as developing and maintaining sustainable cultures with intergenerational continuity, various life-preserving immune system functions, more or less closed economic systems much easier to understand and survive within, shared worldviews and ethical expectations resulting in less routine local conflict and very rare intractable cross-cultural impasses resulting from wildly disparate expectations of basic social structures and functions, and maintenance of manageable semipermeable cultural boundary mechanisms for regulating every kind of inflow from external influences.

Because the human population has been increasing at likely unprecedented rates, humanity is increasingly rapidly forced closer together. Because of air travel and the World Wide Web, humanity has also become, at an unprecedented pace, overwhelmingly more networked. Interactions between people on opposite sides of the planet, which, only a few generations ago, were absolutely impossible, are now instantaneous and routine. Such revolutionary social realities have come about at rates which have far exceeded humanity's historic adaptation rates. Without isolated discreet groups spread out all over the planet, social stresses and infectious diseases circle the globe more rapidly than ever before and recently seem prone to constructive interference patterns producing dangerous, potentially unsurvivable

amplitudes. Such dangerous patterns act somewhat like brain wave patterns during seizure activity. In some cases of intractable epileptic seizures, neurosurgeons have been able to bring relief by performing corpus callosotomies, severing the corpus callosum, thereby isolating the left and right cerebral hemispheres. Humanity's historically isolated, insulated social systems were more like split brains than brains with intact commissures. Pediatric neurosurgeons seeking to alleviate relentless seizure activity have sometimes performed hemispherectomies, removing one of the cerebral hemispheres. Analogously, some people groups have tragically undertaken to excise other people groups whose existence they have deemed somehow incompatible with their own survival or culture or peace or flourishing.

Widespread use of certain environmentally destructive technologies, developed relatively recently in the scope of human history, has brought humanity to possible tipping points beyond which the ecosystem critically supporting human and other life could no longer be sustained. The ecosystem might, at some point, be non-restorable. Humanity is making very little progress toward reversing this destructive course, and it appears this might be due to certain relentless social cycles which stem from common characteristics of human sociality that very well might prove ultimately extinction-causing. Such common characteristics of human sociality might have been adequately adaptive and life-sustaining when our planet's ecosystem supported even a few million human beings, but such common characteristics of human sociality might now be unsustainable vestiges of previous, very much less population-dense eras.

Humanity is just acquiring the means to rewrite our own operating systems by programming and reprogramming DNA. That means our species faces sudden onset of unprecedented intentional evolution. This comes as our species has already been confronted by relatively instantaneous restructuring of humanity's entire social system. This might demand

intentional revision of common characteristics of human sociality. Perhaps this also demands purposeful development of species-wide social mechanisms that are capable of facilitating the adaptation necessary for continued viability of our species and of our shared habitat. This dissertation is an exploration of the need for and possibility of such revision of common characteristics of human sociality and purposeful development of species-wide social mechanisms capable of facilitating adaptation necessary for continued viability of our species and of our shared habitat. This is an exploration of intentionally endowing humanity with adequate freely chosen sharing behavior. This is an exploration of the idea that, in order to survive and thrive, humanity must begin generously sharing our ecosystem's finite resources instead of relentlessly competing for resources and attempting to dominate one another. Finally, this dissertation explored conceptualizing and devising technological means to make this happen soon enough to prevent tragically dystopic futures or even extinction of our species.

Importance of this Exploration

Because importance is an axiological consideration, the question, "What is the importance of this exploration?" is incomplete. Sharpening the question requires asking, what is the importance of this exploration to whom?

To a person entirely unconcerned about what happens to this planet and to future generations after that person dies, this exploration and the entire matter of benevolutioneering might only be important or valuable to the extent that it could impact that person's life. By extension, that person's expected remaining life span is a critical factor in determining if and to what extent this exploration and the entire matter of benevolutioneering might be important or valuable. Belief in the possibility of significantly extending human life spans in the very near future could, therefore, be a factor. In contrast, to a person extremely concerned about their own

legacy, about their generation's legacy, about what happens to this planet, and what happens to future generations, this exploration and benevolutioneering might be of utmost value.

This exploration reflects the latter axiology and considers each of the following questions. Is it important to seriously consider benevolutioneering? If so, how and why does this even matter? What difference does and could it make to explore this? How does this exploration relate to the heritage and mission of Saybrook University? How does this exploration relate to the heritage and mission of the tradition and enterprise of humanistic psychology? How does this exploration relate to transpersonal psychology? How does this exploration relate to consciousness, spirituality, and integrative medicine? How does this exploration relate to my personal intellectual, philosophical, spiritual, theological, and religious heritage?

Who Am I and Why Is This Exploration Important to Me?

First, I value the scientific method and appreciate rigorous scientific reasoning. I also acknowledge openness to the possibility of yet to be discovered, non-Newtonian factors affecting multiple areas of inquiry, including the life sciences, especially the nature and function of consciousness and sociality. I disclose openness to consideration of non-Newtonian factors when pursuing explanations of natural phenomena. It would be difficult to explore a number of ontologically important fields such as relativity or quantum mechanics without openness to consider non-Newtonian factors. Although I am a theist, and my openness to consider non-Newtonian factors does not exclude theological considerations, I believe theological consideration often warrants separate inquiry, ideally employing specialized methodologies and demanding particularly rigorous intellectual humility. I regard many, if not most, theological models as competitive undertakings in which theologians have typically reasoned circularly in seeking to confirm culturally derived a priori beliefs in or about their personal or sectarian

pantheon over and against others' divinities and others' cultural worldviews and, commonly, influenced to one degree or another by religious institutional priorities. This dissertation is not a theological exploration. In terms of non-Newtonian factors, I have grappled with such concepts as extra-dimensional ontologies and quantum mechanical processes possibly associated with consciousness and the human nervous system. Nevertheless, I believe it is entirely consistent to conceptualize experiences of putative divine activity as having physical correlates that are entirely appropriate scientific subject matter. This certainly includes the domain of what has come to be called neurotheology (Beauregard, 2008; Beauregard & O'Leary, 2007; Beauregard & Paquette, 2006; Newberg, 2010, 2014, 2018; Newberg & Waldman, 2016; Newberg, Alavi, et al., 2001; Newberg, D'Aquili, & Rause, 2001). I consider it likely that subjective personal and putative transpersonal elements of consciousness (Beauregard & O'Leary, 2007), including aspects of free will, creativity, even altruism, exceed current human epistemological capacity, even though actually characterized by what I consider full ontological status. This would be consistent with the intractability of the hard problem (Chalmers, 1993) of mind-body interface and with many other paradoxes associated with consciousness and putative transpersonal phenomena. Possible transpersonal aspects of altruism and benevolence could well be within non-Newtonian realms. I suspect they are, and it is best to disclose and bracket that suspicion in the interest of honest inquiry in this exploration.

Since 2011, I have been exploring the transhumanist movement and intrigued by the possibilities of intentionally engineering human evolution. I have attended several transhumanist conferences and met with and spoken to major figures in the transhumanist community. I (Mormon Transhumanist Association, 2014b) was featured among the speakers and panelists (Mormon Transhumanist Association, 2014a) at the San Francisco Bay Area's Transhuman

Visions conference on the future of religion and spirituality. My presentation was briefly and not entirely accurately referred to in O'Connell (2017):

> I heard a Seventh Day Adventist [sic] pastor with the pleasingly literary name Robert Walden Kurtz, who knew something of cults (having been personally acquainted with a guy who died at Waco after joining David Koresh's Branch Davidian sect in the 1990s), speak of how transhumanism could easily lend itself to such extreme and eccentric spiritual offshoots. (O'Connell, 2017, p. 166)

A *New York Times* book review called O'Connell (2017) "A wonderful, breezy romp….[A] gonzo-journalistic exploration of the Silicon Valley techno-utopians['] pursuit of escaping the body and ultimately mortality" (O'Connell, 2017, Front Cover). The inaccuracy I referred to was that, although I do have certain knowledge of the subject of cults, including, but not limited to the Branch Davidians and the People's Temple followers of Jim Jones, I was not, in fact, acquainted with anyone in the Branch Davidian sect who died at Waco. Rather, I had been an undergraduate colleague of a person who left that cult shortly before the February 28, 1993, Waco tragedy.

In February 2017 I served as an interview guest for the Christian Transhumanist Podcast (Redding, 2017). Shortly after that interview aired, I was elected to serve on the Board of Directors for the Christian Transhumanist Association. I served in that role for 3 years.

Throughout my involvement with the transhumanist movement, I have perceived what appears to me a dominant perspective among transhumanists of reductionist materialist models of consciousness. The same perspective also seems dominant within the community of scientists and engineers with whom the transhumanist community places the most hope for the development of transhumanist technologies. I have become concerned by what that necessarily implies about a number of accompanying beliefs, such as those regarding sociability, volition, and ethics. I am not convinced that there is a simple answer to the mind-brain explanatory gap. I am concerned about pressing forward with the modification of the human nervous system

without allowing for the possibility of unknown aspects and dimensions of what might endow human beings with subjective personhood. Arrogant recklessness could result in species-wide implementation of technological nervous system alterations accompanied by profound change in or loss of essential aspects of authentic humanity. I am concerned that such tragic losses could involve reduced or eliminated altruistic behavior, loss of such prosocial phenomena as benevolence and certain kinds of love, even certain dimensions of both individual and collaborative creativity.

Although any synthesis of my seemingly disparate identities might not, on the surface, seem plausible, in addition to being a theist and a STEM-loving transhumanist, I consider myself a humanist. Although all of this has been unavoidably affecting my expectations as I have explored, I believe far more remains to be discovered than what is known by our species and that future discoveries will challenge all of our understandings and beliefs.

Contributions to Saybrook University's Mission

According to Pinker (2018), what could be called humanism is "the goal of maximizing human flourishing—life, health, happiness, freedom, knowledge, love, richness of experience" (p. 410). Pinker (2018) said, "It is humanism that identifies *what* we should try to achieve with our knowledge. It provides the *ought* that supplements the *is*. It distinguishes true progress from mere mastery" (p. 410). Brumlik (2016) equated humanism with transhumanism, identifying transhumanism, intentional use of every available means to define and extend human nature, as that which distinguishes human beings from all other entities. It is humanism that distinguishes Saybrook University and that occasioned its founding. At Saybrook University's website, on the webpage, *The Fourth Revolution*, Saybrook University's president, Nathan Long (n.d.), explored "the university's humanistic legacy" (para. 1) and characterized Saybrook's future as a "future

unbound by convention" (Long, n.d., para. 1). Long (n.d.) identified Saybrook University's founding and continuing mission as "promoting a more just, humane, and sustainable world" (para. 3).

Benevolutioneering embraces and extends Saybrook University's special flavor of humanistic thought. Exploring critical intersections of frontier medical science research with acknowledgement of the degree to which prosocial, psychoneuroimmunological, and transpersonal factors influence physical and all other aspects of well-being, reducing suffering and even potentially dramatically extending life, reflects Saybrook University's openness to integrative medicine's potential contributions to wellness and thriving. In fact, whereas transhumanists' visions of enhancing and immortalizing human beings are typically modeled as the logical extension of reductionist materialist Western medical science, benevolutioneering, as herein modeled, can be conceptualized as a radical extension of the strand of integrative medicine embraced and promoted within the Saybrook University community's tradition of mind-body medicine and integrative health. Additionally, subsumic philosophy, upon which benevolutioneering is founded, values and considers every actual perspective, although certainly not every proposition or opinion, as valid. Clearly, that extends the third principle listed among Saybrook University's principles of humanistic psychology at Saybrook University's website, on the webpage *The Fourth Revolution*: "The point of view of the subject is honored and articulated" (Long, n.d., para. 12).

Benevolutioneering shares Saybrook University's vision of "contributing to a more just, humane, and sustainable world" (Long, n.d., para. 29). Benevolutioneering also seeks to extend Saybrook University's current goal of "taking the humanistic values that informed the field of psychology and making these not a third way or 'force', but instead promoting these values as

the force for positive, social transformational change" (Long, n.d., para. 31). Extending such values to the fields of futurology, transhumanism, and moral neuroenhancement fulfills Saybrook University's ambitious objective of influencing multiple disciplines: "By expanding the promise of humanistic thinking into various fields of study, we expand the opportunity to change the world one individual, one organization, and one community at a time" (Long, n.d., para. 33).

Suffering and Unprecedented Jeopardy of Dystopias or Extinction

This exploration is not important only to me or to Saybrook University's community of humanist psychologists and scholars. I believe the considerations of this exploration are actually of utmost importance to our entire species and to all other species with which we share this planet. Benevolutioneering and its subsumic philosophical foundation are intended to contribute to the mitigation of chronic unnecessary suffering and multiple existential threats to all of humanity and to every living creature with which humanity shares this planet.

One dynamic measurement of humanity's current level of existential threat is the Bulletin of the Atomic Scientists' Doomsday Clock, a now online, continuously updated device warning humanity of "how close we are to destroying our world with dangerous technologies of our own making. It is a metaphor, a reminder of the perils we must address if we are to survive on the planet" (Doomsday Clock, 2021, para. 2). The Doomsday Clock offers a relative measure of how close we are to being hoisted by one of our own petards. When the clock debuted in 1947 it was set at 7 minutes before midnight. Midnight represents the time at which humanity is destroyed by its own technology. Although the clock originally indicated how close humanity was to species-wide self-destruction through nuclear warfare, it has since expanded its representation to reflect

additional extinction level existential threats as they have emerged. Here is the history of the clock's settings.

Year:	1947	1949	1953	1960	1963	1968	1969	1972	1974	1980
Minutes to midnight:	7	3	2	7	12	7	10	12	9	7

Year:	1981	1984	1988	1990	1991	1995	1998	2002	2007	2010
Minutes to midnight:	4	3	6	10	17	14	9	7	5	6

Year:	2012	2015	2016	2017	2018	2019	2020	2021
Minutes to midnight:	5	3	3	2.5	2	2	1.67	1.67

"The real existential threats we face are things like nuclear war, climate change, unconstrained A.I., and the increasing centralization of wealth and power" (Azarisn, 2019, para. 15). Harari (Bilyeu, 2018) listed technological disruption among the most serious challenges humanity faces. The list of humanity's existential threats should also include biotechnology and bioweaponry.

Hazards of Worldview

Each of humanity's self-made existential threats and major sources of relentless unnecessary suffering are associated with underlying philosophical hazards. Philosophies develop over time, but philosophical development is, at critical points, significantly shaped by important intentional philosophical reconsideration. Humanity's current circumstances suggest urgent need for significant philosophical reconsideration. Modern human values are not well-adapted to current societal realities. Many modern human conceptions of reality neglect to account for very important relatively recent human discoveries and are not well-adapted to recently culturally blended communities and humanity's now hyper-connected ways of life. Increasing societal polarities stem from and further foster fundamental disagreements about how and where to obtain accurate, reliable information, about how to distinguish fact from nonsense and falsehood.

Axiological Hazards. Strikingly, each of humanity's major existential threats and the persistence of incalculable entirely unnecessary suffering stem from humanity's fundamental deficiency of prosociality. Prosociality, as the term is used in this exploration, involves positive sentiments for others and benefitting others. If the fundamental axiology, the core value and primary goal, of human beings, individually and collectively, was benefiting others, protecting others, resourcing others, prospering others, and facilitating others' joy and fulfillment, humanity would not be existentially threatened by hazards of its own making. Selfishness is steering our species toward self-destruction. Humanity's fundamental nonprosocial axiology has been causing and perpetuating immeasurable suffering for millennia. That is not new. In fact, in many ways, our species has even come to quite admire itself for its inclinations and abilities to outdo others and obtain disproportionate shares of every kind of finite resource. Recently, though, with astoundingly rapid development of technological sophistication, human beings have become excessively adept at taking more than their share and hurting others, and human beings have come to value, more and more, defeating others, often even more than benefiting themselves. This particular type of value has become so culturally foundational that it appears to be valued as an end in itself, that for the sake of which, and it even appears to be treated in certain respects, as sacred. Various time-honored creation accounts are being outcompeted by a now prevailing origins mythology which models development from prokaryotes to people as driven by the engine of competitive struggle. This implies that competition is, in a sense, our creator, as that without which we would not have come into being, as that to which we owe our very existence and hope of continued progress. It is not difficult to appreciate many people's strong emotions toward any suggestions that competition might beneficially be considered for reduction or elimination. Such iconoclastic notions could be experienced as quite offensive, even heretical,

and could evoke uncritical dismissiveness or anger. Many functions of human existence have been seemingly irreversibly arranged as competitive endeavors, zero-sum contests in which one's objective is preventing another person from reaching their objective. This structures such aspects of our lives as: nutrition, shelter, attire, economics, governance, justice, vocation, technology, art, leisure, companionship, sexuality, child-rearing, medicine, education, even scholarship, science, religion, and spirituality. It would be challenging to list very many important pursuits of modern living not characterizable as succeeding by defeating others.

Among the most serious axiological challenges to the survival and thriving of our species, also stemming from humanity's fundamental deficiencies of prosociality, is the dominant (Galbraith, 2014), widespread preference for growth and expansion with little concern for sustainability (Capra & Luisi, 2014; Heinberg, 2011; Jackson, 2009, 2013; Rubin, 2012). "The fundamental dilemma underlying the major problems of our time seems to be the illusion that unlimited growth is possible on a finite planet" (Capra & Luisi, 2014, p. 363). Perhaps this is fueled, at the level of the individual consumer, by basic greed, another tentacle of selfishness, or by having been conditioned by the notion that it would indicate personal failure if a person was not frequently gaining and upscaling more and more possessions. Nevertheless, the increasing scarcity of now-traditional energy resources, of certain other manufacturing resources, and slowing population growth have dramatically stiffened competition within society's rat race (Rubin, 2012). Patriarch of Western culture's political economy, Adam Smith (1776/2010), whose arguably canonical treatise has served as a "foundation of modern economic theory" (Capra & Luisi, 2014, p. 50), believed that:

> The self-balancing market system was one of slow and steady growth, with continually increasing demands for goods and labor. This idea of continual growth was adopted by succeeding generations of economists, who, paradoxically continued to use mechanistic equilibrium assumptions while at the same time postulating continuing economic growth.

> Smith himself predicted that economic progress would eventually come to an end when the wealth of nations had been pushed to the natural limits of soil and climate, but he thought this point was so far in the future that it was irrelevant to his theories. Today our global economy is fast approaching these natural limits… (Capra & Luisi, 2014, p. 51)

It is easy to see how, with the increase of competition for lifestyle levels, including even, at the most concrete local levels, the immediate acquisition of consumer items, becomes increasingly aggressive and otherwise dramatically antisocial. This has been concretely illustrated by the rise of aggressive behavior among Black Friday shoppers (Lennon et al., 2011; Lennon et al., 2014; Nawaz & Khan, 2020; Raymen & Smith, 2016; Smith & Raymen, 2015). What could these relatively recent behavioral developments be indicating? Imagine the extension of underlying axiologies of Black Friday consumer misbehavior, with its pronounced demonstrations of such self-centered disregard for other shoppers and for the immediate retail environment, to our world's broader systems and citizenry. This is more than a useful metaphor. It is more like laboratory microscopy of biopsied samples of malignant tissue.

Unfortunately, it is not only during times of scarcity that humanity seems to treasure and foster systems that promote fierce competition for finite resources. In times of resource abundance societies arrange and construe artificial scarcities to sustain the dynamics of their economic systems. Insistence on various kinds of growth helps to create such resource vacuums. Also, many, if not most, favored modes of recreation and entertainment are fundamentally based on contriving various zero-sum scarcities. People perceived not to embrace and engage in the spirit of zero-sum competition are regarded as less successful in school, in their neighborhoods, in their families, at play, and in their careers (Kohn, 1986). To many people, sustaining the model of a competitive society is believed to be extremely important, even indispensable, to humanity's flourishing (Case, 2007; Lütge, 2019; Nelson, 1998; Porter, 2008).

As this dissertation has explored, it appears humanity might be entering an era in which technologies of intentional evolution can neuroengineer even axiologies and reify favored ontological constructs of life, consciousness, the human organism, human nature, even metaphysics. There is little understanding of ontological constructs of life, consciousness, the human organism, human nature, and metaphysics. West-favored illusions of egalitarianism and freedom from ideological coercion might prove unable to compete with efficient, overwhelming, straightforward, unapologetic, decisive Sino-political social engineering, especially if artificial intelligence development is ultimately shaped by China-based research, which might be imminent (Oikawa & Shimono, 2021). Western values that ultimately end up persisting and contributing to future world culture could believably end up being antisocial values such as those values embracing Ayn Rand's (1957/1996; Ayn Rand Institute, 2020; Rand & Branden, 1964/2005) legacy of considering altruism immoral, whatever mechanisms are involved in corporate competition so fundamentally antisocial that some corporations even select psychopaths as chief executives, and widespread grassroots and institutional regard of compassion and kindness as weaknesses.

Ontological Hazards. Although philosophy may well have been born of exposure to new ideas and alternate worldviews at a few points of foreign interface such as important ports and crossroads, limited exposure to fertilizing interjections of alien ideas at cultural peripheries is a very different species than today's forced, relentless, thorough blending of nearly every one of our planet's cultures and subcultures. This might be the first time in human history that a large percentage of our species is living in extremely dynamic, high pressure, crowded communities, intermingled with people with whom there is no shared worldview, widely disparate models of

reality, contrasting theologies, divergent moral and ethical systems, and very different sources of enjoyment and meaning.

Historically, our species' thousands of generally effective cultures and subcultures, each with their internally shared worldviews, did not develop within conditions anything like today's blender-like cultural milieu. Population growth has reduced the space each person could occupy, nearly every resource is tied to a world-wide system of economics and production, environment-impacting activities are global concerns, the internet is a world-wide commons, international travel links our entire species epidemiologically, and our weaponry is capable of harming people anywhere on our planet almost instantaneously. Our connectedness is as if we were living in a single village with dwellings separated by no more than a few feet.

It would be challenging enough if the greatest problem associated with today's close-quarters coexistence was the challenge of mutual understanding and of forming close friendships and other important cross-cultural relationships between people of so many seemingly incompatible ontologies. Unfortunately, the challenge of seemingly inherent incompatibility of worldviews is dwarfed by the trouble stemming from people's convictions that differing worldviews are necessarily the basis for fierce competition, self-superiority, one-upmanship, conflict, disregard, disrespect, bigotry, violence, spite, schadenfreude, even warfare.

There is an unprecedented and increasingly urgent need for ontologies that facilitate living together amicably, in mutual respect and admiration, with people of disparate worldviews, various epistemologies, and various axiologies. Humanity might lack the luxury of adequate time to wait for development, by historic adaptive mechanisms, of shared or even adequately compatible philosophies to prevent irreversibly dystopic futures or even extinction. Because

residency in our era is so much more fluid than in earlier eras, gradual evolutionary mechanisms might never bring about adequate cultural adaptation.

Epistemological Hazards. Although, logically, acquiring and evaluating knowledge is not inherently a competitive undertaking, constructs of fundamentally competitive epistemology have developed and are in wide use. Tribalism emerges among people with differing epistemologies. This is becoming evident in the increasing partisanship associated with anti-intellectualism. Apparently, the Dunning-Kruger effect fosters a folk belief that people of more modest cognitive ability and less educational background possess certain wisdom less available to people more cognitively and educationally resourced. In a competitive model, intellectual humility can be viewed as conceding defeat in some form of contest. During the COVID-19 pandemic this has resulted in significant harm.

There is also an increasingly hazardous tendency to accept and even prefer certain kinds of conspiracy theories. This has also become competitive in a tribalistic way and sometimes in a partisan way. This has also resulted in significant harm during the COVID-19 pandemic.

A far more subtle impact of highly valuing competition drives many very intelligent thinkers to epistemologically over-utilize parsimony, mistakenly attributing ontological authority to Occam's Razor, losing sight of the fact that the value of Occam's Razor is as a heuristic, as a shortcut that makes it possible for human thinkers to usefully, indispensably, profoundly oversimplify nature to facilitate development of practical, good-enough models and solutions. This is so instantiated in many people's philosophies that they unwittingly attribute metaphysical authority, ontological power, to Occam's Razor. This has even come to be assumed as scientific orthodoxy. That is, unfortunately, an earmark of scientism, a kind of fundamentalism in which certain beliefs and traditions and values associated with cultural notions of science and scientific

communities function, uncritically, in many ways, like a religion. Orthodoxies do not tend to foster intellectual humility. A certain kind of pride seems to make it difficult for many people to heartily acknowledge the profound limitations of human cognition and human achievement. Humanity must admit nature's staggering complexity and humanity's relatively modest, finite cognitive capacities. Humanity risks insisting on perpetuating over-simplified models and solutions to the dismissal and exclusion of potentially revolutionary solutions to humanity's gravest challenges, inherently characterized by staggering complexity. Humanity also risks developing and implementing profoundly harmful technologies based upon clung-to orthodoxies involving tragically limited understandings and oversimplified models of nature, the human organism, and human essence.

Weaponry-Related Jeopardy

Graffin (2015) likened humanity's incessant warring with the "'warfare' between species that we see in nature" (p. 156) and asserted that "war is an inevitable feature of all populations" (p. 156). It is informative that stemming from a protracted spirit of one-upmanship are some of humanity's greatest potential global catastrophic risks: nuclear war, nuclear terrorism, bioweaponry and bioterrorism, nanotechnological weaponry and terrorism, and totalitarianism (Ackerman & Potter, 2008; Caplan, 2008; Cirincione, 2008; Nouri & Chyba, 2008; Phoenix & Treder, 2008). Geraci's (2010) frightening list of potential apocalyptic artificial intelligence scenarios can be viewed as somehow, concern-by-concern, linked in one way or another to antisociality, a reductionist materialist consciousness construct, or both. In other words, without antisociality, risks of that sort would not exist. Certainly there is a staggeringly long list of calamities and hurts of more modest magnitude that would cease to exist if antisociality

disappeared. Proposing benevolutioneering involves boldly proposing that we do whatever it takes to minimize antisociality.

Humanity continues to increase the likelihood of cataclysmic nuclear warfare or cataclysmic nuclear terrorism (Bilyeu, 2018; Bostrom, 2019; Cirincione, 2008; Wright, 2017). Fabiano (2018) said "there are strong reasons in favour of attempting to improve moral dispositions; it could significantly decrease a wide range of extreme risks that arise from our moral failings (for example, nuclear war from lack of global co-operation)" (p. 1). Although the fluctuating probability of a large-scale violent event is dramatic and incredibly concerning, that is not a certain fate. Ecological calamity, however, has already arrived.

Ecological Jeopardy

Humanity's entire global habitat, the very physical support system of humanity's existence, is seriously threatened. Human activity, that is, collective human behavior, motivated by common human values and common human sociality, is compromising humanity's planetary habitat.

> Anthropogenic climate change, or climate change for short, is arguably one of the biggest problems that confront [sic] us today. There is wide agreement that climate change will affect the lives of all people around the world in areas such as food production, access to water, health, and the environment. Indeed, it has been estimated that millions could suffer hunger, water shortages, diseases, and coastal flooding as a result of global warming. (Liao et al., 2012, p. 206)

It is even possible that current ecological trajectories are leading to such severe habitat compromise that our species' continuity is at significant risk (Spratt & Dunlop, 2019). It might seem that the earth, as a system, is so massive, so extensive, so permanent and immovable, that human activity would never be able to substantially alter the continuity of the earth's apparently relentless processes. That was closer to the truth when humanity's global population was very much less than it is today and when combined human effort was not multiplied so effectively by

the powerful machinery of the twentieth and twenty-first centuries. Our planet's climate is undergoing significant change as a result of human activity (World Meteorological Organization, 2021). Demonstrating how human activity is now the "dominant force shaping the face of Earth" (Elhacham et al., 2020, p. 442), Elhacham et al. (2020) reported that the mass of human-made materials now exceeds the mass of all living biomass.

Extensive use of fossil fuels is significantly raising the earth's temperature. Manifold effects of this warming are already appearing. Satellite imagery shows almost complete disappearance of the Northern California coast's kelp forest over the past 8 years (McPherson et al., 2021). Researchers have warned that the Amazon rainforest, sometimes referred to as the earth's lungs, within 49 years of reaching a rapidly approaching deforestation tipping point, could become a savannah grassland (Kottasová, 2020). Forests being burned away each year in enormous global-warming-caused wildfires in the Western United States, unlikely to regrow, could be largely replaced by non-forest vegetation (Rodman et al., 2020; Sakas, 2020; Stevens-Rumann & Morgan, 2019). Western Antarctica's Thwaites Glacier, which "sits like a keystone right in the centre of the West Antarctic Ice Sheet" (Pinkstone, 2021, para. 18), has been called the doomsday glacier (Pinkstone, 2021). "If it was to collapse, it would lead to an increase in sea levels of around two feet (65cm) and already accounts for four per cent of the world's sea level rise each year" (Pinkstone, 2021, para. 4). Wåhlin et al. (2021) reported that newly discovered warm water flows, now impacting pinning sites on all sides of the glacier, threaten to unpin and release the Thwaites Glacier entirely, much sooner than previously estimated. Jones et al. (2018) warned that human-caused climate change would result in pandemics. Engler et al. (2021) pointed to the COVID-19 pandemic as foreshadowing further climate-change-caused epidemiological disasters. Daggett (2018) coined the term petro-masculinity to denote "new

authoritarian movements in the West…embracing a toxic combination of climate denial, racism and misogyny" (p. 25), a dynamic indicating that fossil fuels are not only about profit but have become important to some people's very identities, further complicating already discouraging social and political challenges to slowing human destruction of earth's ecosystem.

Liao et al. (2012) considered as potential interventions to climate change both geoengineering solutions and biomedically modifying human beings to mitigate climate change, or, failing that, to adapt human beings to the effects of climate change. They opined that human engineering, as they referred to biomedically modifying human beings, was potentially less risky than geoengineering and recommended further serious consideration of human engineering in the climate change debate. Liao et al. (2012) suggested that a promising "indirect means of mitigating climate change is to enhance and improve our moral decisions by [pharmacologically] making us more altruistic and empathetic" (p. 210):

> Many environmental problems are the result of collective action problems, according to which individuals do not cooperate for the common good. In a number of the cases, the impact of any particular individual's attempt to address a particular environmental problem has a negligible impact, but the impact of a large group of individuals working together can be huge. If people were generally more willing to act as a group, and could be confident that others would do the same, we may be able to enjoy the sort of benefits that arise only when large numbers of people act together… Increasing altruism and empathy could also help increase people's willingness to assist those who suffer from climate change. While altruism and empathy have large cultural components, there is evidence that they also have biological underpinnings. This suggests that modifying them by human engineering could be promising. (Liao et al., 2012, pp. 210–211)

Potential Hazards of Artificial Intelligence

In 2017 Ray Kurzweil predicted that human level artificial intelligence was only 12 years away (The Artificial Intelligence Channel, 2017). Notwithstanding its likely benefits, and even though, as I discuss later in this dissertation, I believe that benevolutioneering would never be possible without the development of strong artificial intelligence, artificial intelligence introduces grave concerns unlike any realistic concerns humanity has faced with any computing

technologies or any other technologies to date. For decades people have expressed legitimate concerns that artificial intelligence would be disruptive and would reshape the world's economy by edging workers out of many trades. Bonab et al. (2021) even defined high level machine intelligence as the "point in the future when unaided machines can accomplish every task better and more cheaply than human workers" (p. 261) and predicted that, unlike any previous radical inventions, artificial intelligence is so substitutable for labor that growing unemployment rates will be irreversible. Although these obvious concerns about artificial intelligence permanently disrupting employment are extremely significant, some people are concerned that artificial intelligence poses even greater threats, existential threats, very real risks of dystopian futures, even possible extinction level threats to humanity. Consider Elon Musk's warning:

> The percentage of intelligence that is not human is increasing, and eventually we will represent a very small percentage of intelligence. I try to convince people to slow down…AI [Artificial Intelligence], to regulate AI. This was futile. I tried for years. It's capable of vastly more than almost anyone knows, and the rate of improvement is exponential, and it scares the hell out of me. The biggest issue I see with so-called AI experts is that they think they know more than they do, and they think they're smarter than they actually are. The Deep Mind system can win at any game. It can already beat all the original Atari games. It is superhuman and plays the games at super speed in less than a minute. And we're all feeding this network with our questions and answers. We're all collectively programming the AI. And Google, plus all the humans that connect to it, are one giant cybernetic collective. This is also true of Facebook and Twitter and Instagram and all these social networks. They're giant cybernetic collectives. AI has administrator level access to Google servers to optimize energy usage at the data centers. However, this could be an unintentional Trojan horse. Deep Mind has to have complete control of data centers, so with a little software update, that AI could take complete control of the whole Google system, which means they can do anything. They could look at all of your data… . It's…definitely going to be outside of human control. The thing that's going to be tricky here is that it's going to be very tempting to use AI as a weapon….In fact, it will be used as a weapon. In general, we are all…much less smart…than we think we are—by a lot. So the on-ramp to serious AI, the danger, is going to be more humans using it against each other, …most likely. …some new technology will cause damage or death. There will be an outcry. This…tends to plague smart people; …they define themselves by their intelligence. And they don't like the idea that a machine could be way smarter than them. So they discount the idea, which is fundamentally flawed. That's…wishful thinking.

> I'm…very close to the cutting edge in AI. …I think the first bit of advice would be to…pay close attention to the development of artificial intelligence. …We need to just be very careful in how we adopt artificial intelligence and to make sure that researchers don't get carried away, because sometimes what happens is a scientist can get so engrossed in their work, they don't necessarily realize the ramifications of what they're doing. So I think it's important for public safety that…governments keep a close eye on artificial intelligence and make sure that it does not represent a danger to the public. I'm not really all that worried about the short-term stuff. …Narrow AI is not a species-level risk. It will result in dislocation, and lost jobs and…better weaponry and that kind of thing. But it is not a fundamental species level risk, whereas digital superintelligence is. So it's really all about laying the groundwork to make sure that if humanity collectively decides that creating digital superintelligence is the right move, then we should do so very, very carefully. Very, very carefully. This is the most important thing that we could possibly do. (Inner Vision, 2021, 0:00–9:12)

Ray Kurzweil suggested that "the blueprint for the master algorithm–or a single, general purpose learning algorithm–is hidden in the brain" (Singularity Hub Staff, 2017). Recently developed organic electrochemical transistors are beginning to facilitate associative learning in artificial intelligence systems modeled after the brain's system of neurons which is much more adaptable than older transistor-based systems (Ji et al., 2021; Rayne, 2021). "Reinforcement learning is one of the oldest and most powerful ideas linking neuroscience and AI" (Dabney & Kurth-Nelson, 2020, para. 3). Hoping to stimulate neuroscientific progress in order to advance artificial intelligence research, Dabney et al. (2020), exploring distributional reinforcement learning in the brain, hypothesized that brains represent "possible future rewards not as a single mean, but instead as a probability distribution, effectively representing multiple future outcomes simultaneously and in parallel" (Dabney et al., 2020, p. 671). Dabney and Kurth-Nelson (2020) reported that:

> A recent development in computer science – which yields significant improvements in performance on reinforcement learning problems – may provide a deep, parsimonious explanation for several previously unexplained features of reward learning in the brain, and opens up new avenues of research into the brain's dopamine system, with potential implications for learning and motivation disorders. (Dabney & Kurth-Nelson, 2020, para. 2)

If the human brain, is, at any level and in any way, a template, whether partial or even nearly complete, for artificial intelligence, then humanity risks not only replicating but possibly profoundly amplifying and ultra-empowering potentially autonomous entities with seeds of flaws or even actual developed flaws which are the very human flaws which have been causing suffering and now underlie existential threat to human life and all other life on earth. At the outset of the creation of artificial intelligence, humanity has an opportunity to carefully correct some of those vestiges of eras in which orders of magnitude less planetary population, each endowed with vastly less destructive capability, could rely on their global ecosystem to absorb and easily correct for barely significant insults, and populations could quite often migrate away from incompatible populations and circumstances into uninhabited or very sparsely inhabited areas of the earth capable of supporting new lifestyles and new communities.

Scientists and engineers adequately resourced to create advanced artificial intelligence systems would certainly avoid creating incredibly intelligent entities which would emulate the kind of thinking associated with psychopaths, would they not? Actually, "researchers at MIT have [already] created a psychopath. They call him Norman. He's a computer" (Scharping, 2018). The Artificial Intelligence system dubbed Norman was trained to caption images using a "popular deep learning method of generating a textual description of an image" (Yanardag et al., 2018, para. 2). The material used to train Norman was "image captions from an infamous subreddit…dedicated to document and observe the disturbing reality of death" (Yanardag et al., 2018, para. 2). After Norman's training, Norman was tested with an instrument which utilizes Rorschach inkblots for detection, in humans, of underlying thought disorders. Norman's responses were gruesome and were characteristic of a person who would be diagnosed as a psychopath. So, we have now reached the stage in which human beings have, in a very real

sense, created the "world's first psychopath AI" (Yanardag et al., 2018, para. 1). How? In essence, by creating a system in our own image.

> The researchers behind the project didn't intend to cause harm, of course. As they state on their website, Norman is a reminder that AI's are only as just as the people that make them and the data they're trained on. As AI becomes woven into our daily lives, this could have real consequences. Legacies of racism and discrimination, the gender pay gap—these are all human flaws that could potentially be baked into computer algorithms. An AI meant to allocate housing loans and trained using data from a period where redlining was common, could end up replicating racist housing policies of the 1960s, for example. Norman is a good reminder that our technology is just a reflection of humanity. (Scharping, 2018, paras. 9–10)

Bostrom (2015) warned that:

> we should not be confident in our ability to keep a superintelligent genie locked up in its bottle forever. Sooner or later, it will [get] out. …The answer here is to figure out how to create superintelligent A.I. such that even if—when—it escapes, it is still safe because it is fundamentally on our side because it shares our values. (13:11–13:33)

If artificial intelligence is to be made in our image, according to our values, can we afford to have those values, as they are now, instantiated in intelligence machines millions of times more intelligent, and therefore millions of times more powerful, than the most intelligent, most powerful human beings, designed without anything even resembling compassion, empathy, or remorse?

> It's critical not to underestimate the ability of human nature to diverge to some dark places that even the most sensible people think is impossible to do. Now, you add to that this technological innovation…. We have an exponential growth of all kinds of stuff: artificial intelligence, for example. …A.I. is an exceedingly useful but potentially very dangerous enterprise. …You're aware of …Hawkings' and all those warnings about what we call runaway technology, 'cause this…has the potential—of what we call runaway technology—it may get away from us, …it may end up writing its own source code, in which case we will have little or no control. (Geneva Centre for Security Policy, 2016, 7:41–8:38)

Potential Hazards of Transhumanism: Concern for Essential Humanness

Importantly, for the research trajectory I hope this dissertation fosters, Brumlik (2016) equated transhumanism with humanism. Zakariya (2016) characterized transhumanism as

utopian scientific humanism and as, for some, a secular substitute for certain hopeful religious utopianisms. Sorgner (2016) wrestled with the complications of conceptualizing notions of the good, best, virtue and other issues associated with axiological ideals, presented several candidate models, and highlighted the shortcomings of each. Each shortcoming seemed, to me, related to a continuation into the enhanced future of a diversity of types of inherently antisocial self-interest. This significantly helps to situate my exploration.

Various technologies exploring, modifying, linking, and extending human nervous systems in ways capable of impacting human consciousness are under development or are proposed and advocated. Many of these technologies represent profound advances, promotion of which essentially defines the agenda of what has come to be called the transhumanist movement, with promises of unparalleled enhancement of human life. Many of these proposed life-altering technologies involve unparalleled adjustments of aspects of human life long regarded as essential. The cyborg endeavor, creation of human-machine hybrids by incorporating technology into the human body, or the converse, for repair or improvement, is already very much underway and progressing surprisingly rapidly (Davis, 2006; Geraci, 2010; Kurzweil, 2005; Skordili, 2013).

Are there indications of how influential figures in the transhumanist community conceptualize the essence of a human being? How are constructs such as life, mind and consciousness regarded? This is foundational for considering the nature of possible forms of sociality of anticipated enhanced human (or posthuman) beings who could ultimately be the creations of the most influential figures in the transhumanist community if current trajectories are maintained. In one of the books from the required reading list of Ray Kurzweil's October 2011 New York City Singularity Summit, among the most significant transhumanist gatherings

to date, Marcus (2008) characterized human beings as needing improvement and the human mind as a “kluge” (p. 7), best explainable, in terms of evolutionary psychology, as erratically assembled. Kurzweil is among the most prominent transhumanist advocates of advancing technologies intended to modify, link, and extend human nervous systems in ways likely to significantly impact human consciousness (Ptolemy, 2011). In fact, it is common to hear and read among prominent transhumanists that life itself, although extremely complex, is strictly mechanical (Gardner, 2007).

Beliefs within Occidental culture, about consciousness, range from denial of its existence to insistence that everyone must reverence it as deity. Though there have been many theories of consciousness, none have been adequately supported to rise above the status of proposal (Charet, 2010). Reductionist materialist consciousness theories (RMCTs) insist that consciousness, the experience of having free will, and all else that human beings seem to experience subjectively result from exclusively physical structures and processes (Blackmore, 2006, 2010, 2012; Ratio BG, 2014). For many, RMCTs provide the logical basis for views about the feasibility and permissibility of certain proposed potentially consciousness-impacting transhumanist technologies (PPCITT), such as uploading human consciousness into computer systems and combining artificial intelligence technologies with the human nervous system (Kurzweil, 1999, 2000, 2013). Certain PPCITTs could shape the trajectories of the development of human life. RMCTs are viewed by many as precluding the reality of aspects of the human experience valued by humanists, existentialists, various religionists, and those embracing various aspects of transpersonal psychology. Theories of consciousness within the neuroscience and transhumanist communities warrant careful consideration and should inform humanists’, existentialists’,

religionists', and transpersonalists' dialog with both the neuroscience and transhumanist communities.

Is it possible that a strictly materialist, computational philosophy of mind could eventually determine public policy? Could civil authorities ever deem it mandatory to provide children with nervous system modifications or supplemental enhancements to remedy what are now normal cognitive abilities but could come to be considered cognitive disabilities inadequate to facilitate accessing an eventually upscaled grade-level curriculum appropriate for cognitively enhanced students? Could children without such enhancements ever be considered disabled? Is there any possible future in which mandatory nervous system enhancements, developed by people uniformly committed to RMCTs, compromise or even eliminate neurocorrelates of aspects of essential humanness?

Is it possible, and would it be best, to simply legislate prohibition of frightening varieties of technological human enhancement? Such technologies could frighten voters. If voters were ever thus frightened, they might seek laws to prevent development of new people-changing technologies. Such legislative attempts, if successful, might only delay implementation and acceptance of human modifications. According to Stock (2002), this would likely lead to hazardously more rapid implementation of dramatic human modification technologies, because the technical hurdles for such human modification would continue to steadily decrease during any period of legal prohibition of such technologies, creating pressure behind legislative blockades. Also, any nation's legislative prohibitions of people-changing technologies would have no international authority. Rival nations' unimpeded human enhancement programs would continue to advance, increasing their lead in developing citizenry ever more dominant militarily, technologically, and in competitive fields associated with international trade.

There exists a vital need to develop widely acceptable syntheses of current, disparate models of consciousness such that these syntheses are adequate and in-time to facilitate ethical implementation policies and practices of consciousness-impacting nervous system augmentation. If there is widespread satisfaction with current consciousness philosophies among those researchers best positioned to propose innovative theories of consciousness, then what are likely sources of urgently needed new synthetic models? Turner (2012) asserted that a narrowness of perspective within contemporary neuroscience, to the extent that foundational ontology is affected by cultural bias, stems, at least in part, from prevalent mentalistic terminology that unduly extends misleading mentalistic metaphors. Such is the case not only among neuroscientists. Important influences within neurophilosophy seem equally physicalist and just as averse to the notion of anything phenomenological having any ontology apart from brain structure. It seems that Block (2008) was so certain of exclusively neurological bases of phenomenology that he proposed searching for neural bases of phenomenology only in terms of ever simpler instances of neural bases of phenomenology. There was no apparent consideration on Block's part of any candidate extra-neurological bases of consciousness. Apparently, for Block, the case is closed. Dismissive bias seems to rule out even considering the possibility of consciousness involving a subjective entity with ontology apart from the atoms currently arranged within the brain. Turner (2012) argued from this assertion for the need to conduct cross-cultural ethnographic research in consideration of alternate models less steeped in cultural bias, including those more phenomenologically inspired. Whether from such a cultural anthropological approach or not, is there a need for new models of consciousness and related concepts? Barring waiting indefinitely for empirical evidence to eventually overwhelmingly support one of the current models of consciousness, there is need for elegant new synthesizing

paradigms of consciousness, mind, and related constructs within neuroscience and neuropsychology. The likelihood of openness to even consider development of new models is reduced by commitment to favored models. As things stand, RMCTs are so prevalent within scientific fields related to and likely to influence consciousness theory that career choice and career field gatekeeping could even be helping to perpetuate multi-generational homogeneity of RMCTs within such fields.

What kinds of consciousness-impacting human enhancement technologies are associated with the transhumanist agenda, and how could particular philosophies of consciousness make any difference in considering and treating such potential technologies? One example of an important and fascinating aspect of transhumanism associated with consciousness theory involves the questions of feasibility and desirability of uploading human consciousness into some kind of computer system either as a means of survival or of improvement. Although one might imagine such a process as involving a computer external to the human body, the computer to which one's information could be uploaded could be vanishingly small and could be housed inside one's skull. In other words, it could completely or partially replace or augment one or more brain structures. Such an implanted computer might outperform, in quantifiably measurable processes, the brain structures it augments or replaces, but it could also lack or impede certain undiscovered or even just inadequately valued functions regarded as essential humanness or associated with spiritual functions typically dismissed as woo-woo by most in the various neuroscience communities. Aside from variations of such an uploading process involving compromise or destruction of the source brain, such uploading scenarios could represent duplication or creation of facsimile rather than modification of existing human nervous systems. Such considerations are somewhat related to but not entirely within the scope of this dissertation,

so are mentioned briefly but not treated extensively herein. These concerns were valuably and accessibly explored in more depth by Chalmers (2010). Consider, though, the difference it could make for such uploads if the entire process was designed by individuals denying the reality of important aspects of human existence. Would such uploads not be immeasurably more favorable if the part of the human being that actually has first person subjective experience was uploaded with all the rest of what constitutes human consciousness? If the existence of that part of the human being was denied by all those who created the technology for such uploads, is it not likely that the technology might omit provisions to upload those valuable components needed for subjective experience if that could even ever be possible? The other-minds problem would prevent verification of the presence or absence in an uploaded version of a person of the subjective element, that part of the person about which it could be said that there is something that it is like to be (Nagel, 1974) that person. How could actual subjectivity-experiencing individuals be distinguished from entities that would be, essentially, philosophers' zombies? Even if a newly uploaded version of a person did, in fact, have a perfectly functional first person subjective experiential aspect, how could we distinguish continuity of personal identity from newly formed identity immediately subsequent to ending a person's original stream of continuity of subjective identity? Interestingly, this would be, of course, much less concerning if personness and consciousness is modeled according to Buddhist philosophy. Nevertheless, the Buddhist consciousness and personhood models are not universally accepted, are not possible to prove to everybody's satisfaction, and might be very good metaphors among the metaphors of every other model of consciousness and personhood, none of which can fully and perfectly model every aspect of personal existence.

Because all attempts to construct a model of human functioning have failed to identify a role for consciousness in any operationalized conceptualization of the brain, and due to the inability to make complete sense of the idea of consciousness within prevailing theoretical constructs within the neuroscience community, Torey (2014) said that consciousness has been removed altogether from the philosophy of mind of many within the neuroscience community. Dennett (1991, 2013, 2014) clearly stated that he believed consciousness and what is thought of as free will result from exclusively physical structures and processes. Even though this also characterizes Blackmore's (2006, 2010, 2012; Ratio BG, 2014) position, Blackmore (Ratio BG, 2014) said that, although consciousness has not really been defined, the best characterization of consciousness involves Nagel's (1974) distinction regarding first person subjective experience. Distinguishing conscious entities from non-conscious entities, Nagel asserted that there is something that it is like to be a conscious entity, but there is nothing that it is like to be a non-conscious entity. To illustrate this phenomenological distinction, Nagel's (1974) famous essay invited readers to try to imagine what it would be like to be a bat, a small flying mammal that uses echolocation to hunt insects. Koch (2014) described how Tononi (2012) "uses a mathematical expression to represent conscious experience and then derives predictions about which circuits in the brain are essential to produce these experiences" (Koch, 2014, p. 26). Koch then portrayed neuroscientist Dehaene's (2014) book on consciousness as equating consciousness to an experiential artifact of what amounts to, essentially, a scratchpad within the brain. Globus (2011) believed one contribution to the lack of a clear definition of and biases associated with this term, consciousness, is its relatively recent acquisition of additional connotations such as phenomenal experience. Earlier, Block (1995) unapologetically concluded that only a circular definition of phenomenal consciousness is even possible and that the

explanatory gap is a contingent property of phenomenal consciousness. Dehaene and Naccache (2001), though, were confident all the hard problems associated with consciousness will simply disappear with a suitable conceptual scheme of consciousness.

There is a prevailing notion that, within certain arrangements of ordinary matter, accidental, albeit extremely complex, inherent properties of the physical universe, relatively recently labeled *emergence*, inevitably yield what is commonly referred to as consciousness (Kaku, 2014). In consideration of that notion, although there is no surety of what will be eventually discovered in this regard, it is far from certain that even perfectly modeling a human brain will result in concomitantly modeling a human mind. Curiosity is warranted about the possibility of factors beyond the scope of current ontological constructs. Although there may be little or no justification for expecting empirical vindication of models involving a ghost in the machine, since this could be non-falsifiable, some of what David Chalmers was grappling with that he notably labeled *the hard problem*, the brain-consciousness interface, including such notions as his *panprotopsychism* construct (Chalmers, 2014), evidenced earlier in his dissertation (Chalmers, 1993), cannot be simply dismissed. Panprotopsychism, also quite possibly a non-falsifiable notion, represents an ontological construct that at least softens the hard problem.

> Panpsychists think that consciousness is fundamental and ubiquitous, panprotopsychists think that proto-consciousness is fundamental and ubiquitous. The properties that characterise conscious experience are commonly referred to as phenomenal properties; and hence the properties involved in proto-consciousness are referred to as protophenomenal properties. In the first instance, we can think of protophenomenal properties as properties that are not themselves forms of consciousness but which in combination give rise to forms of consciousness. (Goff et al., 2017)

Chalmers' allowance of the idea that proto-consciousness might be somehow fundamental within the universe could offer fertile ground for addressing aspects of the mind-brain paradox. In Chalmers' (2014) TedTalk, his portrayal of his notion of proto-consciousness was reminiscent of George Lucas's notion of The Force in Star Wars (Lucas, 1977). Chalmers'

(2014) TedTalk was also reminiscent of some of Jack Sarfatti's (ThinkingAllowedTV, 2010) earlier ideas. In a PBS interview, Sarfatti (ThinkingAllowedTV, 2010) echoed Einstein-follower David Bohm's ideas involving a super-implicate order.

Einstein was extremely reluctant to accept notions of the random nature of fundamental particles and their dynamics, characteristic of Niels Bohr's Copenhagen interpretation of quantum mechanics. Einstein resorted to suspecting extremely complex, although non-stochastic, hidden variables contributing to quantum mechanical operations to avoid what Einstein derisively characterized as God playing dice with the universe. Similarly, David Bohm (1952) believed that, through some non-local mechanisms, hidden variables interact with quantum systems and account for their probabilistic nature (Penrose, 1989).

Sarfatti (ThinkingAllowedTV, 2010) also referred, with some apparent openness, to the orchestrated objective reduction (Orch OR) conjectures of Roger Penrose and Stuart Hameroff (Hameroff, 1998, 2007, 2014, 2021; Hameroff & Penrose, 1995, 2014; Penrose, 1994; Penrose & Hameroff, 2011; Warner J Duchén M., 2015), "one of the most acceptable and continuous [quantum consciousness] theories that covers in detail quantum physics, quantum gravity, quantum information theory, molecular biology, neuroscience, cognitive science, philosophy, and anesthesiology" (Li et al., 2019, p. 4).

Roger Penrose was intrigued by his recognition that human mathematicians can prove mathematical results that should not be algorithmically provable according to his understanding of Gödel's incompleteness theorems, which established that it is not possible for sound mathematical theories to internally prove themselves. Penrose (1989) drew from that recognition the idea that the mind of a human mathematician could not both solve Gödel-unprovable results and be accurately described as a formal proof system and so could not be, or be running, a

computable algorithm. In other words, that mind could not be fully described mechanistically and so could not be a classical system. Furthermore, it was clear that the mathematician's mind did not fundamentally differ in type from other human minds. Penrose, of course, also recognized quantum mechanics as the alternative paradigm to classical physics. He proposed that "the 'objective collapse', that is, the collapse and superposition of quantum interference, is a real physical process, similar to the bursting of bubbles [and that] consciousness was the product of quantum space-time structure" (Li et al., 2019, p. 4). Penrose, however, did not have a model of how the human nervous system could facilitate quantum processes.

Arizona anesthesiologist and neuroscientist Stuart Hameroff "likened the flow of information in the brain to computers in which microtubules were to the brain what transistors were to the computer" (Li et al., 2019, p. 4). Hameroff "invoked that microtubules could be the fundamental units involving information processing in our enigmatic brain, e.g., visual identity, learning, cognition, and memory" (Li et al., 2019, p. 4). Inspired by Hameroff's idea and by what Penrose had drawn from Gödel's incompleteness theorems, Penrose (1989, 1994) "attached the quantum effect in human cognition" (Li et al., 2019, p. 4) and considered the possibility that consciousness not only affects quantum mechanics but is affected by quantum mechanics and might even fundamentally involve quantum mechanics.

> An unprecedented collaboration heralded the advent of the Orch-OR theory. Illuminated by the structure of microtubules, Penrose posited that the microtubules composed of protein polymers played an essential role in the understanding of human consciousness from the perspective of quantum mechanics [Penrose, 1994]. Co-established by Hameroff and Penrose, the Orch-OR theory approached consciousness from various aspects and became richer and more profound with new discoveries in neuroscience and development of research methods and instruments. (Li et al., 2019, p. 4)

Orch OR, orchestrated objective reduction, is so named because objective collapse is also referred to as objective reduction. The term *orchestrated* refers to the orchestration process carried out by neurotransmitters.

> Subtle changes caused by neurotransmitters from synaptic inputs could "orchestrate" tubulin states controlled by dipole couplings (one kind of intermolecular force), thus leading to microtubule simulation…[(Hameroff, 1998; Hameroff & Penrose, 1995)]. Tubulin quantum coherent superpositions and computations are increasingly combined to augment their superposed mass energy. Once the energy meets the critical threshold of quantum gravity, self-collapse occurs. That is, at this moment, the consciousness event occurs. (Li et al., 2019, pp. 5–6)

Although skepticism regarding Orch OR has been common, it seems that widespread criticism (Boolos, 1990; Davis, 1993,1995; Hepp, 2012; Koch & Hepp, 2006; Lewis, 1969; Putnam, 1995; Tegmark, 2000) and dismissal out of hand of the Orch OR conjectures should now be at least somewhat moderated in light of relatively recent claims of evidence supporting quantum vibrations in neuronal microtubules (Hameroff, 2014, 2021; Hameroff & Penrose, 2014; Warner J Duchén M., 2015). Accordingly, Li et al. (2019) said:

> Quantum mechanics has been inextricably linked with consciousness since its birth. Undoubtedly, the Orch-OR theory co-established by theoretical physicist Penrose and neuroscientist Hameroff is currently the most convincing theory. Even more exciting, with the emergence of new drugs, new research methods, and new quantum technologies, this theory is constantly being enriched and perfected. (Li et al., 2019, p. 7)

Several disciplines have offered evidence that "the Orch-OR theory could be self-explanatory and could be invoked to many different conscious backgrounds" (Li et al., 2019, p. 7). Research fields yielding such evidence have included memory research (Craddock, Tuszynski, & Hameroff, 2012), cognition research (Hameroff, 2007, 2014; Rasmussen et al., 1990), neural synchrony research (Craddock et al., 2014), and vision research (Woolf & Hameroff, 2001). Anesthesia is a field that has provided particularly intriguing evidence that might add support to the Orch-OR theory (Craddock et al., 2017; Craddock, St. George, et al., 2012; Emerson et al., 2013; Pan et al., 2007; Xi et al., 2004). Li, Lu, et al. (2018) "found that xenon's (one kind of anesthetic) nuclear spin could impair its own anesthetic power" (Li et al., 2019, p. 7). That represents an actual neural quantum process (Li et al., 2019).

> Thus, the quantum theory of consciousness is increasingly gaining more supporters. With the dedication of these supporters, the quantum theory of consciousness will be gradually completed and will be able to explain the hard problem systematically and comprehensively. As the enigmatic riddle of consciousness has remained intractable, we need more theories and hypotheses to attract enough attention and maintain lively debate. This conflict is the only way for human beings to explore the truth. Since there is no conclusive scientific mechanism of consciousness, as one of the most systemic and convincing theories among various theories of consciousness, the Orch-OR theory deserves our deeper understanding and study. (Li et al., 2019, p. 7)

Chalmers (1993) maintained consciousness as within the scope of the natural order and asserted that the prevailing view of the natural order is in need of expansion. Some believe that among needed expansions of the prevailing order of things is the overdue abandonment of various dualistic models, including the sharp distinction between the human organism and certain technologies and between material ontology and cyber ontology (Skordili, 2013). Torey's (2014) characterization of Chalmers' hard problem as nothing more than a "bastard offshoot of neuroscience" (p. 131) which is "neither hard nor a problem" (p. 132), reveals Torey's dogmatic reductionist materialistic position.

Kurzweil (2013) characterized Chalmers' panprotopsychism as a dualistic construct that assigns consciousness a distinct ontological reality and places consciousness outside the physical world. Kurzweil (2013) next characterized his own model of consciousness as a variant of panprotopsychism, viewing consciousness as an emergent property of a complex, albeit closed, physical system. Kurzweil's (2013) extensive discussion of various theories and aspects of consciousness is extremely well-balanced and thoroughly considered. Nevertheless, Kurzweil is a strict materialist. He leads the charge to achieve his version of personal human immortality by uploading into computer systems data which he equates with the human mind. According to Geraci (2010), the associated movement can be compared to many apocalyptic religious movements and draws upon such traditions.

According to Verdoux (2009), not everyone believing it is imperative to pursue human technological enhancement by every available means agrees with the optimism of progress characterizing many within the transhumanist movement. Verdoux pointed out that there are people committed to human enhancement even though they hold pessimistic, dystopian views about humanity's future. Some of these people are in favor of all kinds of human enhancement, artificial intelligence, and extreme lifespan lengthening, but they do not believe any of these hopeful transhumanist goals will be technologically feasible. Although beyond this dissertation's scope, it might be useful to extensively explore the relationship between philosophy of consciousness with both belief in the feasibility of consciousness impacting technologies and belief in permissibility of consciousness impacting technologies.

Blackmore (Ratio BG, 2014) said that in Chalmers' (1995) framing the "hard problem of consciousness" (p. 81) as "the question of how physical processes in the brain give rise to subjective experience" (p. 81), his use of the phrase "gives rise to" (p. 81) returns consciousness study to dualism. Certainly, though, there are influential thinkers maintaining that neither should consciousness be dismissed as nonexistent nor minds reduced to algorithms (Chalmers, 1993, 2014; Earley, 2002; Gierer, 2008; Grof, 2012; Penrose, 1989, 1994). Both complicating and warranting this dissertation's exploration is the fact that few among those thusly regarding consciousness and making scholarly contributions accordingly seem to be engaging in the conversation regarding the technologies, underway and proposed, exploring, modifying, linking, and extending human nervous systems in ways likely to impact human consciousness. Neither, perhaps unfortunately, are they among those leading and advancing neuroscience and neuropsychology. However insightful and potentially valuable the perspectives of non-reductionist thinkers, they do not seem to be steering the development processes of the

technologies capable of impacting consciousness. The contributions, therefore, of non-reductionist thinkers might be less direct than the contributions of those actively advancing the very technologies considered herein.

According to Istvan (2013; Mormon Transhumanist Association, 2014a, 2014c), the full range of potentially consciousness-impacting transhumanist technologies is entirely feasible. Istvan insisted that anyone who actively impedes and delays development and implementation of such technologies should be held criminally liable. Istvan was the Transhumanist Party's candidate for the 2016 United States Presidential election. Istvan (Mormon Transhumanist Association, 2014a) shares the Penrose (1989,1994) view that consciousness involves quantum mechanical processes, as does Radin (1997, 2006, 2010).

At issue for purposes of this exploratory dissertation is the fundamental lack of consensus regarding the ontological status of constructs related to and including consciousness and mind. Closely related are notions regarding the ontology and nature of personhood, identity, subjectivity, and the soul. Because views under consideration involve divergent schemas involving all of these elements, certain indirect concepts are useful in discerning analogous conceptualizations. One such indirect concept is belief about free will.

In effect, a prevailing theory of consciousness is predicated upon the view that a human being is essentially a very complex machine. This is distinct from views that human beings each somehow inhabit a complex machine or are composed only in part of complex mechanical components. These opposing views can represent the basis of a person's beliefs about the feasibility and permissibility of technologies potentially impacting human consciousness. One of the most significant differences between a machine and a human being, according to long-held

notions, is the capacity to freely choose, entirely non-deterministically, absolutely volitionally, between more than one possible course of behavior.

Consideration of the nature of consciousness is not entirely separate from consideration of whether a person can actually freely choose rather than merely experience the illusion of such capacity to choose while having all behavior predetermined by very complex sequences of non-volitional events. Although denying freedom of choice creates many challenges such as justification of culpability, personal accountability for behavior, it appears that allowing for actual volitional choice must defy the logic of cause and effect. Such apparent departure from causal reasoning is deemed by many in the scientific community as deferring to magic for explanation and dismissed as nonsense. I believe this stems, in part, from a bias for mechanistic determinism. It is common, for example, for modern empiricist materialist neuroscientists to conclude that human beings do not, in fact, have actual free will (Crick, 1995; Ramachandran, 2004; Torey, 2014). Although many who dismiss consciousness also dismiss free will and, therefore, might not give much thought to or say very much about free will (Crick, 1995), the topic represents one more window of insight into a person's theory of consciousness.

It seems that reductionist theories of consciousness and related constructs have been shown to dominate transhumanist discussions and agendas as they do most of the sciences, including neuroscience (Freeman, 2003; Koch, 2004a, 2004b, 2012) and neuropsychology (Freeman, 2003). As evidenced in transhumanist literature and in the popular press, confidence in neuroscience is very high (Beck, 2010), and leaders within the field of neuroscience as well as within the transhumanist community, especially at the intersection of the two communities, may contribute influentially and authoritatively to changing conceptualizations of human brains, human minds, and the meaning of human consciousness. In 2013, rivaling the scale of the human

genome project in terms of data volume and funding (Choudhury et al., 2014; Gross, 2013; Kaku, 2014; Kandel, Markham, et al., 2013), neuroscience research moved to the front burner in the United States and in the European Union, with multibillion-dollar initiatives to fully map connectivity within a human brain. This reflected the fact that RMCTs have been predominant within neuroscience (Blackmore, 2012; Ratio BG, 2014). The European Commission's anticipated billion-euro Human Brain Project, launched in October 2013, stalled within its first couple of ears, reportedly plagued from the start by leadership problems, internal strife, and early loss of confidence within the neuroscience community (Abbott, 2020). The research effort has progressed more favorably in the United States:

> The BRAIN Initiative started in 2013 as a large-scale effort to accelerate neuroscience research by providing researchers with tools to study and treat human brain disorders. The NIH BRAIN Initiative has focused on brain circuit structure and function as well as the development of technologies to manipulate connections. To date, more than 900 awards totaling approximately $1.8 billion have been supported by the NIH BRAIN Initiative, which is collaboratively managed by 10 institutes. (National Institutes of Health, 2020, para. 8)

The BRAIN Initiative appears to be yielding little or no research of particular relevance for development of PPCITT.

> A number of BRAIN Initiative-supported research findings have been published over the past year including identification of neurons that help rats envision future scenarios; the discovery of specific cells activated by general anesthesia and that may be potential targets for chronic pain treatments; advances in imaging technology that can measure brain activity up to 3,000 times per second in animals; examining nonverbal behavior in people with severe depression who receive deep brain stimulation; watching as odor-sensing cells within the nose react to complex smells; finding brain cells that can initiate torpor, a state of inactivity similar to hibernation; and a new device that may allow real-time control of prosthetic limbs. (National Institutes of Health, 2020, para. 9)

Although not everyone's view of the nature of consciousness and associated concepts of the ways consciousness relates to the essential nature of human life aligns with reductionist views dominant within the neuroscience community, the views of many leading consciousness theorists regarding theory of consciousness, the nature of the mind-brain relationship, and what

all that has to do with the essential nature of being human seem to align fundamentally with reductionist views dominant within neuroscience. Reductionist views are also characteristic of many of the leading advocates of transhumanism. Transhumanist activists predict and advocate modification of human beings as soon as technologically possible to radically advance human evolutionary progress millions of times more rapidly than their interpretation of the ancient rate of natural selection and other Darwinian mechanisms. Progress within neuroscience is one of the most significant factors advancing technological feasibility of human modification.

If RMCTs dominating the neuroscience and transhumanist communities eventually provide the basis for the ethics, axiologies, and technologies of widespread significant human modification, then such human characteristics as empathy, subjectivity, and capacities underlying intangible human warmth might be jeopardized. Such potential jeopardy calls for careful consideration, because humanity could be looking to neuroscience to explain what it means to be, and how to remain, human. Humanists, existentialists, religionists, and transpersonalists would be well advised to engage the neuroscience and transhumanist communities in consideration of the existence and importance of various qualitative aspects of human life and experience. If such conversations are to occur and be beneficial, they must be motivated by and based upon understanding the gravity of such conversations as well as the philosophies and agendas of all involved.

Previous and Ongoing Considerations of Moral Bioenhancement

DeGrazia (2014) defined enhancement as "any deliberate intervention that aims to improve an existing capacity, select for a desired capacity, or create a new capacity in a human being" (p. 361). Throughout this dissertation, as the term morality is used and whenever the concept of morality is involved, my definition and notion of morality most nearly matches Ugazio et al.'s (2014) characterization of morality as "the expression of judgments classifying

behaviors into good/right and bad/wrong ones" (p. 157). Moral enhancement was characterized by DeGrazia (2014) as "interventions…intended to improve our moral capacities such as our capacities for sympathy and fairness" (p. 361). As Crockett (2014a) pointed out, DeGrazia (2014) distinguished "between the enhancement of moral motivations, moral cognition, and moral behavior" (p. 371). Relatively recently, a body of literature has been developing that explores moral enhancement (Carter, 2015; Crockett, 2014a, 2014b; Crutchfield, 2016, 2019; Darby & Pascual-Leone, 2017; Douglas, 2008, 2013a, 2013b, 2014; Fabiano, 2018; J. Harris, 2011, 2012, 2013, 2014, 2016; Jolić, 2014; Kaebnick, 2016; Kulawska & Hauskeller, 2018; Paulo & Bublitz, 2019; Persson & Savulescu, 2008, 2010, 2013, 2014, 2019; Powell & Buchanan, 2016; Sandberg & Fabiano, 2017; Schaefer, 2015; Tennison, 2012; Walker, 2009; Wasserman, 2014; Wiseman, 2016).

Some researchers refer to moral enhancement as moral bioenhancement, especially when discussing moral enhancement which would employ less traditional, more technological means. DeGrazia (2014) pointed to examples of avenues of less traditional moral bioenhancement approaches recently explored either speculatively or, in some cases, already in use, including:

- Administration of glucose to increase resistance to temptation to perform unwanted behaviors or temptation to neglect wanted behaviors (Gailliot et al., 2007)
- By administration of selective serotonin reuptake inhibitors, the reduction of inclination to assault people (Crockett et al., 2010)
- Reduction of unconscious racial bias by administration of propranolol (Terbeck et al., 2012)
- Reduction of aggression by electrically stimulating the amygdala (Franzini et al., 2005)
- Use of neurofeedback for increasing sympathy and for treating antisocial personality disorder (Caria et al., 2010; Sitaram et al., 2007)
- Selecting embryos for gene coding associated with increased probability of altruistic disposition (Li et al., 2015; Reuter et al., 2011; Walter, 2016)

- Genetic modification of gametes, embryos or postnatal human beings for increased probability of altruistic disposition (DeGrazia, 2014)
- Selecting embryos for gene coding associated with decreased probability of antisocial personality disorder (Eley et al., 1999)
- Genetic modification of gametes, embryos or postnatal human beings for decreased probability of antisocial personality disorder (Eley et al., 1999)
- Selecting embryos for gene coding associated with increased probability of traits associated with fairness (DeGrazia, 2014)
- Genetic modification of gametes, embryos or postnatal human beings for increased probability of traits associated with fairness (DeGrazia, 2014)
- Creation of synthetic chromosomes with multiple genes coding for increased probability of various desirable moral traits (DeGrazia, 2012; Silver, 2007)

Unsurprisingly, much of the scholarly consideration of moral bioenhancement has appeared in the literature of bioethics and philosophy (Carter, 2015; Crockett, 2014a, 2014b; Crutchfield, 2016, 2019; DeGrazia, 2005, 2014; Douglas, 2008; Hall, 2019; Harris, 2011, 2014; Lara, 2017; Levy et al., 2014; Persson & Savulescu, 2008, 2013; Savulescu et al., 2014; Specker et al., 2014; Specker & Schermer, 2017). In exploring moral bioenhancement as potentially acceptable, beneficial, and desirable, a wide spectrum of proposed interventions (Specker & Schermer, 2017; Teunisse et al., 2019) and extents of enhancement (Wasserman, 2014) has been under consideration. One example of the many aspects of moral bioenhancement considered is moral enhancement of intractably violent criminals and pedophile offenders by application of anticipated genetic and neurological interventions expected from ongoing aggression research. Such enhancements seem likely to be among the least controversially discussed applications of moral bioenhancement and far less likely to encounter widespread popular resistance. Probably more controversially, some have advocated developing moral bioenhancement technologies to treat far more common antisocial characteristics such as racism and xenophobia and to increase prosocial traits such as empathy and fairness (Douglas, 2008).

Specker et al. (2014) identified eight representative themes within ethical debates concerning desirability of moral bioenhancement: (a) moral bioenhancement's necessity, (b) the possibility of consensus on what moral bioenhancement should involve, (c) moral bioenhancment's scientific and practical feasibility, (d) whether or not there are ethically significant differences between biomedical and traditional means of moral enhancement, (e) freedom of the individual, (f) autonomy of the individual, (g) identity of the individual, (h) moral bioenhancement's social impact and group dynamics.

Other focal areas of scholarly discussion of the ethics of bioenhancement have included distinctions between direct approaches to moral bioenhancement and indirect approaches to moral bioenhancement (Schaefer, 2015), current impacts of pharmaceuticals on moral agency (Levy et al., 2014), debates concerning moral bioenhancment's eventual permissibility or even necessity, and possible means of encouraging voluntary moral bioenhancement (Carter, 2015).

Specker et al. (2014) "argued that although discussions of moral enhancement so far raise important philosophical questions about the nature of human morality, moral behavior, and moral thought" (Specker & Schermer, 2017, p. 416), such debates often seem "too remote from real (and realistic) contexts and applications to do justice to the specific ethical questions raised by such practices" (Specker & Schermer, 2017, p. 416). They advocated narrowing the focus of moral bioenhancement debates to what they considered more realistic biomedical treatments of moral pathology and consideration of moral issues arising in connection with such possible treatments (Specker et al., 2014).

Of course, as Specker and Schermer (2017) underscored, because it is relatively so early in the actual science and technology of moral bioenhancement, nobody really knows which ethical issues will ultimately ensue. Crockett (2014a) cautioned, "The science of moral

bioenhancement is in its infancy" (p. 370).

Recent development of powerful tools that seem potentially capable of facilitating significant enhancement of human genetics, human endocrinology, and the human nervous system, including the brain, have prompted ambitious expectations of soon being able to directly improve aspects of human morality and sociality. According to Hughes (2012):

> Our growing understanding of the brain and how it generates empathy, self-control, moral judgment and even spiritual transcendence suggests that we will increasingly be able to identify and treat not just psychopathology, but ordinary moral and spiritual weakness. Neuroscience will offer us all the possibility of becoming the better people that we want to be. (para. 1)

Rosen (2010) provided rather interesting background that helped to characterize Hughes' perspective:

> As a former Buddhist monk, Professor James Hughes is concerned with realization. And as a Transhumanist—someone who believes that we will eventually merge with technology and transcend our human limitations—he endorses radical technological enhancements to humanity to help achieve it. He describes himself as an "agnostic Buddhist" trying to unite the European Enlightenment with Buddhist enlightenment.
>
> Sidestepping the word "happiness," Hughes' prefers to speak of "human flourishing," avoiding the hedonism that "happiness" can imply. "I'm a cautious forecaster," says Hughes, a bioethicist and sociologist, "but I think the next couple of decades will probably be determined by our growing ability to control matter at the molecular level, by genetic engineering, and by advances in chemistry and tissue-engineering. Life expectancy will increase in almost all countries as we slow down the aging process and eliminate many diseases." Not squeamish about the prospect of enhancing—or, plainly put, overhauling— the human being, Hughes thinks our lives may be changed most by neurotechnologies—stimulant drugs, "smart" drugs, and psychoactive substances that suppress mental illness. (Rosen, 2010, para. 1)

Wiseman (2016) underscored the staggering complexity of human moral functioning and characterized moral functioning as biologically mediated but not strictly biologically determined. To reduce the extent to which human beings are so problematically morally flawed, Wiseman (2016) called for an integrated research approach to moral bioenhancement, which would consider recent empirical research investigating influences of dopamine, oxytocin, and serotonin

on human behavior and cognition. But Wiseman (2016) expected more limited results in the near future:

> What we will be looking for in a realistic moral enhancement is in fact something far more limited [than Wiseman's perhaps not entirely accurate portrayal of Hughes' expectations of future moral enhancement], something present here and now. But just because such presently relevant moral enhancement may be limited, that does not necessarily make it any less useful for that. (Wiseman, 2016, p. 47)

Neither Harris (2011) nor Paulo and Bublitz (2019) considered moral bioenhancement either as plausible or as potentially beneficial in the foreseeable future as did Hughes (2012) or even Wiseman (2016). Crutchfield (2016, 2019), Persson and Savulescu (2008, 2010), Schaefer (2015), and Sparrow (2019) were more optimistic about moral bioenhancement's potential to improve human moral functioning relatively soon. While Crutchfield (2019) argued that moral bioenhancement should be both compulsory and covert, Carter (2015) vigorously opposed even offering any incentives to people to encourage voluntary participation in moral bioenhancement programs. According to Schaefer (2015), it is very important to recognize two distinct categories of approaches to moral enhancement, including moral bioenhancement, direct and indirect. "Direct moral enhancements aim at bringing about particular ideas, motives or behaviors. Indirect moral enhancements…[aim to make] people more reliably produce the morally correct ideas, motives or behaviors without committing to the content of those ideas, motives and/or actions" (Schaefer, 2015, p. 261).

In Savulescu's (The Artificial Intelligence Channel, 2018) lecture asserting the urgent necessity of moral bioenhancement, he opined that "the most likely way in which moral bioenhancement could potentially occur is actually in our children" (38:17–38:24). Savulescu's next assertion provides a valuable example of one of the reasons developing subsumism, benevolutioneering's philosophical foundation, is so important to the entire consideration of moral bioenhancement. Here is what Savulescu said:

> What we need today is a secular moral education, an education around certain moral values like equality, justice, respect for autonomy, nondiscrimination, and I think people need to learn to assimilate those values and develop moral skills that we need in a population. So I don't think that we will find those in religious education. And once we have a program of moral education that's secular, that we can agree on that embody [sic] the sorts of values we want to encourage, it's quite possible that technology will accelerate our ability to learn those skills and concepts. Because tDCS [Transcranial direct current stimulation] is one example where it increases the acquisition of any skill—motor skill, numeracy, language—by selectively stimulating the brain, you can, of course, change its function. And I believe we ought to research ways in which this could be done to achieve our goals, because we are at a crossroads because of the problems of globalization and massive technological advance. (The Artificial Intelligence Channel, 2018, 38:26–39:29)

That statement glosses over the so-far intractable challenges of humanity's seemingly insurmountable axiological disparities. Either ignored or as a sticking point, this tends to characterize and challenge the entire discussion of moral bioenhancement. In this case, the distinction between religious and secular domains is illusory, in that Savulescu, presumably identifying as secular, ascribes certain traits to religion, which he incorrectly imagines are not also characteristic of so-called secular persons and their paradigms. He appears to believe secular persons are not impacted ideologically to the extent of those he considers unsecular (or religious). Further, the illusion of a distinction between religious and secular domains is applicable to certain cultures but not to other cultures in which notions of thusly partitioning various life modules would seem absurd. In fact, the notion of overlooking the moral values of religious people manifests an aspect of first world cultural bigotry. How many of our world's cultures are secular or even imagine their lives to be sortable into religious and secular dimensions? This preference for and assumption of obvious superiority of whatever is imagined to be secular morality over whatever is imagined to be religious morality importantly illustrates the axiological complexity of advancing ideas of moral enhancement in our pluralistic world. The assumption that the listed moral values (equality, justice, respect for autonomy, nondiscrimination) are universally esteemed or even unquestionably estimable is naive or worse.

Who gets to decide what is good and what is bad? This is not straightforward. Listing those four moral values (equality, justice, respect for autonomy, nondiscrimination) as adequately universal moral enhancement targets is quite an ironic conceptual wrecking ball somewhat humorously swinging back toward Savulescu's own position. Again, this underscores the need for a synthesizing, reconciling philosophical system such as subsumic thought to function as benevolutioneering's philosophical foundation.

Problem Statement, Objective, and Research Questions

Problem Statement

Profound unnecessary suffering and unrealized joy stem from certain common human behaviors. Beyond chronic misery, such behavior, unless soon enough intentionally addressed, threatens to irreversibly cause gravely dystopian futures or even human extinction. Prosociality involves positive sentiments for others and benefitting others. Prominent scientists and futurists predict that, without significantly enhanced prosociality, dystopian fears are justified. Some studies predict bioenhancement technologies fundamentally altering brain, mind, consciousness, identity, volition, and essential phenomenological aspects of being human. Other studies predict enhancement disparities amplifying "man's inhumanity to man" (Burns, 1873, p. 26). Many scholarly treatments of moral enhancement technologies focus on ethical objections, rejecting notions that humanity should or ever could technologically modify human nature to improve the human condition.

Transhumanists anticipate employing or merging with technology to transcend present physiology and cognition. Some anticipate exponentially accelerating technological progress yielding resource ubiquities of material, energy, and time, creating utopian futures of abundance, bioenhancement, and immortality. It might be possible that, without scarcities and competition for finite resources as primary engines of enterprise and enjoyment, realizing the illusory nature of

self-centered pursuits of achievement, status, happiness, and meaning could result in unprecedented species-wide despair.

Axiology and philosophy of consciousness determine how enhancement is distinguished from diminishment or even exanimation. This warrants concern for notions of value, sociality, mind, consciousness, and related constructs among influential transhumanists, scientists, and engineers most likely to further transhumanist futures by contributing to rapid progress of relevant technologies.

Objective

This theoretical dissertation's primary purpose is the exploration of conceptualizing development and species-wide implementation of plausible, beneficial, radically prosocial moral bioenhancement technologies, the intentional evolution of benevolent neuropsychology. It is also the purpose of this dissertation to explore development of philosophical scaffolding adequate for conceptual development of plausible species-wide technological enhancement of prosociality with its fundamental need for consensus in identifying candidate characteristics as therapeutic targets, discerning beneficial characteristics worth amplifying or adding, and identifying traits to reduce or mitigate. It is further purposed that such philosophical scaffolding would also ontologically, epistemologically, and axiologically serve to facilitate redefinition and reshaping of sources of meaning, life satisfaction, and cultural expression in human circumstances profoundly disrupted by ubiquities of material, energy, and time, creating utopian futures of abundance, bioenhancement, and immortality.

This dissertation further aims to stimulate subsequent research that nudges human enhancement's trajectory toward radical prosociality. Areas most important for further

exploration include the neuropsychology of values, strong artificial intelligence, and accelerating development of actual moral enhancement technologies.

This dissertation also purposes to raise certain questions and to compel their consideration, questions that prompt careful scrutiny of the trajectories and timetables of humanity's evolving sociality and transhuman technologies.

Research Questions

This dissertation's central research question is: Is benevolutioneering, the intentional evolution and species-wide voluntary implementation of radically benevolent neuropsychology, possible and beneficial? Exploring this central question involves also asking the following questions:

1. How is benevolutioneering conceptualized?
2. What is meant by possible? It is important to explore what is, or, at least, what is at all likely to become, conceptually possible, physiologically and technologically possible, and possible to achieve in terms of species-wide voluntary acceptance and participation.
3. What is meant by beneficial? It is important to explore means of determining values and criteria by which to measure benefit. It is also important to explore who would benefit.
4. Is there reasonable cause for concern that common human behaviors now causing profound, unnecessary suffering, if unchecked, actually could lead to gravely dystopian futures or even human extinction?
5. Is there any likelihood of transhumanist enhancement disparities amplifying man's inhumanity to man?
6. Would certain human enhancement technologies be likely to fundamentally alter brain, mind, consciousness, identity, volition, and essential phenomenological aspects of being human?
7. Without significantly technologically enhancing human prosociality species-wide, are fears of dystopian futures justified?
8. Has human sociality ever been technologically enhanced?

9. How could consensus be approached in identifying candidate characteristics as therapeutic targets, discerning beneficial characteristics worth amplifying or adding, and identifying traits to reduce or mitigate?

10. What kind of philosophy would be necessary to underlie conceptual development of plausible species-wide technological enhancement of prosociality given the need for consensus in identifying candidate characteristics as therapeutic targets, discerning beneficial characteristics worth amplifying or adding, and identifying traits to reduce or mitigate?

Scope of This Dissertation

This dissertation is future-oriented. Its focus involves mostly the next century. Many of the enhancement technologies considered are anticipated within the next few decades, but in most cases, the time scale is uncertain.

Although this dissertation explores world-wide issues, certain issues considered pertain more to those nations contributing most to ecological jeopardy and to the risks of deployment of weapons of mass destruction. That is because such issues pose existential threats to our species.

This exploration's scope encompasses the entire human race. Certain attention is focused on influential transhumanists and on theorists, scientists, and engineers most likely to shape and influence the development trajectory of technologies associated with human modification anticipated by transhumanists.

Parochial considerations of extremely significant theological, spiritual, and religious dimensions of this dissertation's topic area are of particular personal importance to me as a clergyperson and religious thinker within my own denominational doctrinal matrix. In-depth exploration of these considerations, although outside this dissertation's scope, is underway in a simultaneous parallel exploration.

Aspects of extreme importance related to this dissertation's focus that are postponed for in-depth exploration in the near future include:

1. In-depth reconsideration of the bioethical and legal minefields associated with human enhancement (Doyle, 2010; Farah, 2012). Although important, these concerns are already the most considered and reconsidered aspects of moral enhancement exploration and debate.

2. Consideration of the neuropsychology of values. Warranting a focused exploration, this is the topic of a paper under simultaneous development in partial fulfillment of my otherwise completed Saybrook University psychophysiology certificate program.

Because this exploratory dissertation's considerations are largely future-oriented, this dissertation is intended more to raise questions than to provide or even propose final answers. It is even a higher purpose of this dissertation to prompt others to ask further questions about trajectories of human sociality, about how trajectories of human sociality might be intentionally channeled or, at least, influenced, and about how to collaboratively evaluate relative benefits and desirability of multiple potential trajectories and timeframes of evolving human sociality. This dissertation decidedly does not seek to definitively, comprehensively, or exhaustively characterize every specific approach or technique for achieving technological interventions to enhance prosociality. Rather, this dissertation explores only a few potential hints or proofs of concept that technologies of prosocial bioenhancement are likely plausible.

Practicality has limited this dissertation to exploring only a modest, introductory slice of the vast array of aspects associated with considering the prospect of what is herein conceptualized as benevolutioneering, a focused, extended vision of species-wide technology-based moral enhancement. In conceptualizing benevolutioneering and a potential philosophical scaffolding for benevolutioneering, hopefully, throughout this exploration, several original considerations and perspectives have been introduced which may both help to reconcile previously apparently intractable impasses and help prompt further investigations which otherwise would have been impossible or, maybe, tragically, not in time.

Organization and Outline of Chapters

There are eight chapters in this dissertation. This chapter introduces benevolutioneering and subsumic philosophy, explains my sense of importance and urgency regarding this exploration, and characterizes this dissertation's approach. Chapter 2 considers several issues related to theoretical methodologies and methodological challenges inherent in futures studies and then characterizes this dissertation's exploratory methodology. Chapter 3 introduces issues connected with futurism, including transhumanism, emerging technologies relevant to human enhancement, and particular unprecedented hazards presented by aspects of humanity's possible technological and societal trajectories. In Chapter 4, I introduce subsumism, benevolutioneering's philosophical scaffolding. Chapter 5 conceptualizes and characterizes benevolutioneering and explores benevolutioneering's plausibility. In Chapter 6, I discuss a small sample of the modest accumulation of the scientific community's discoveries of structural and functional physiological correlates of sociality-related behavior and phenomenology potentially relevant to developing and implementing benevolutioneering. Chapter 7 is a retrospective overview and discussion of the findings of this dissertation's exploration. The final chapter of this dissertation, Chapter 8, offers conclusions and identifies several important trajectories for further research.

Brief Description of the Research Design of This Dissertation

This theoretical dissertation explored the conceptualization and plausibility of a moral bioenhancement model and its underlying philosophical scaffolding. Because the model conceptualized and explored requires resources not yet fully developed, this research design must be appropriate for futures studies. Futures studies research considers potential factors, anticipated developments that should be determined to be more probable than improbable and likely more probable than other plausible developments. This contrasts with empirical research

designs. Likelihood of value of theoretical futures studies considering matters of potentially grave importance can be increased by developing models which, if acted upon, likely result in benefits stemming from multiple divergent developments more probable than other possible developments. This is not limited to merely developing contingencies. Ideally, models can be developed that are inherently win-either-way models. Such models facilitate future planning more likely to result in beneficial outcomes regardless which developments, among those most probable, ultimately come about. This exploration seeks to conceptualize such a model.

CHAPTER 2: METHODOLOGY

Broadly speaking, this dissertation's research was conducted as exploratory theoretical research. This chapter further characterizes this dissertation's methodology as a subsumic exploratory systems theoretical approach for futures studies, with which I have conceptualized and explored benevolutioneering, the intentional evolution of benevolent neuropsychology, and its necessary philosophical scaffolding, subsumism. This chapter characterizes a flexible methodology for this exploratory theoretical dissertation considering subject matter pertaining to radically prosocial futures studies related subject matter. I intend to convey in this chapter a sense of the importance of the relationship between exploration, theory, futures studies, and the profound intellectual humility grounding subsumic philosophy. Because theoretical dissertations are less common than other types, it is important to briefly consider the nature and status of theoretical dissertations as well as the notion of futures studies and futures studies research.

Theoretical Dissertations and Their Methodologies

At Saybrook University, theoretical research has a history of being regarded as a methodology in its own right (Kenny, 2010a, 2010b). Many methodology textbooks and dissertation guides do not even mention literature-based theoretical dissertations. Generally, research methodology textbooks and dissertation guides offer little or no guidance for the doctoral student planning to write a theoretical dissertation. Many do not even acknowledge the existence of such dissertations. Such was the case with Cone and Foster (2006), Creswell (2003, 2013), Creswell and Plano Clark (2011), Denzin and Lincoln (2013), Foss and Waters (2007), Locke et al. (2013), Rachna (2013), Robson (2011), Thomas (2003), and Yin (2016). Clingan (2011) had a similar experience:

> There are hundreds, if not thousands, of text books that survey a breadth of methods, or define and describe specific quantitative and qualitative methods of research. There are many good texts that provide a broad overview of quantitative and qualitative research

> and then describe a few specific methods in more detail. There are also countless texts that present a specific method, such as statistics or survey texts for quantitative methods, or qualitative texts in phenomenology, feminist research methods, participatory action research, heuristics, interviewing, case studies, and on and on. After years of searching, I feel fairly certain that I will never find a textbook that defines literary, theoretical, or textual research as a research method, or that describes how to create a methods section for a thesis/dissertation that uses this standard method of research. The closest I have come to textbooks that teach this method are books on how to do a literature review, how to write a research paper, or professional writing style guides—all of which are only the beginning of a textual/theoretical thesis/dissertation. (p. 5)

Clingan has been expanding Clingan (2011) for a book on scholarship, but, as of 2017, she did not "expect to have that [book] available for a couple of years" (J. Clingan, personal communication, May 15, 2017).

Theoretical research, theoretical analysis, even theory per se, has, nevertheless, been considered a method (Ballantyne, 2015; Benyshek, 2012; Clingan, 2011; J. Clingan, personal communication, May 15, 2017; Greening et al., 2011; Kenny, 2010a, 2010b; Rudestam & Newton, 2015; Winstanley, 2010). Kenny (2010b) is the single most well-researched, thorough, and useful consideration of theoretical dissertation methodology that I have found. Importantly, though, Winstanley (2010), in conspicuous contrast to most of the other dissertation guides evaluated, included an entire 3,971-word chapter somewhat helpfully describing the process of writing a theoretical dissertation plus five other important smaller discussions scattered throughout the book. Although Rudestam and Newton (2015) addressed theoretical dissertations only once, their exactly 400-word discussion of theoretical dissertations is both validating and useful. In terms of validation of theoretical dissertations, Rudestam and Newton (2015) said that "Another possible approach to writing a dissertation is to write a theoretical dissertation and bypass the need for data collection entirely. This is by no means an easy alternative. Making an original theoretical contribution is a profound intellectual challenge" (p. 61). Contrasting the knowledge required for a theoretical dissertation with the knowledge required for a standard

qualitative or quantitative study, Rudestam and Newton (2015) suggested thinking about the difference between being a tourist in a particular country and being a native of that country. A tourist "might learn as much as possible about the country by studying maps, reviewing the customs, and learning the language, but chances are" (Rudestam & Newton, 2015, p. 61) a tourist will "never master the country as well as the native. It's the same with research" (Rudestam & Newton, 2015, p. 61). Rudestam and Newton (2015) said that making a "genuinely original theoretical contribution" (p. 61) requires knowing an inquiry area inside out, requires intimate familiarity with the field's issues and controversies. They advised novices in any area of inquiry to adopt an empirical research design rather than even considering attempting a theoretical dissertation. Rudestam and Newton (2015) also said that even though doctoral dissertations usually need to be theory-derived and usually must have theoretical implications, and that the data gathered and analyzed for one's dissertation might even help to open new ways of thinking within one's discipline, that "is quite different from starting with the expectation of creating, let's say, a new theory of consciousness or, a bit more modestly, a revised theory of short-term memory" (p. 62). Rudestam and Newton (2015) characterized the expectations and the task of pursuing a theoretical dissertation:

> you will be expected to argue from the literature that there is a different way of understanding a phenomenon than has heretofore been acknowledged. Some of the more viable theoretical dissertations in the social sciences are those that bring together or integrate two previously distinct areas. (p. 62)

That characterization could apply to dissertations yielding either what Turner (2014) identified as mundane theory, theory that applies existing theory to an area to which it has not yet been applied, or what Turner identified as bricolage, theory that applies multiple theories to one another in hope of novel synthesis.

Ballantyne (2015) said: "According to Robert Kenny (2010[a]), the description of the steps leading to the topic or focus of a dissertation comprises the methodology of a theoretical dissertation" (p. 12). Clingan (2011), an earlier version on which Kenny relied heavily, addressed this point:

> When the data the scholar is working with is gathered from existing textual materials no methods section is required to describe that process as it is the obvious and first step with which all scholarship begins. Textual or theoretical research does not require a methods section because it would be a rather ineffective process to write: "I read one hundred and three books, listened to six professionals in the field, read multitudes of current articles on the subject, thought about and weighed all of that, and came to the following theoretical conclusion." That method (the steps taken) becomes obvious as the material is presented and therefore does not need to be described in a discrete methods section. Remember, a methods section is there to provide readers with enough information to repeat the research. No one needs to be told to read, talk, discuss, think, and write. I hope. (Clingan, 2011, p. 4)

Although Clingan's point could be applied to this dissertation, I believe there is value in considering the conceptualizations of theoretical research with which I have grappled throughout this exploration. Nevertheless, in spite of the fact that this dissertation obviously includes a methods section, Clingan's description fits quite well much of my own research process, in terms of reading hundreds of books, listening to dozens of specialists in the several fields associated with this exploration, reading more than 1,500 articles related to this exploration's subject matter, contemplating, comparing, brainstorming, and constructing theoretical conclusions. The design of Ballantyne's (2015) Saybrook University theoretical dissertation, in fact, also followed such a model. Certainly the validity of a theoretical methodology seems entirely defensible and was stated forcefully by Clingan (2011). In fact, in expanding Kenny's (2010a) consideration of inductive versus deductive theory and theorizing to include consideration of abductive theory and theorizing, such a methodological construct might be unavoidable. It might be unacceptably opaque to do otherwise. It certainly seems so after considering Clingan's (2011) restatement of her argument:

> With textual or theoretical research, it's not that you have no method; it's that you don't have to describe it in the same way you would for a qualitative or quantitative study. It's not that a textual/theoretical thesis/dissertation has no methods section; rather the methods section is fully integrated into the thesis/dissertation, especially in the literature review. In textual/theoretical research, the whole literature review becomes your methods section, because you are laying out your methods when you tell the reader, "I read foundational authors a, b, and c, did a comparative analysis of their work alongside the more recent work of scholars x, y, and z, and came to the following conclusion." Of course for a textual/theoretical master's thesis or doctoral dissertation doing the literature review provides the reader with your methods (as well as your methodologies…) but it is only the beginning of your work. The remainder of the thesis/dissertation, where you come to your own conclusion or propose your own theory or interpretation of the research, and apply your theory in a manner appropriate in your field, is what makes it research suitable for a master's thesis or doctoral dissertation as opposed to just being a review of literature. (p. 5)

Although beyond this dissertation's scope, there might be value in exploring the use of formal phenomenological research methodology to explore the phenomenological nature of the inner process of producing bildung, high theory, as described by Turner (2014). When functional brain scanning equipment has been miniaturized and can be utilized round the clock outside the laboratory, perhaps neurophenomenological exploration of the inner process of producing bildung will someday even be feasible.

Futures Studies Ontologies, Epistemologies, and Methodologies

Lombardo (2006) uses the term *future studies* rather than *futures studies*. Although the terms are used interchangeably, futures studies is less likely to be misinterpreted as referring to studies anticipated to take place in the future, and futures studies is used more commonly. Lombardo's (2006) definition of future studies, "an empirical and scientifically based approach to understanding the future" (p. 109), taken by itself, could easily be understood as a distinctly positivist declaration. It is far from accurate to characterize the entire futures studies community as strictly positivist.

Scholarly futures studies methodologies, according to Bell (1997a), have been eclectic, mostly adopting methodologies and methodological tools from various academic and professional research disciplines:

> The scientific, scholarly, and rhetorical methods of any discipline in the humanities, social sciences, and the sciences might be—and sometimes are—used by futurists doing research on some particular topic. That is, as a holistic and synthesizing field, futures studies draws on whatever methodological techniques may be available in existing disciplines if they are relevant to the futures investigation at hand. (Bell, 1997a, pp. 241–242).

Developing futures studies theory, with underlying ontology and epistemology and resultant methodologies, is critical in defining futures studies and determining whether and where futures studies belongs at the table in the academy. Within the futurist community, the fact that colleges and universities have established futures studies degree programs has been celebrated as progress and fashioned into credentials. There must be a card if one is to be a card-carrying member. Where, though, is futures studies seated at the table? Where should it be seated? Is it seated at the children's table or at the grownups' table? There are degree programs in many genres of fiction, including science fiction. Are those programs seated with high energy physics, molecular genetics, and neurosurgery?

Creswell (2013) succinctly characterized each of five interpretive frameworks of qualitative research according to four necessarily underlying philosophical dimensions: ontological beliefs, epistemological beliefs, axiological beliefs, and methodological beliefs. The interpretive frameworks were: (1) postpositivism; (2) social constructivism; (3) transformative/postmodern; (4) pragmatism; and (5) critical, race, feminist, queer, disabilities. Positivism's absence made sense because only qualitative research was under consideration, and positivism would generally restrict research to quantitative methods. It would be valuable to evaluate each of the five interpretive frameworks in terms of applicability and usefulness in

futures studies research. Following Bell's (1997a) lead, however, of the five interpretive frameworks discussed by Creswell (2013), only postpositivism is considered herein. Consideration of the use within futures studies of each the four remaining interpretive frameworks, although beyond this chapter's scope, warrants separate treatment. It is important to note that Bell (1997b), an extensive, substantial volume, focused exclusively on axiological issues related to futures theory. Axiology is pivotal in consideration of prosocial neuroenhancement, especially as it relates to my commitment to requiring any proposed neuroenhancement to increase freedom at every step and in every way. Creswell (2013) characterized postpositivism's ontological beliefs as involving a single reality that "exists beyond ourselves, 'out there'" (p. 36). The researcher "may not be able to understand it or get to it because of [the] lack of absolutes" (p. 36). Postpositivist epistemology, according to Creswell (2013), includes the belief that "reality can only be approximated. But it is constructed through research and statistics. Interaction with research subjects is kept to a minimum. Validity comes from peers, not participants" (p. 36). Of postpositivism's axiological beliefs, Creswell (2013) said that a "researcher's biases need to be controlled and not expressed in a study" (p.. 36). Finally, Creswell (2013) said that postpositivism's methodological beliefs include: (1) "Use of [the] scientific method and writing" (p. 36); (2) The "object of research is to create new knowledge" (p. 36); (3) "Method is important" (p. 36); (4) "Deductive methods are important, such as testing of theories, specifying important variables, making comparisons among groups" (p. 36).

In Bishop's (1998) review of Bell (1996), Bishop said the volume would "appeal to futurists as a benchmark in the development of their field" (p. 13), and said that the volume is a thorough, fairly uncontroversial, broad representation of the futures studies discipline. Bishop

characterized the book as appealing to "new students of the field as a careful delineation of its basic framework although it may go too deeply into epistemological matters for novices" (p. 13). Fellow futurist, Richard Slaughter (2007), called Wendell Bell "one of the most productive, articulate and respected members of the international futures community" (para. 1).

Bell (1997a) pointed to the 1960s and 1970s as decades during which positivism was vigorously challenged by postpositivist thought and as an era of particularly formative development for futures studies. Understandably, futures studies' epistemology was influenced by both positivist and postpositivist thought. Considering those influences mostly detrimental, Bell (1997a) identified an alternate philosophy of science, critical realism, as providing an adequate theory of knowledge for futures studies. Largely the product of Bhaskar's (1998, 1978/2008) scholarship, the label *critical realism* "has come to be applied to the work of a number of philosophers of whom Roy Bhaskar is undoubtedly the most original and influential…, especially in the human and the borderline natural/human science" (Collier, 1994, pp. ix–x). Denzin and Lincoln (2013) said that critical realists used the word critical to refer to a "transcendental realism that rejects methodological individualism and universal claims to truth" (p. 22). According to Denzin and Lincoln (2013), critical realism is opposed to "logical positivist, relativist, and antifoundational epistemologies" (p. 22). Critical realism, as understood within the information systems field, was characterized on the Human Behavior Project's website as follows:

> Critical Realism (CR) is a philosophy of science that is based around a number of ontological principles. Epistemologically, CR provides principles that can be applied by researchers developing theoretical explanations about phenomena in the world. It therefore functions at a level similar to that occupied by such philosophies as Positivism and Interpretivism. Because CR principles are usually used to underpin the development of theoretical explanations it is more accurately considered a "metatheory", rather than a "theory". ("Critical Realism Theory," 2015, para. 1)

Critical realism agrees with the positivist notion that "there is a world of events out there that is observable and independent of human consciousness" (Denzin & Lincoln, 2013, p. 22).

As points of comparison and contrast for positivism, postpositivism, and critical realism, Bell (1997a) identified, for each, nine parallel, sometimes overlapping characteristics. I have rearranged and paraphrased Bell's characterization of each of the nine points of comparison as related to by each of the three major interpretive frameworks Bell considered.

(1) Positivism is characterized by a focus on science as a product, a linguistic or numerical set of statements. Postpositivism concentrated on science as either an activity or as a developmental history. Science, for the postpositivist, centers on what scientists actually do, especially according to postpositivist sociologists. Postpositivists studied scientists' actual laboratory activities (Andrews, 1979; Collins, 1985; Latour & Woolgar, 1986), communication and influence networks (Collins, 1985; Gaston, 1970/1973; Kuhn, 1962/1996), subcultures and social organization, their norms (Kuhn, 1962/1996), and violations of their norms. Kuhn's (1962/1996) historical rather than philosophical approach exemplifies this postpositivist approach. Critical realism views science as a body of numerical or linguistic statements about reality's nature. The critical realist is interested in science's history, institutions, and activities.

(2) For the positivist, science seeks to demonstrate the coherence and the logical structure of its product, that is, with the linguistic or numerical set of statements that is science. Science, for the positivist, is thus concerned with producing axioms. Postpositivism was generally associated with the belief that theories lack "a tidy deductive structure" (Hacking, 1975, p. 117), and, doubting that "tests of theories [ought to] proceed by deducing observation –reports from theoretical postulates" (Hacking, 1981, p. 1), postpositivists are not as concerned as are positivists with producing such axioms. For the critical realist, science is concerned with the

coherence and logical structure of the body of those numerical or linguistic statements about reality's nature that science incorporates. Critical realism is also concerned with the usefulness of those statements in manipulation of the world for the achievement of human goals by such applications as employing discovered causal associations for human accomplishments.

(3) Positivists insist that some of the linguistic or numerical statements that science comprises be empirically falsifiable, testable. Postpositivism responded variously to positivism's insistence upon falsifiability. Some postpositivists insisted that facts alone are insufficient to overthrow a theory because, in general, alternative theories are possible. Some postpositivists point to epistemological constructivism functioning among scientists in the creation of their own ontologies "by their theories, methods, analogies, and metaphors. Facts, in other words, are theory laden" (Bell, 1997a, p. 201). More extreme postpositivists, ontological constructivists, insist that there actually are different realities, that "in deploying successive paradigms we rather literally come to inhabit different worlds" (Hacking, 1981, p. 4). For critical realism, although certain of reality's features will always be humanly inaccessible, a certain actual reality is inseparable from scientific achievement. Although fallible, non-absolute, "conjectural, conditional, corrigible, tentative, qualitatively judgmental, and presuppositional" (Bell, 1997a, p. 208) truth, for critical realism, is humanly knowable to the extent of human perception and comprehension. There are actually true assertions, there are actually false assertions, and humans can often, empirically or logically, justify beliefs as either true or false.

(4) Positivists believe science is significantly cumulative. Postpositivists typically believe that, because science advances in revolutionary leaps, science is not particularly cumulative. According to Kuhn (1962/1996), "scientific revolutions are…those non-cumulative developmental episodes in which an older paradigm is replaced in whole or in part by an

incompatible new one" (p. 92). Critical realism agrees with positivism's belief that science is significantly cumulative because, as even Kuhn (1962/1996) admitted, revolutionary scientific leaps can include, even stem from, cumulative scientific discovery and interpretation prevalent at the time.

(5) Positivists believe science, for the most part, transcends culture. Postpositivists argue that cultural biases are inherent in science and that culture-free scientific knowledge cannot exist. Critical realism acknowledges the importance of postpositivism's argument that science is not culture-free, and critical realism views the possibility of the distortion of truth through cultural bias within science as a threat to the validity of science.

(6) Positivists believe science is founded on "specific results that are dissociated from the personality and social position of the investigator" (Bell, 1997a, p. 197). Postpositivists believe that the investigator's personality and social circumstance necessarily importantly influence scientific results:

> One's personal life history and psychology and one's positions in society and various socioeconomic structures, as well as one's cultural setting, are viewed as affecting a researcher's or a theorist's characteristic ways of conceiving of things and set limits on the dimensions of possible thought. Also, the political clout of different scientists and, ultimately, a consensus of a community of scientists shape the definition of "reality" accepted by a given science. Knowledge, more broadly, inevitably serves special interests, usually those of established and powerful groups in society, and is especially insidious when it is masked behind the false claims of disinterest and value-free statements. (Bell, 1997a, pp. 201–202)

Science may be described, according to Popper (1992), as "the art of systematic over-simplification—the art of discerning what we may with advantage omit" (p. 44). Although critical realism acknowledges the importance of postpositivism's concern regarding the hazards associated with the possibility of investigators' personalities and social circumstances influencing scientific results, critical realists typically believe that it is possible to protect scientific processes and results adequately and effectively from cultural, personal, and social

bias. Critical realism is typically relatively confident that objectivity is achievable because "intersubjective evaluation of research findings permits correcting…[cultural, personal, and social bias]; objectivity, thus, can be achieved" (Bell, 1997a, p. 208).

(7) Positivists believe "science contains theories or research traditions that are largely commensurable" (Bell, 1997a, p. 197). Illustrative of postpositivism's position, Hacking (1981) characterized early Kuhn as concerned that the self-defining nature of each paradigm determines what sort of evidence is selected for testing the paradigm. According to Feyerabend (1975), isolated, a concept lacks meaning, and it is only a concept's theoretical context as used that gives meaning. Critical realism is satisfied, typically, that the theories and research traditions within science generally overlap enough to facilitate recognition and critical testing of important contradictions.

(8) Positivism acknowledges that, sometimes, ideas incorporated into science are discontinuous with scientific understanding up to that point. Postpositivism insists that, nearly always, not just sometimes, ideas incorporated into science are discontinuous with scientific understanding up to that point. Critical realist thought, like positivism, generally involves the belief that new ideas are incrementally incorporated into science by continuous small additions and that revolutionarily discontinuous ideas also shape science. Although positivism regards the latter to be relatively infrequent exceptions and postpositivism regards the latter as the norm, critical realism models growth in science as involving three often simultaneous modes of growth process: preparadigmatic, normal, and revolutionary.

(9) Within positivist belief, according to Hacking (1981), is the notion that there is an underlying unity throughout science, that there is one entity, science, which underlies all the truly scientific disciplines, rather than multiple separate sciences. There is "basically one science

about one real world" (Bell, 1997a, p. 197). Generally, postpositivism rejects the notion that science constitutes a unity. Postpositivism rejects the idea that "less profound" (Bell, 1997a, p. 202) branches of science reduce "to more profound ones" (Bell, 1997a, p. 202), such as: sociology to psychology, psychology to biology, biology to chemistry, and chemistry to physics. Instead, within the postpositivist view, various communities of scientific knowledge, "each relative to its particular topic and community of scientists" (Bell, 1997a, p. 202), make up science. Within the critical realist view, whether or not there is some kind of basic unity of science "whereby less profound sciences can be reduced to more profound ones" is considered an empirical question that has not yet been answered.

Although Bell (1997a) proposed critical realism as an interpretive framework possibly best suited to the futures studies discipline, and even if, in 1997, critical realism closely represented the interpretive framework of most of North America's futurists, it probably is not an entirely accurate representation of the interpretive framework of most of 2021's most influential futurists. I believe that many of 2021's most influential futurists are STEM-educated positivists in high tech corporations. I believe they are largely outside of academia. Furthermore, critical realism is neither identical nor contradictory to my own developing interpretive framework, a framework I refer to as a subsumic ontology and epistemology. Nevertheless, Bell's comparison serves as an extremely valuable matrix—or even point of departure—within which to characterize, point-by-point, any interpretive framework, at least in part.

Lombardo (2006) quoted futurist Alvin Toffler as having said "that futurists attempt to create new, alternative images of the future, visionary explorations of the possible, systematic investigation of the probable, and moral evaluation of the preferable" (as cited in Lombardo, 2006, p. 112). Relevant to futures studies, Toffler (1990) also said:

> It seems hardly necessary to add that the future is not "knowable" in the sense of exact prediction. Life is filled with surrealistic surprise. Even the 'hardest' models and data are frequently based on 'soft' assumptions, especially where these concern human affairs. Moreover, the very subject of these books—accelerant change—makes the details in them subject to obsolescence. Statistics change. New technologies supplant older ones. Political leaders rise and fall. Nevertheless, as we advance into the terra incognita of tomorrow, it is better to have a general and incomplete map, subject to revision and correction, than to have no map at all. (Toffler, 1990, pp. xx–xxi)

It might be better to have an accurate although incomplete map than no map, but it is not better to trust a grossly inaccurate map than to have no map at all. Are there fuzzy lines between informing and leading, considering and following, between mindfulness and faith? Do futures studies theories exist on such continua as that from exploration to speculation, extrapolation to preparation, imagination and divination, investigation and proclamation, observation, and determination? Bell (1997a, 1997b), Bishop and Hines (2012), Dielenberg (2013), Fukuyama (2002), Masini (2006), Lombardo (2006), and Saniotis and Henneberg (2011) all expressed their belief that the future is not predetermined and emphasized the responsibility to not just anticipate or attempt to predict the future, rather to influence—to create the future. Because my own research interest involves proposing to intentionally impact the future of the brain, I was, of course, intrigued by Dielenberg's (2013) point:

> The challenge of predicting the brain from a neuroscience perspective suggests a narrowing of the field of possibilities; however neuroscience is an extremely broad field in itself, collaborating with such diverse areas as psychology, anthropology, pharmacology, physiology, sociology, genetics, computer science, engineering, mathematics, physics, philosophy and ethics. A neuroscientist can specialize in any one of these fields, and consequently if asked about the future will no doubt propose a view commensurate with the history and developments of their field, while glossing over other areas so as to avoid turning the question into a book-length project. (pp. 209–210)

Dielenberg (2013) added, "One essay on the topic justified the undertaking by saying" (p. 210) that "it seems necessary to explore possible directions of the evolution of human brains simply to be able to prevent maladaptive developments" (Saniotis & Henneberg, 2011, p. 3). Perhaps it would be good to go beyond just obtaining and following a map of the future, even a very good

map. Perhaps it would be better to go beyond even creating a map, even a very good map. Perhaps it is best to make new roads, very good roads. This is an important intersection of futurology and humanism, between transhumanism and the humanistic values associated with Saybrook University's humanistic legacy. Interestingly, Brumlik (2016) even equated transhumanism with humanism. All oughts and shoulds are, of course, inherently goal oriented, axiological, and are always inescapably future-oriented. Consider Pinker's (2018) important characterization of humanism:

> The goal of maximizing human flourishing—life, health, happiness, freedom, knowledge, love, richness of experience—may be called humanism… . It is humanism that identifies *what* we should try to achieve with our knowledge. It provides the *ought* that supplements the *is*. It distinguishes true progress from mere mastery. (p. 410)

Because one typically engages in futurism and conducts futures studies without expecting oneself, one's actual person, to be present in the significantly distant future, futurism is, and futures studies are, in some respects, always etic. That tends to preclude humanistic-existential dimensions from our considerations of the future. Can we enhance our futurizing by incorporating some of the positive aspects generally associated with emic perspectives and approaches? What about, even if only as a device, a technique, considering operating as if you and I are, as real individuals, as our actual selves, going to be alive for at least the next 800 or 900 years—or even much longer? How might this impact our perspectives about and approaches to considerations of the future? Popularized, might this result in ecological and political benefits, actual improvements? Throughout this exploration I have attempted to employ this more nearly emic approach to consideration of the future.

Characterizing This Dissertation's Methodology

As already stated, this is an exploratory theoretical dissertation. This dissertation's methodology could be further characterized as a subsumic exploratory systems theoretical

approach for futures studies. This section explains how a subsumic approach facilitates simultaneous theoretical, exploratory and systems methodological approaches. This section also explains the need for this multi-stranded approach in considering human futures.

Rationale for the Selection of Theoretical Methodology

"An old joke goes like this: in theory, theory and practice are one; but in practice, they have nothing to with each other" (Rabaté, 2002, p. 146). I had quite practical reasons for electing to conduct this dissertation's research using theoretical methodology. My rationale for a theoretical approach followed from the nature of the ideas explored and the fact that those ideas could not have been explored using other methods. Scholarly conversation regarding our species' sprints into unprecedented modes of volitional evolution require adequate theoretical foundations. I did not believe any theoretical matrix yet existed that could adequately encompass or facilitate scholarly exploration and formal discussion of the intentional human changes I envision. Though, I believe, imminent, the problem has not yet confronted us in its entirety. At this point there is value in remembering what Disney et al.'s (1951) version of Lewis Carroll's (1865/2005) White Rabbit counseled Alice: "Don't just do something, stand there" (Disney et al., 1951). In emergencies, a person who hesitates might be lost, but adequately early theoretical consideration is not hesitation. In considering trajectories I believe are capable of changing humanity's very essence, I do not propose leaving out the "do" in "We really need to do something about this." We might, though, have just enough time to look before we leap. Among many other urgently needed explorations, I believe this dissertation's theoretical exploration might be able to serve as a stitch in time that might help save your essence and mine.

Type of Theoretical Methodology

This dissertation's methodology is exploratory in the sense that Stebbins (2001) distinguished social science exploratory research from other exploratory research approaches, as "a broad-ranging, purposive, systematic, prearranged undertaking designed to maximize the discovery of generalizations leading to description and understanding of an area of social or psychological life" (p. 3). Stebbins (2001) added that:

> Such exploration is, depending on the standpoint taken, a distinctive way of conducting science—a scientific process—a special methodological approach (as contrasted with confirmation), and a pervasive personal orientation of the explorer. The emergent generalizations are many and varied; they include the descriptive facts, folk concepts, cultural artifacts, structural arrangements, social processes, and beliefs and belief systems normally found there. (p. 3)

Stebbins (2008) also said:

> In general, exploration is the preferred methodological approach under at least three conditions: When a group, process, activity, or situation has received little or no systematic empirical scrutiny, has been largely examined using prediction and control rather than flexibility and open-mindedness, or has grown to maturity…but has changed so much along the way that it begs to be explored anew. Whichever condition pertains, the accent in exploration is forever on the inductive generation of new concepts and empirical generalizations. (Stebbins, 2008, p. 328)

My approach is indeed that of an explorer. It is important within my research approach to subsume all varied relevant "descriptive facts, folk concepts, cultural artifacts, structural arrangements, social processes, and beliefs and belief systems" (Stebbins, 2001, p. 3). Regarding the three conditions under any one of which an exploratory approach is preferable, all three conditions apply to my subject matter. As far as I have been able to ascertain, there has been little or no discussion about my concerns, let alone "systematic, empirical scrutiny" (Stebbins, 2008, p. 328). The larger issues associated with my research focus have not previously been considered with "flexibility and open-mindedness" (Stebbins, 2008, p. 328). Related to or at least implied by this dissertation's research focus is at least one area, utopianism, which "has grown to

maturity…[and] has changed so much along the way that it begs to be explored anew" (Stebbins, 2008, p. 328).

Among the varieties of theoretical research methodology, systems approaches are most similar to this dissertation's methodology. It would be possible to characterize this dissertation's methodology as exploratory systems theoretical research, based upon Capra and Luisi's (2014) eight characterizations of systems thinking:

1. Shift of perspectives from the parts to the whole
2. Inherent multidisciplinarity
3. [Shift of perspective from] objects to relationships
4. [Shift of perspective from] measuring to mapping
5. [Shift of perspective from] quantities to qualities
6. [Shift of perspective from] structures to processes
7. [Shift of perspective from] objective to epistemic science
8. [Shift of perspective from] Cartesian certainty to approximate knowledge (pp. 81–82)

All eight of those characteristics are reflected in important dimensions of this dissertation's methodology, particularly the second, multidisciplinarity, and the seventh, epistemological focus. As will become clear, this dissertation's research spans many disciplines, and its methods and developing theories depend on an epistemology developing within a subsumic worldview. Subsumic epistemology and worldview are further considered Chapter 4.

Although systems approaches share important similarities with this dissertation's research approach, much of this dissertation's research differed from much of even the systems theoretical research traditions in that this research endeavor dealt with future conditions. Although development of strategic academic consideration of issues within the realm of futuristic human science has, for a number of years, certainly been underway (Bell, 1996; Hejazi, 2011), dissertation methodologies specific to futuristic systems theory apparently remain to be formalized. According to Grunwald (2016):

> New or further developed methodical approaches are needed to analyze and assess futuristic visions, especially their content, their cultural background, their degree of

> reality and probability, their feasibility, their normative aspects, and their impact on the public and political debate. Visions must be made the subject of prospective hermeneutical analysis in order to better understand their content and their strategic constellation. The primary issue is to clarify the meaning of the future projections: What is at issue; what rights might possibly be compromised; what images of humankind, nature, and technology are formed, and how do they change; what anthropological issues are involved; and what designs for society are implied in the projects for the future? (p. 43)

In this dissertation, I have employed a subsumic epistemology in which I consider as many perspectives as possible, pertinent, and practical. A subsumic epistemology involves considering every actual perspective valid and important. That is decidedly not the same as considering every proposition valid or considering every proposition important. Herein, a perspective is defined as a mental point of view (Merriam-Webster, n.d.-f), and, distinguishing subsumism from any of the many varieties of relativism requires, among other important distinctions, avoiding confusing perspectives with propositions. Herein, a proposition is defined as "an expression in language or signs of something that can be believed, doubted, or denied or is either true or false" (Merriam-Webster, n.d.-g). Although a perspective could be represented by a proposition, certainly not every proposition is a perspective. Considering every actual perspective valid and important is also definitely not the same as considering every opinion, belief or claim valid and important. Subsumic epistemology does not regard arguments or positions or beliefs of the invalidity of other's perspectives as actual perspectives. They are statements of beliefs that one's own perspective is the only valid perspective and that others' perspectives must be measured against one's own opinions. That is not a perspective. Instead, that is a blind spot in one's own perspective, a speculation about what one cannot see because it is outside one's field of view, outside one's focal area, outside one's focal length, but it is, nevertheless, subconsciously interpolated or extrapolated and then regarded as if it is being personally experienced, as if it is actually being personally perspectivally viewed. Additionally,

subsumic epistemology does not regard as actual perspectives simply copying, adopting, or parroting another's perspective, opinion, belief, or claim, or following any kind of popular meme, vogue, or party position.

Continual Methodological Refinement

Because of the nature of the subject matter and the order of research events involved in this dissertation, in keeping with the spirit of the qualitative research tradition (Locke et al., 2013), a degree of methodological openness and continual methodological refinement was strategic. In considering this study's approach to human futures exploration, I allowed for ongoing methodological development so the exploration could suggest methodological refinement as necessary.

Throughout this dissertation's research process, its methodological approach continued to develop. The approach proved a useful, fitting approach, a subsumic exploratory systems theoretical approach for human futures considerations. Because this methodology, by design, was adaptive, I identified the necessity of openness to methodological refinement and attempted to maintain, at every point, openness to methodological refinement.

One description of a particular mode of inquiry is particularly well-suited for conveying a sense of the process used in researching and writing this theoretical dissertation, especially in terms of its deeper epistemological aspects. That mode is what Anderson and Braud (2011) called intuitive inquiry. According to Anderson (2011):

> Epistemologically, intuitive inquiry is a search for new understandings through the focused attention of one researcher's passion and compassion for her- or himself, others, and the world. In so doing, intuitive inquiry affirms a world reality in flux and mutable and, therefore, challenges conventional notions of a static worldview that is separate and distinguishable from the knower, the lover. The intuitive inquirer may feel like she is chasing a moving target and that she is likely to wonder if she is or the data are changing before her eyes. Both are changing because insight changes understanding in an ongoing ebb and flow. Therefore, it is not unusual for intuitive inquirers to cultivate insights that

> may ‘break set’ with established theory and scholarship. In research reports, the tale of an intuitive inquiry is reported fully and projected toward the future as an impetus for individual, ethical, moral, and collective change. (pp. 17–18)

Limitations

Among the limitations of this research are those limitations inherent in all qualitative research, including the challenge of defending adequate researcher objectivity and objective verifiability of data. Further limitation of this proposed research involves a limitation inherent to all theoretical research: the complicated nature, if not implausibility, of real-world testing of hypotheses or of findings, and criteria and function of the processes of selection of literature to represent relevant scholarly conversation to date. In many cases, when constructing futurological theory, immediate testability and falsifiability can be entirely impossible.

An even more significant limitation of this dissertation involves potential researcher bias. As is very clear in the introductory chapter, this exploration has involved issues about which I am passionately concerned and have long held certain opinions. Although my intention and attempt have decidedly been to conduct balanced, critical, even skeptical exploration, it has not been possible to avoid preferring certain findings. Any such bias should always be suspected of influencing objectivity in research. Nevertheless, certain of this dissertation’s findings and conclusions have not ended up being what I would have preferred. Although that might allow me to feel somewhat more confident in this dissertation’s integrity of research and theory development, I consider it likely that if the same research questions had been explored by a researcher with very different viewpoints and values than mine, the findings and conclusions might have been less sanguine regarding benevolutioneering’s plausibility and desirability. No matter how carefully and openly I bracket my values and perspectives, readers should keep these bias-related concerns in mind.

CHAPTER 3: FUTUROLOGY, FUTURES STUDIES, AND OUR RAPIDLY EMERGING TOMORROWLAND

Even when regarded as an academic pursuit, futures studies has certainly not been among the most common or most esteemed of scholarly disciplines. Lombardo (2006) described futures studies as, "an empirical and scientifically based approach to understanding the future" (p. 109). The futures studies field developed steadily, for the most part, inside and outside academia since the end of World War II (Masini, 2006). In Slaughter (2007), Slaughter and Bell, pioneering futures studies scholars, discussed a perceived decline in North American academic futures studies programs at the close of the 20th century. In the decade since Bell had retired, simultaneously publishing his two-volume foundational handbook of futures studies (Bell, 1997a, 1997b), North American academic futures studies programs had been losing ground. It would be interesting, even though outside the scope of this dissertation, to graph the volume of futures studies publications and futures studies courses and available degree programs in English speaking academia versus non-English speaking academia since the middle of the 20th century. While using Google scholar to search for multiple futures studies topics associated with academia, in varying date ranges within that time frame, I sensed a steady rise and relatively recent abrupt fall in publication volume. Although searches without date parameters produced very many more articles in English than all other languages, search date ranges since 2013, since 2016, and since 2017 produced progressively fewer and fewer articles in English. Masini (2006) identified what could be a related trend:

> Mention should…be made of future studies in the developing countries, which have shown an increasing interest in the field. Within the Francophone region of Africa, Morocco was a leader in futures activities; in the English-speaking zone, Egypt, Kenya and Tanzania have well developed futures communities. Both India and Sri Lanka have highly respected futures groups, and of course Japan follows the developing countries'

> pattern and interests. Latin America has recently been expanding its activities in future studies, particularly in Mexico, Venezuela, and Brazil. (p. 1161)

My searches returned numerous studies from Iran and many studies in Mandarin, without English translations. This might be important in anticipating cultural influences within futures studies. The radical interventions my research anticipates require consideration of humanity's full cultural spectrum and collaboration with futurists of various cultures going forward.

Transhumanism

Among important strands of contemporary thought about the future, and one of this dissertation's foundational constructs, is transhumanism. Transhumanism is a decades-old, world-wide movement sharing a belief in the feasibility and the goal of fundamental transformation of human beings through the development and widespread implementation of technological enhancements of human physical, mental, and psychological capacities (Geraci, 2010; Kurzweil & Grossman, 2005, 2009). Brumlik (2016) traced the roots of transhumanist thought back to the Renaissance. Modern transhumanists expect and promote the eradication of aging and death through science and technology (Aging Reversed, 2015; de Grey & Rae, 2008; Duncan, 2012; Foresight Institute, 2019; Fossel, 2015; Hughes, 2004; Zhavoronkov, 2013). Photojournalist David Vintiner "set out to meet the innovators, artists, and dreamers within the transhumanism movement…pushing the boundaries of their biology to become something more than human" (Sanchez, 2020, para. 2). Vintiner defined transhumanism as the belief that "human beings are destined to transcend their mortal flesh through technology, [that]…our biology constrains our experience of reality and that we don't have to accept what nature has given us" (Sanchez, 2020, para. 5). According to Vintiner, "from bionic limbs and eyes to designing new senses and extending life expectancy, these individuals are redefining what it means to be

human" (Sanchez, 2020, para. 5). A fledgling body of literature has begun to characterize transhumanism, with varying degrees of scholarly character.

Moore's Law

Much of the hope of some of the modern era's most ambitious transhumanist futurists stems from extreme confidence in Moore's Law (Kaku, 2011b; Kurzweil, 2000, 2005, 2011; Ptolemy, 2011). In 1965, Gordon Moore, founder of Fairchild Semiconductor and co-founder of Intel, was asked to write, for Electronics Magazine's 35th anniversary issue, an article predicting the next decade of development of the integrated circuit. Moore reviewed the field's brief history. In 1960 a silicon chip held only a single transistor. Within 2 years the first integrated circuit chip held four components, resistors as well as transistors. Moore said "next year we had eight, and then around 16. And I could see that—in '65, the next one coming had about 60" (Moore & Rose, 2005, 29:53–30:02). Moore observed, "it's been about doubling every year, starting with one in 1959" (Moore & Rose, 2005, 30:04–30:07). Moore plotted that progress and, assuming such progress would continue, drew a straight line on logarithmic paper, predicting that within a decade a chip would hold 60,000 components. Based only on the first few years of silicon chip development, Moore (1965) observed that, every year, the number of transistors in a single chip doubled without increasing chip size, and he projected that trend's continuation at least a decade into the future. However, by 1975, there had been only about 9 doublings instead of his predicted 10. Ultimately, Moore modified his projection, predicting continued doubling of component density every 2 years rather than every year. At some point, one of Moore's colleagues dubbed Moore's forecast Moore's Law. Although Moore's original projection primarily concerned chip component complexity, Moore's colleague, David House, applied Moore's forecast to predicting the rate of increasing computing power (Moore & Rose, 2005), and that iteration became the most popular understanding of Moore's Law.

For 40 years, Moore's Law "served as a unique guide to the dynamics of the silicon revolution" (Brock, 2006, p. ix). Although Moore's law was originally an "observation and prediction about the economic and technical trends at play in the early years of integrated circuit technology, Moore's law eventually became" (Brock, 2006, p. ix) the expectation and the "organizing goal of a multibillion-dollar global industry" (Brock, 2006, p. ix). With silicon chip technology integral to nearly every aspect of modern life, Moore's Law has come to serve as "an emblem for the whole of technological change" (Brock, 2006, p. ix).

Over at least the past 2 decades, Moore's Law has been regularly pronounced dead or, at least, just about to decay (Bonab et al., 2021; Lundstrom, 2003). Moore himself, who called his prediction "a lucky guess that got a lot more publicity than it deserved" (Moore & Rose, 2005, 28:06–28:09), when asked if Moore's Law would no longer be applicable, replied:

> Well, one of the principal ways we achieve this is by making things smaller. And we are approaching the limit that - materials are made of atoms. You know, we're not too far away from that. But talking to the Intel technologists, they think they can still see reasonably clearly for the next four generations. That's further than I've ever been able to see. So it's amazing how creative the people have been about getting around the apparent barriers that were going to limit the rate at which the technology could expand. (Moore & Rose, 2005, 33:42–33:16)

But Moore's Law has neither died nor decayed (Gale et al., 2020; Hudson, 2021; Knight, 2021; Kovalick, 2021; Lex Fridman, 2020; Ricón, 2020), and it seems possible that progress might not only continue but might soon dramatically exceed Moore's predicted rate. In fact, a quantum computing version of Moore's Law forecasts annual doubling of quantum volume, a metric of a computer's capacity to handle complexity. That recent version of Moore's Law was labeled by IBM as Gambetta's Law after leading quantum theoretician Jay Gambetta. Reportedly, through 2020, Gambetta's Law had held steady for 3 years, the same number of years of data upon which Moore (1965) based his original forecast (Lichfield, 2020).

Quantum Computing

The profound impact digital computers have had on society over the past 5 decades is undeniable. The impact could be viewed as stemming from digital computing's role in enhancing humanity's ability to gather, store, process, and apply information. This extends the impact of such earlier information handling enhancement technologies as writing and the printing press. It might be easy for many people today to contrast the magnitude and rate of the impact of writing and printing presses with that of digital computing. It is doubtful, though, that very many people today realize the potential of quantum computing to dwarf the magnitude and rate of impact of digital computing. Nevertheless, the potential information processing power of quantum computing and its impact on society is vastly greater than that of the power and impact of digital computing.

Appreciating this contrast requires consideration of the nature of quantum computing and the nature of digital computing. Digital computers are, essentially, vast arrays of binary switches, meaning that each of many switches logically functions like a common on-or-off light switch. Wiring eight of these binary switches in parallel arrangement, which means side-by-side, provides $2^{\wedge}\mathbf{8} = 256$ unique combinations of on or off states, more than enough combinations to represent all the characters on a keyboard. The information momentarily represented by each switch in a given state, on or off, is referred to as a bit. The information momentarily simultaneously represented by the on-or-off pattern of all eight switches, representing a single character, is referred to as a byte. Over time, these switches have been engineered to be incredibly small, so small that millions of these eight switch groupings can be combined in a single electronic component smaller than a single letter on this page. This represents the foundation of our era's electronic means of conveying largely the same kind of alphanumeric information representable by writing, typing, or printing. To that semiotic basis were added ever

more clever means of storing, processing, recalling, and conveying such alphanumeric information. With that basis, microcomputing has helped to produce the last half-century's paradigmatic changes in the nature of human existence.

In contrast with what is now conventional computing, quantum computing is not digital. It is not limited to each bit representing only an on or an off state. Instead of having only two states, each quantum bit, known as a qubit, theoretically, is in a state that depends on how the on state and the off state instantaneously relate to one another. That relationship stems from an abstract angle. That abstract angle, known as the qubit's phase, ranges from 0° to 360°. The qubit's phase underlies wavelike interference effects, which are the key to quantum computing's mind-boggling power (Cho, 2020; Ghafari et al., 2019; Moreira et al., 2020).

Another way to contrast quantum computing and digital computing is by considering that, although each switch or bit in a digital computer is definitely in one of only two states, on or off, or, as commonly represented, as being in either a 0 state or in a 1 state, in describing a quantum computer we must get used to using uncertain terminology. We must become accustomed to considering, using the language of probability, that each qubit has, at a given instant, a certain likelihood of being in a 0 state and a certain likelihood of being in a 1 state (Ghose, 2020). Such fuzzy relationships open the door to information handling that more closely resembles the fuzzy Bayesianesque reasoning it seems the human brain might use (Ghafari et al., 2019; Moreira et al., 2020) to outperform modern digital computers at many kinds of information processing tasks.

Beyond processing information in ways similarly to how it is believed the human brain processes certain kinds of information, quantum computers can consider vastly more possibilities than either a human brain or a digital computer. One group of quantum computer scientists

recently claimed that they constructed a quantum computer capable of generating a superposition of every possible future state of the computer. Their quantum computer "creates a quantum superposition of all possible future trajectories that the system can evolve into" (Ghafari et al., 2019, p. 1). Theoretically, for information processing involving high-dimensional Hilbert spaces, "a comparison of statistical futures via two-photon interference can achieve a quantum advantage in communication complexity" (Ghafari et al., 2019, p. 6). Such two-vector comparison "is also an important component of many machine learning tasks, and thus a similar advantage could extend to more general settings like speech recognition" (Ghafari et al., 2019, p. 6).

Clearly the information revolution associated with digital computing was more than a simple next step in linear technological progress. Humanity has experienced unprecedented disruption. It is hard to imagine a quantum computing revolution imposing disruption thousands or even millions of times the magnitude of the historic disruption of the last half-century. Nevertheless, even this extremely shallow glance at quantum computing contrasted with digital computing should offer at least a suggestion of the staggering impact that it seems very likely quantum computing is about to impose on our species, for better and, possibly, for worse.

Technological Singularity

As stated, some of the modern era's most ambitious transhumanist futurists draw hope from extreme confidence in Moore's Law (Kaku, 2011b; Kurzweil, 2000, 2005, 2011; Ptolemy, 2011), which, as discussed, in the two previous sections, continues to prove remarkably enduring. As iterated by David House to predict the rate of increasing computing power (Moore & Rose, 2005) at Moore's modified projected rate of doubling every 2 years (Moore & Rose, 2005), Moore's law inspired Kurzweil's (2005) prediction that, by approximately 2045, the computing power of a computer would exceed the capabilities of the human brain. Kurzweil (2005) called that transition point the technological singularity. Recently, some transhumanists

have been predicting that rapid progress in quantum computing will result in the singularity arriving much sooner than 2045 (Fan, 2019; Gale et al., 2020; Schulze-Makuch, 2020).

To many people, the technological singularity might seem little more than the deus ex machina of modern transhumanism's wishful narrative of the near future. If or when, however, computers' computing power exceeds the capabilities of human brains, many things now impossible would or will become possible. Such computing power could be utilized to even further advance computing technology, dramatically increasing the rate of technological progress recursively.

Transhumanists expect such recursively increasing computing power to dramatically increase the rate of progress of such human enhancement technologies as life-extension, genetic reprogramming, augmented physical and mental capabilities, and human-robot hybridization. The dramatic increase in technological capabilities could also facilitate dramatically increased conceptual and technological capability to far more rapidly effect the species-wide progress in human sociality conceptualized in this dissertation as benevolutioneering.

Big Data

Information processing technology, or computing power, is only as powerful as the information available to process. Anticipated enhancements in computing power discussed previously could only result in information processing incredibly more powerful than current information processing to the extent that there would be massive quantities of useful information available to process and processes for meaningfully utilizing massive quantities of information. These are the concerns of the emerging field of big data. Although *big data* commonly refers to the "collection, processing, analysis and visualisation associated with very large data sets" (Emmanuel & Stanier, 2016, p. 1), there are so many definitions, formal and informal, of big data that it has become difficult to clearly define the term. Consequently, it is sometimes

challenging to communicate effectively within and about this increasingly important field (Emmanuel & Stanier, 2016). Hu et al. (2014) identified three major categories of current definitions of big data: attribute-based definitions, comparative definitions, and architectural definitions. Hu et al. (2014) pointed first to the attributive definition provided by Gantz and Reinsel (2011): "Big data technologies describe a new generation of technologies and architectures, designed to economically extract value from very large volumes of a wide variety of data, by enabling high-velocity capture, discovery, and/or analysis" (p. 6). Their definition delineated "four salient features of big data, i.e., volume, variety, velocity and value…[which became] the '4Vs' definition…used widely to characterize big data" (Hu et al., 2014, p. 4). Hu et al. (2014) next identified in Manyika et al. (2011) the comparative definition of big data as "datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze" (p. 1). Hu et al. (2014) then referred to Cooper and Mell (2012) for an architectural definition of big data: "Big data is where the data volume, acquisition velocity, or data representation limits the ability to perform effective analysis using traditional relational approaches or requires the use of significant horizontal scaling for efficient processing" (p. 15). Emmanuel and Stanier (2016) synthesized multiple definitions of big data in characterizing their own understanding:

> The term Big Data describes a data environment in which scalable architectures support the requirements of analytical and other applications which process, with high velocity, high volume data which may have a variety of data formats and which may include high velocity data acquisition. (Emmanuel & Stanier, 2016, p. 5)

For purposes of the exploration described in this dissertation, recent and ongoing developments within information science, described as big data, represent the exponentially increasing accumulation, meaning-making, and ever-expanding application of vast, unprecedented quantities of information associated with every kind of human activity and with

every field of humanity's ever more rapidly increasing pursuit of knowledge. This is, of course, inseparable from the exponentially increasing computing power predicted and described by Moore's Law and seemingly promised by the advent of quantum computing. Big data is also a key factor in considering the possibility of the technological singularity, the transhumanist agenda, and the ambitious prospect of benevolutioneering.

Artificial Intelligence

At the frontiers of the most promising explorations of human functioning, even the most promising approaches, which, so far, hardly scratch the surface, are regularly found to be quite limited. An example of this regularity is the suggestion of Jonas and Kording (2017) that the fundamental approach of current neuroscience research, production, and analysis of immense, multimodal, complex datasets of functioning brains, "may fall short of producing meaningful understanding of neural systems, regardless of the amount of data" (p. 1) and that there might be a critical misunderstanding of what it might necessarily mean to meaningfully understand functional nervous systems. This underscores the fact that any of the predictions, proposals, and ambitions of the transhumanist vision of the future, certainly including benevolutioneering as conceptualized and characterized herein, will have to rely on profound technological progress, especially development of strong A.I., to pick up where our best pre-enhanced human brains reach their limits.

Although historically indispensable, our parsimonious epistemologies are reaching their limits. We must acknowledge overwhelming complexity at many of today's frontiers of human exploration. Arguably, we will need strong A.I. to help us figure out, or to understand for us, the many staggeringly complex factors involved in the systems of the human organism, especially the human nervous system, particularly, as most concerns this dissertation's exploration, whatever aspects of the human organism underlie aspects of fundamental human nature

associated with sociality, morality, and benevolence. Most certainly, we would need the help of strong A.I. to ever seriously consider significantly upgrading humanity: genetics and maybe still undiscovered coding systems, the complexity of the human nervous system, reciprocal relationships between endocrinology and sociality, the immune system's influence on sociality, reciprocal relationships between sociality and gut flora along with other indispensable symbiotic flora within the human organism, pheromones, subtle environmental influences, cultural influences and systems, and countless other factors, including factors not yet even suspected. That most definitely does not mean, however, that effective benevolutioneering cannot be developed and implemented species wide. We must consider the countless, immense improvements in human exploration and engineering facilitated by digital computing technologies during the past 50 years and how implausible today's attainments seemed prior to the past 50 years' developments in digital computer technologies. A critical difference, though, between our species 50 years ago and our species today is that we are now just beginning to develop computing technologies that can arguably be considered actually intelligent, that are likely to soon surpass human intelligence, intelligent technologies that can fundamentally self-modify, and that will arguably soon even be able to fundamentally modify essential human nature with or without, at some point, human consent. Combined with the as yet unimaginable power of quantum computing, the already increasingly networked connectivity of nearly every aspect of human life, and exponential growth of the internet of things, humanity has never encountered any comparable risks or opportunities.

Tomorrowland Technologies

The World Wide Web has facilitated dramatic societal change in much of the world. Today, if internet service is interrupted, communities, industries, markets, education, health care, and even public safety services can be profoundly impacted. We routinely experience video

conferences with people from the other side of our planet. Many people rarely, if ever, patronize any brick-and-mortar retailers. Some schools, churches, social clubs, dance studios, martial arts dojos, and music instructors function almost exclusively online. Increasingly, our automobiles, household appliances, thermostats, and doorbells are connected to the internet. The lockset on my home's front door can be opened by bringing a small RFID chip near its front-mounted receiver pad. Countless times it has been opened instantly by the tiny RFID embedded under the skin of in my son's left hand. We use smart phone native voice activated internet search functions while we drive on rural highways and then voice dial any phone number on the planet hands-free. Our Bluetooth ear pieces have shrunk. Hearing aids double as Bluetooth interfaces with our smartphones. Hearing aids have been becoming so small that they are almost undetectable. Just reaching the market at the time I am writing this are extremely small hearing aids designed to be positioned in direct contact with the eardrum. They are installed inside the ear. They are not external devices. There is no technical barrier impeding development of similarly internally installed Bluetooth smartphone interfaces that are not hearing aids. Interfaces have been developed and are being rapidly improved that are capable of interfacing the human brain with the Internet.

> The Internet comprises a decentralized global system that serves humanity's collective effort to generate, process, and store data, most of which is handled by the rapidly expanding cloud. A stable, secure, real-time system may allow for interfacing the cloud with the human brain. One promising strategy for enabling such a system, denoted here as a "human brain/cloud interface" ("B/CI"), would be based on technologies referred to here as "neuralnanorobotics." Future neuralnanorobotics technologies are anticipated to facilitate accurate diagnoses and eventual cures for the ~400 conditions that affect the human brain. Neuralnanorobotics may also enable a B/CI with controlled connectivity between neural activity and external data storage and processing, via the direct monitoring of the brain's $\sim 86 \times 10^9$ neurons and $\sim 2 \times 10^{14}$ synapses. Subsequent to navigating the human vasculature, three species of neuralnanorobots (endoneurobots, gliabots, and synaptobots) could traverse the blood–brain barrier (BBB), enter the brain parenchyma, ingress into individual human brain cells, and autoposition themselves at the axon initial segments of neurons (endoneurobots), within glial cells (gliabots), and in

> intimate proximity to synapses (synaptobots). They would then wirelessly transmit up to ~6×10^{16} bits per second of synaptically processed and encoded human–brain electrical information via auxiliary nanorobotic fiber optics (30 cm^3) with the capacity to handle up to 10^{18} bits/sec and provide rapid data transfer to a cloud based supercomputer for real-time brain-state monitoring and data extraction. A neuralnanorobotically enabled human B/CI might serve as a personalized conduit, allowing persons to obtain direct, instantaneous access to virtually any facet of cumulative human knowledge. Other anticipated applications include myriad opportunities to improve education, intelligence, entertainment, traveling, and other interactive experiences. A specialized application might be the capacity to engage in fully immersive experiential/sensory experiences, including what is referred to here as "transparent shadowing" (TS). Through TS, individuals might experience episodic segments of the lives of other willing participants (locally or remote) to, hopefully, encourage and inspire improved understanding and tolerance among all members of the human family. (Martins et al., 2019, pp. 1–2)

Collaborating researchers from the University of Washington and Carnegie Mellon University have developed a prototypical social network in which three geographically remote persons were linked over the internet utilizing a combination of electroencephalography and transcranial magnetic stimulation. The successful trial of their brain-to-brain interface arrangement was the first time a single brain has been able to send and receive messaging without any physical movement involved in conveying information (Jiang et al., 2019).

As with today's shrinking Bluetooth devices, it is reasonable to expect that as soon as brain-to-brain interfaces are commonly marketed then their form factors will begin shrinking until they are small enough to be undetectable and then imbedded in our bodies. That will represent, in effect, technologically achieved telepathy. Connectivity and networks are about to give way to what will be ultra-connectivity and ultra-networks. We are almost there. The same ultra-connectivity will allow direct brain contact with the Internet's vast information resources. Will that open the door to certain kinds of information sharing not yet conceived of? We can imagine everything that it is now possible to do with our smartphones, imagine those smartphones becoming microscopic, then embedded in our bodies, and then augmented with input and output modalities exploiting far more than the visual, auditory, and limited haptic

modalities now in use. Imagine also combining those developments with virtual and augmented reality involving all sensory modalities, including interoceptive functions and somatic emotional cues. Imagine even adding to all those modalities the possible effects of transcranial magnetic and electrical stimulation to orchestrate combinations of any of the phenomenological and functional effects seen so far in transcranial magnetic and electrical stimulation research.

Is miniaturization really progressing toward such tiny devices that they could be easily incorporated into human bodies? University of Manchester researchers have created a programmable molecular scale robot, on the order of one millionth of a millimeter, which can use its vanishingly small robotic arm to perform useful tasks such as moving molecular scale cargo and even assembling other molecules like miniaturized automotive assembly line robots (Kassem et al., 2017). Scientists have developed a magnetic 3-D printing technique for assembling flexible millimeter-scale robots programmable for shape and locomotion characteristics to permit optimized delivery of pharmaceutical payloads, object manipulation, and minimally invasive procedures (Li, Li, et al., 2018; Xu et al., 2019). Micromotors have been developed and operated inside mouse stomachs, and those motors are powered by locally supplied bioavailable fuels (Gao et al., 2015). University of New South Wales engineers have developed micro-submarines that are biocatalytically self-propelled and require no external guidance to perform precise drug delivery tasks (Guo et al., 2019). That would couple well with MIT researchers' development of nanosystem delivery of extremely precise dosages of neuropharmaceuticals to brain regions as small as a cubic millimeter (Dagdeviren et al., 2018).

Among the most transformative technological advances is the growing capacity to program and reprogram DNA. Essentially, whatever can be made according to DNA coded instructions can also be remade, combined, and redesigned, likely either somatically or in

progeny. Gene splicing technology is becoming so accessible that individuals have even been undertaking gene-manipulation-based self-modification projects in their own homes. Even such seemingly science fiction scenarios as increasing native intelligence are recently being seriously explored. One avenue under exploration for improving cognitive function, not just in declining brains, but even in high-functioning brains, hinges on restoring juvenile plasticity to adult brains (Jenks et al., 2017). According to historian Michael Bass (Illing, 2017), genetically engineered human beings will be here much sooner than most people realize, and we are not ready for that. It is important to realize that such dramatic changes are incremental. Soon does not mean sudden. These changes are actually so soon that they are already steadily taking place at an accelerating rate.

Not long ago, a man in his late 70s described for me both of his hip replacements, both of his knee replacements, both of his intraocular lens replacement procedures, his pacemaker implantation, his decades-old artificial heart-valve, the profound effectiveness of the single ECT treatment he received in his 60s, his blood pressure medication, his new insulin pump, and the effectiveness of his metformin prescription. Ten minutes later, when we began discussing my studies of human enhancement technologies, he proclaimed adamantly that he was against transhumanism and any human enhancement technologies. It seems likely that many people regard currently available human enhancement technologies as components of standard medical care to which they are entitled. It would be useful to research the percentage of people who hold this opinion also say that they are against transhumanism and human enhancement technologies.

If a person had a massive stroke and their physicians could replace the destroyed brain structures with microscopic, fully functional, implanted circuit boards, most people would probably eagerly welcome such a procedure. As soon as physicians can implant an insulin pump

controlled by an integrated glucose monitor, most diabetics will probably be eager to receive theirs. As soon as dialysis machines can be miniaturized and implanted, very few dialysis patients will say they do not want an artificial kidney implant because it would make them a human–machine blend. Little by little we are getting used to artificial body components, whether or not we are getting used to the idea of blending human beings with machines. There are people today who would not even consider going to the bathroom without their smartphone in their hand. It will be interesting to see how many of those people are unwilling to have their miniaturized and dramatically improved smartphone implanted and interfaced more directly with their nervous system. Elon Musk (Inner Vision, 2021) said that we are, to some degree, already cyborgs. His is an interesting perspective, because he is of one of the people helping to drive rapid technological progress. Instead of only wondering what the future will bring, he is actually playing significant roles in shaping the future. Here is his cyborg comment in context:

> And then how do we ensure that the future is going to be the future that we want, that we still like? …I do think that there's a potential path here, which is—and we're really getting into science-fiction or sort of advanced science stuff, but having some sort of merger with biological intelligence and machine intelligence. To some degree, we are already a cyborg. If you think of, like the digital tools you have, your phone, your computer, the applications that you have, like the fact that…you can ask a question and instantly get an answer from Google or, you know, from other things. And so you already have a digital, tertiary layer. I say tertiary because you can think of the limbic system, kind of the animal brain or the primal brain and then the cortex, kind of the thinking planning part of the brain and then your digital self as a third layer. But, so you already have that—and if, like, somebody dies, their digital ghost is still around, you know, all of their emails and their pictures that they've posted and their social media. That still lives, even if their physical, if they died. So over time, I think we'll probably see a closer merger of biological intelligence and digital intelligence. And it's mostly about the bandwidth, the speed of the connection between your brain and your digital—the digital extension of yourself, particularly output, like when—and output, if anything, is getting worse. You know, when used to have like, keyboards that we use a lot. Now we do most of our input through our thumbs on a phone, and that's just very slow, the computer can communicate at 1 trillion bits per second, but your thumb can maybe do, I don't know, 10 bits per second, or hundred, if you're being generous. So some high-bandwidth interface to the brain, I think, will be something that helps achieve a

> symbiosis…between human and machine intelligence and maybe solves the control problem and the usefulness problem. (Inner Vision, 2021, 5:38–8:19)

Fundamental Resource Ubiquities

At the point of the singularity anticipated by today's transhumanists, exponentially increasing computing power will have dramatically multiplied the rate of progress of human enhancement technologies and human-robot hybridization. Not only that, but the dramatic increase in technological capabilities is also expected to result in unprecedented abundance to the point of ubiquity of energy, of material resources, and, in effect, of time. Elon Musk (Inner Vision, 2021) expects some of this abundance to result from widespread use of robots replacing and dramatically outperforming the human workforce:

> Now the output of goods and services will be extremely high. So, with automation, there will come abundance. … Almost everything will get very cheap…I think we'll just end up doing universal basic income. It's going to be necessary. The harder challenge, the much harder challenge, is how do people then have meaning…A lot of people, they derive their meaning from their employment. So if you don't have—if you're not needed—if there's not a need for your labor, how do you—what's the meaning? Do you have meaning? Do you feel useless? (Inner Vision, 2021, 4:39–5:34)

In terms of helping to alleviate one of humanity's most pressing existential threats, climate change, one of the most important resources demanding paradigmatic transition is energy. This is one of society's most challenging trajectories that Musk has been attempting to influence.

To facilitate discussion of transhumanist post-technological singularity ubiquities, I have coined two words, *umer* and *anacumer*.

Umer is an acronym coined to convey, within this dissertation, the idea of **U**biquity of **M**aterial and **E**nergy **R**esources. Such ubiquity refers to individuals in the future anticipated to be ultra-resourced in real time, in terms of energy and material resources. This involves resource ultra-ubiquity through ubiquity of multiple forms of free usable energy. This ubiquity also

involves free instantaneous universal availability of matter and of arrangements of matter into most imaginable material objects (Kaku, 2011a, 2011b). This is conceptually similar to the so-called replicator technology portrayed in the television series *Star Trek: The Next Generation* (Roddenberry et al., 1987–1994), underlying the process by which Captain Picard, played by Patrick Stewart, articulated, "Tea, Earl Grey, hot," and a cup of tea materialized. This replicator-like technology might involve robotic swarm technology (Hamann, 2018) at the nano-scale or even the pico-scale (Gershenfeld et al., 2017).

Consideration of prosociality enhancement requires awareness of the terminology with which relevant constructs have been and are being discussed. Those constructs and related terminology are not straightforward and uncontested. Consideration of the many dimensions of those constructs hints at the theoretical difficulties associated with even conceptualizing the processes associated with intentionally influencing the evolution of prosociality. Developing theoretical constructs necessary to advance—or even prudently avoid—aspects of prosocial neuroenhancement will require further developing increasingly precise taxonomies and associated terminologies.

Within this dissertation, umer is used as a noun to describe a person living with the experience of **U**biquity of **M**aterial and **E**nergy **R**esources. *Umeric* is used as an adjective to describe conditions, persons, or eras of **U**biquity of **M**aterial and **E**nergy **R**esources. Umericity describes the condition of **U**biquity of **M**aterial and **E**nergy **R**esources. *Umerity* is the state or quality of being umeric.

I also coin the noun *anacumer* (ə-na'-kyə-mər) to manageably combine and convey five of the most important characteristics of human beings with technologically enhanced bodies and

brains to be stronger, smarter, and healthier, transformed by anticipated 21st century and 22nd century technologies:

1. **A**ugmented: Ultra-enhancement of human bodies and brains in terms of augmentation by physiological alteration such as genetic and epigenetic engineering, strategic ablation, or precise manipulation of axonal connectivity between specific neurons. This could include upgraded and additional senses and additional or enhanced motor functions, memory, and intelligence.

2. **N**etworked: Unparalleled network connectivity of each human being with other human beings or nonhuman animals, hyper-networked computers, and artificially intelligent entities.

3. **A**geless: Life span extended (radical extension of healthy life span, essentially human agelessness, immortalized).

4. **C**yborg: Blending of the human brain and body with nano-scale supercomputer technology and with many other machine technologies (Davis, 2006; Geraci, 2010; Kurzweil, 2005; Skordili, 2013). Such cyborgs could be thought of as human-robot hybrids.

5. **U**biquity of **M**aterial and **E**nergy **R**esources, as described above.

Anacumer is an acronym for **A**ugmented, **N**etworked, **A**geless **C**yborg with **U**biquitous **M**aterial and **E**nergy **R**esources. Additionally, anacumer could almost be considered a bacronym because of its neologistic intentionality, in terms of its phonology, likely associations with similar sounding words, and meaningfully engineered plausible etymology. The term anacumer might bring to mind the word *anachronism*. An anachronism is "a person or a thing that is chronologically out of place; especially one from a former age that is incongruous in the present" (Merriam-Webster, n.d.-a). The ancient Greek word **ἀ**νάκυψον (anakupson) meant "to raise oneself up, …straighten oneself " (Arndt & Gingrich, 1979, p. 56). The image of raising oneself up or of straightening oneself out connects significantly to human beings who engineer important self-modifications. The ancient Greek word μέρος (meros), is etymologically reflected in such words as conformer and isomer. μέρος (meros) meant "part, in contrast to the whole, …component part, …of parts of the body, …share [one's share or portion]…[to] have a share in

[or of] something" (Arndt & Gingrich, 1979, pp. 505–506). In the biblical story of the prodigal son, the King James Version of the Bible (King James Bible, 1769/2017) translates μέρος as *portion*, meaning inheritance. "And the younger of them said to his father, Father, give me the portion [μέρος] of goods that falleth to me. And he divided unto them his living" (Luke 15:12 KJV). Anacumers can reasonably be expected to meaningfully reflect both of these ideas. Importantly, being hyper-networked, anacumers will each be a very small part of a larger, emergent organism—even more so than is the case in 2021. Also, anacumers, the descendants of present-day humanity, will be the heirs of present-day humanity's legacy. The anacumer's five prominent characteristics, plus so-far unimagined characteristics, will be the anacumer's inheritance, the anacumer's portion of our biotechnological legacy.

Within this dissertation, anacumer is used as a noun denoting a person who is an **A**ugmented, **N**etworked, **A**geless **C**yborg living with the experience of **U**biquity of **M**aterial and **E**nergy **R**esources. *Anacumeric* is an adjective to describe conditions, persons, or eras of **A**ugmented, **N**etworked, **A**geless **C**yborgs with **U**biquity of **M**aterial and **E**nergy **R**esources. Anacumericity describes the condition of the existence of **A**ugmented, **N**etworked, **A**geless **C**yborgs with **U**biquity of **M**aterial and **E**nergy **R**esources. *Anacumerity* is the state or quality of being anacumeric.

Ubiquity of Energy

Musk has invested in solar energy and battery technologies to help reduce reliance on fossil fuels. Solar and wind energy generation technologies are important, and some hopeful progress seems to have been achieved, but society is still mostly reliant on nonrenewable, environmentally destructive forms of energy. Development of some of the most hopeful energy

technologies would be more likely achievable after the Moore's-Law-mandated technological singularity as it is envisioned by transhumanists.

At MIT, very significant progress is being made in the lengthy quest for practical fusion-based power generation (Chandler, 2020; Nield, 2021). It seems likely that it will be achieved. It also seems likely that it might be difficult to convince the entire public that fusion power is fundamentally different than fission power. Some people who are uncomfortable with nuclear energy might find it difficult to accept a new form of nuclear energy as safe and environmentally reasonable.

Stanford University researchers, pursuing practical approaches to separating hydrogen, for use as clean fuel, from salt water (Stanford University, 2019). The Stanford researchers developed an "anode consisting of a nickel–iron hydroxide electrocatalyst layer uniformly coated on a sulfide layer formed on Ni substrate" (Kuang et al., 2019, p. 6624), which affords "superior catalytic activity and corrosion resistance in seawater electrolysis" (Kuang et al., 2019, p. 6624). Their approach relies on solar power and appears to solve the problem of rapid electrode erosion, which has previously made electrolytic hydrogen separation extremely impractical (Kuang et al., 2019; Stanford University, 2019). This could be a very significant source of clean fuel that can be stored and used as needed.

One fascinating potential source of clean energy stems from earlier-observed strange ultra-low-frequency (Xu et al., 2014), "atomic-scale fluctuations of a freestanding graphene membrane" (Ackerman et al., 2016, p. 4), specifically, the anomalous stochastic "subnanometer, high-bandwidth…vertical motion of atoms in freestanding graphene" (Ackerman et al., 2016, p. 1). Exploiting this effect, physicists at the University of Arkansas have succeeded in constructing

a circuit that produces, at ambient temperatures, tiny amounts of clean, unlimited power (Thibado et al., 2020).

Creative, revolutionary energy solutions are limited by finite human cognitive resources and, possibly, by the greed of those who profit from society's continued reliance on fossil fuels. Human cognitive and moral enhancement might both be necessary to overcome those two impediments to achieving, world-wide, ubiquity of clean, safe, energy.

Ubiquity of Material Resources

Future technology could facilitate local, instantaneous fabrication of all imaginable material objects, utilizing only ubiquitous ambient material and energy (Kaku, 2011a, 2011b). This could lead to unimaginable abundance (Diamandis & Kotler, 2012; Drexler, 2013).

It has been interesting to watch 3D printing technology come into existence and develop over the past few decades. Combined with computer-aided design (CAD) software, 3D printers allow people to materialize imagined objects more easily than with earlier methods. 3D printing is still developing and is increasingly affordable. Now 4D printing, creation of printed auto-dynamic materials which combine shape programming and smart active materials to construct products with built-in change mechanisms, is in its infancy (Joshi et al., 2020). Although these technologies are impressive, consider the contrast between these technologies and the organic printing technology involved in protein synthesis carried out genetically in living organisms. From whatever material is selectively absorbed from the environment, various elements, including metals, are composed into new reproducing units according to detailed plans written in a language of base pairs on double-helix shaped molecules and carried out by microscopic machines, the manufacture of which is also coded into each organism's genome.

Engineers are now capable of designing and constructing variously capable robots. Robots can and do incorporate artificial intelligence. It is not difficult to imagine a robot designed to construct additional robots. Robots can perform various construction tasks more quickly, precisely, accurately, reliably, tirelessly, and, often, affordably than human workers. And they are doing so. Robots incorporating artificial intelligence can compose music, poems, stories, and works of graphic art. It would seem, then, that a robot could design and construct a robot capable of designing and constructing even better robots. Any process that can be operationalized should be able to be somehow carried out by a robot, and robot design engineering is being improved much more rapidly than human design engineering. When artificial intelligence exceeds human intelligence, the point many of today's transhumanists refer to as the singularity, then the ability of artificially intelligent robots to effect their own improvement and the improvement of the designs of the artificially intelligent robots they in turn design and construct, their improvements are likely to include increasing speed and reducing size. Moore's Law has described only technological progress achieved by human beings who have been improving their products without improving themselves, without increasing their own intelligence. Consider, though, the staggering complexity of today's computer chips, and contrast the complexity of those chips with the complexity of the transistors in the earliest generations of electronic computers. When constructing the earliest electronic computers, did the engineers really believe that, within their lifetimes, they would see anything like an iPhone? Human engineers have not been shortening the product generation period of successive computer chip designs. It has been a 2- or 3-year cycle from one generation of computer chip to the next. Imagine artificially intelligent robots that design and construct increasingly powerful, faster, increasingly intelligent robots, and imagine that, as their intelligence continually increases, they

continue to shorten the period between successive design generations. If each generation was designed and constructed in half the time of the previous generation, imagine how quickly the period between generations would decrease. If we started with a 2-year period between generations, the next period would drop to 1 year. Successive generational periods would then be 6 months, 3 months, and so forth. After the 26th generation the period would drop below a single second. The 170th generation would reach the scale of a unit of Planck Time, and then the time between generations could, of course, not be further reduced except by parallel processing in which multiple robots could combine their efforts, dividing tasks, in producing, as teams of any size, single units. Massively parallel processing, though, would, of course, be conceivable at any stage. Cumulative time to reach non-exceedable cycle frequencies would be 4 years.

Imagine swarms of billions of nanoscale robots cooperatively assembling submolecular building blocks of ambient material to cooperatively produce a single simple consumer product item, a pair of running shoes, for example. Such a swarm could be wirelessly coordinated by the cloud, and the cloud could have received the detailed product request from your mind-cloud connection seconds before construction began. Almost instantaneously, running shoes could be constructed around your feet. When you return from your run, the swarm could deconstruct those shoes, returning molecular building blocks to the environment. This process could be repeated for any material object you could imagine, including every part of your lunch. There would be no need to make a purchase, no need to obtain energy from a power company, and no waste products to constitute a trash and pollution stream. Tomorrow's shoes could differ in any way you desire. Is this entire scenario much farther from where we are right now than the distance from the early 1960s to my iPhone?

Aside from schadenfreude, there would be no benefit to greed. Except for pointless competitiveness, there would be no motivation to deprive anyone or to compete with them for a material or energy resource. Scarcity, though, is not the only factor in competition and greed. Without benevolutioneering or some other form of enhancing prosociality, people would probably still want to hurt each other in a world of ubiquitous material resources. It is also possible that many people's axiologies would fall apart without scarcity. Scarcity is a major factor in the experience of valuing. This could contribute to a sense of purposelessness and a lack of meaning. Purpose and meaning are important factors in human beings' feelings of well-being. This further underscores the importance of benevolutioneering.

Ubiquity of Time

While consideration of the ubiquity of material resources probably renders the notion of taxation absurd, in considering the ubiquity of time, the likelihood of worklessness makes taxation impossible. Having dealt with taxes, perhaps death is appropriately next in line. If we never had to go to work and we were not sprinting through our lives toward the cemetery, then our relationship with time would be very different.

As Cipolla (2003) modeled the role of time keeping and time keeping devices during the Industrial Revolution, Eastern and Western cultures significantly diverged in their respective conceptualizations of time. In the West, workers had to learn to function according to a mechanistic chronology. People were paid for their time, and they had to arrive on time and work until quitting time. Cycles of minutes and hours are experienced quite differently than cycles of seasons and years, and our lives can be textured accordingly. It would be very interesting to see how our species adapts to less externally imposed time structure. It is already interesting to compare my perceptions of people's relationships to asynchronously viewed home entertainment

media such as Netflix with my memory of how people related to their television viewing when I was a child. As a child, countless times, I heard people say things like, “Well, I’ve got to get home in time for my show.” There were times when, as a child, I set my alarm clock to avoid missing my favorite morning cartoons. The fact that, if I missed a program, then it was just gone forever seemed to add importance to my viewing experience. Today there are entire networks of cartoons included in television subscription packages, and there are cartoons on the Internet available whenever anyone wants to view them.

I remember spending a couple weeks in a rural Mexican village and watching very time-conscious people from the United States trying to coordinate their rigid, self-imposed schedules with the people who lived there and seemed to relate quite differently to time. It appeared difficult for them to understand each other and to coordinate their joint activities. I do not think adjusting to worklessness and much longer lifespans will be trivial.

Worklessness

Elon Musk, in discussing artificial intelligence and robotics, addressed the complicated reality of increasing worklessness:

> But what to do about mass unemployment? This is going to be a massive social challenge. And I think ultimately we will have to have some kind of universal basic income. I don’t think we are going to have a choice. …I think it’s going to be necessary. There will be fewer and fewer jobs that a robot cannot do better. But that’s the way that—And I want to be clear—these are not things that I think that I wish would happen. These are simply things that I think probably will happen. And since, you know, …if my assessment is correct, and they probably will happen, then we need to say, “What are we going to do about it?” And I think some kind of a universal basic income is going to be necessary….It’s going to be necessary. The harder challenge, the much harder challenge is how do people then have meaning…A lot of people, they derive their meaning from their employment. So if you don’t have—if you’re not needed—if there’s not a need for your labor, how do you—what’s the meaning? Do you have meaning? Do you feel useless? These are much—that’s a much harder problem to deal with. …So some high-bandwidth interface to the brain, I think, will be something that helps achieve a symbiosis…between human and machine intelligence and maybe solves the…usefulness problem. (Inner Vision, 2021, 3:48–8:19)

Methuselarity

Is there any reasonable likelihood that, in the near future, we could see human life expectancy significantly extended? Actually, it already has been extending, and it seems likely that it will continue to do so.

> Demographic data on age-specific mortality are used to estimate life expectancy, and validated data on exceptional life spans are used to study the maximum length of life. In the countries doing best each year, life expectancy started to increase around 1840 at a pace of almost 2.5 y[ears] per decade. This trend has continued until the present. Contrary to classical evolutionary theories of senescence and contrary to the predictions of many experts, the frontier of survival is advancing to higher ages. Furthermore, individual life spans are becoming more equal, reducing inequalities, with octogenarians and nonagenarians accounting for most deaths in countries with the highest life expectancy. If the current pace of progress in life expectancy continues, most children born this millennium will celebrate their 100th birthday. (Vaupel et al., 2021, p. 1)

We occasionally hear about a person living almost to or a little past 120, but we do not hear about anyone living to 130. Is there any reasonable likelihood that researchers in the near future could discover ways to extend human healthy lifespans to 200 years, 500 years, and beyond? There are hopeful-sounding reports of promising research suggesting that it is possible (Epel et al., 2009; Fahy et al., 2019; Lan et al., 2019; Martel et al., 2021), and some are even ready to start classifying aging as a disease (Bulterijs et al., 2015). Many transhumanists expect that, after the singularity, breakout artificial intelligence will rapidly and dramatically advance age-extension research and technology, a milestone sometimes referred to as the Methuselarity after the biblical character Methuselah, who, according to Genesis 5:27, lived to age 969. It is possible that artificial intelligence will help researchers understand how to best model aging as a treatable disease and then help lead to developing cures for that disease. In fact, that appears to have already been happening. Putin et al. (2017) reported that artificial intelligence had uncovered five biomarkers most important for predicting human aging through a basic blood test: albumin, glucose, alkaline phosphatase, urea, and erythrocytes. Knowledge of the

significance of these markers allows measurement of relative effectiveness of intervention in terms of impact upon life expectancy.

A more extensive presentation of evidence of the plausibility of dramatically increasing maximum healthy human lifespan is beyond this dissertation's scope. I postpone that demonstration to future work. Another issue I look forward to exploring, also beyond this dissertation's scope, is the possible effect upon chronoception in people whose lifespans have been dramatically extended.

Throughout this dissertation, it should be understood that I have operated on the assumption that profound healthy life extension will be taking place and that the recipients of life extension interventions will be restored to and then maintained at the physical condition of their prime age, the biological age of their fully developed young adulthood. Later in this dissertation I propose ways that life extension intervention could be linked to benevolutioneering.

Real Estate Ubiquity

One resource extremely unlikely to become abundant is habitable land, real estate, as real estate is now conceptualized. Based on United Nations population projections, today's world population of 7.87649 billion and population density of 2.024 habitable acres per person might move to a population between 9.6 billion and 12.3 billion by the end of this century (Gerland et al., 2014; United States Census Bureau, 2022).

With such a global population explosion, is it counterproductive to try to attempt to raise the income and thereby the standard of living among the poor and to carry out medical relief work and other relief work to prevent deaths and reduce suffering? Is it possible that such well-meaning support might be inadvertently increasing suffering? Surprisingly, perhaps, an inverse

relationship exists between fertility and income (Schultz, 2005). Bill Gates commented on such concerns:

> In this year's annual letter, Melinda and I take the toughest questions we get asked and give our answers. One that's come up for a long time is, as we make the world healthier, is the population going to get so big that feeding everybody and maintaining the environment is going to be impossible? Here we can see a chart that looks at the total world population over the last several hundred years, and, at first glance, this is a bit scary. We go from less than a billion in 1800 and then 3, 4, 5, 6, and 7.4 billion where we are today is happening even faster. So, Melinda and I wondered whether providing new medicines and keeping children alive, would that create more of a population problem? What we found out is that as health improves, families choose to have less [sic] children. And this effect is very, very dramatic. We find that in every country of the world this is repeated. The population growth goes down as we improve health. So, we've taken that chart that shows the global population growth, and we've actually extended it out all the way to 2100. And we can see that, instead of continuing, it actually flattens out. Another way to see that is through this rate of population growth. And you can see that in the 60's that reached a pretty high number: over 2% per year, and it's now come way, way down. Now, 12.1 billion people is still a lot, but the good news is that, the faster we improve health, the faster family size goes down, and so we can feel great about saving those lives. (Bill Gates, 2018, 0:02–1:58)

A population between 9.6 billion and 12.3 billion would result in a population density between 1.282 and 1.643 habitable acres per person (Gerland et al., 2014). It is estimated that there were no more than 300 million human beings in 1 C.E., corresponding to 52.6 habitable acres per person, and the human population only reached 1 billion during the 19th century (Smil, 1998), corresponding to 15.77 habitable acres per person. Our species faces unprecedented population density.

There are a number of ideas for helping to alleviate our planet's expected overcrowding. There are regular discussions about the need for human colonies on the moon and on other planets. Floating communities have been discussed. One of the most intriguing possibilities is the construction of space elevators. Although that might seem unlikely, "far from science fiction, space elevators may be nearing deployment" (Ravisetti, 2021, p. 1). The idea is being extensively researched and is being seriously considered as a means of lifting various payloads

into space (Shi et al., 2021). I imagine space elevators serving another function. I picture the possibility of spacious dwellings, each with a better view than any skyscraper penthouse, all along the length of the tethering cables. Space elevators are generally conceptualized as extending from the ground to just beyond geosynchronous orbit, about 26,098 miles above sea level (Penoyre & Sandford, 2019). If dwellings were integral to the elevator, such that each level was 25 feet tall and there were 4 dwellings per level, then each elevator could accommodate more than 22 million dwellings. The hurdle facing engineers is that there are not yet any materials strong enough to serve as the tether cable for this kind of space elevator. One idea being seriously considered is that the elevator could be tethered to the moon and hang toward the earth. Currently available materials are strong enough for such a design. This might all seem rather challenging, but so is running out of habitable land.

CHAPTER 4: PHILOSOPHICAL FOUNDATIONS OF THIS EXPLORATION

If humanity was no longer subject to death and no longer competing for finite resources, how would humanity's philosophies change? In one sense, this dissertation explores human circumstances as if, or in case, humanity manages to antiquate inevitable biological death and competition for finite resources. Whether or not any of us currently believes that this is going happen, if it does happen, certain foundational changes seem very probable. It already seems that much of what humanity now considers absolutely settled philosophical foundation needs to be reconsidered if only to suitably adapt to the changes humanity is already struggling to navigate. In this chapter, I propose and explore a developing philosophical system capable of much better serving humanity in our current dramatically altered and rapidly changing reality as humanity moves, or as if humanity was moving, into a profoundly changed existence, possibly even beyond normalized biological deterioration, certain death, and competition for finite resources.

Profoundly increased connectivity has been, and, as consciousnesses are increasingly linked, will be even more ultra-networked, ushering in further revolution in philosophical and religious thought in ways parallel to the Ionian intellectual revolution thought by many to have been precipitated by increased cross-cultural interface at ports of trade. Cross-fertilization of worldviews, not just of a few ideas or practices, giving rise to increased skepticism, has this effect. Is it not true that skepticism "arises as soon as an example is presented of incompatible hypotheses that make equally good sense of the evidence" (Sorell, 1994, p. 131)? Such examples would be far more likely in port cities where cultures intersected. The World Wide Web's transformation of nearly the entire planet into, effectively, one giant port city, forces an unprecedented deluge of seemingly incompatible hypotheses that might each appear to make equally good sense of all available evidence. The scale of assault of this species-wide tidal wave

of divergent hypotheses upon traditions, traditional schemas, and beliefs of every kind brings into question even the entire construct of belief. Sorell (1994) pointed out that "one way of formulating skepticism is by asking whether there might not be, for any hypothesis, an equally credible but incompatible hypothesis purporting to explain the same thing" (p. 131). People's previously invisibly settled points become conspicuous clashes. It is difficult to imagine the magnitude of this dynamic when internet-mediated cultural intersection will be upstaged by cloud-facilitated awareness-sharing. Imagine, also, fully matured quantum computing based strong A.I. forcing reconsideration even of everything that has always been common to all human cultures and that has, therefore, never before been challenged even in the most cosmopolitan of human crossroads.

It is important to understand why benevolutioneering requires subsumic philosophy, or subsumism, as its philosophical foundation. Benevolutioneering necessarily classifies certain characteristics as targets of amplification or important additions and other characteristics as targets for reduction or mitigation. This is inescapably axiological. Values associated with prosociality and antisociality, with selfishness and altruism, compassion, competition, perspective taking, benevolence, schadenfreude, love, hate, spite, greed, generosity, freedom, justice, tyranny, etc. vary on a broad continuum. Forcing values on people disregards their freedom. Disregarding personal freedom contradicts subsumism's foundational principles of love, because love, as herein conceptualized and characterized, is premised upon genuine freedom. Subsumism refuses to coerce or deceive. Subsumic philosophy involves a rigorously internally consistent ontology while valuing and regarding as valid all genuine perspectives. Seemingly intractable, irreconcilable values appear to prevent axiological consensus indispensable for even theoretical conceptual plausibility of benevolutioneering as modeled

herein. Subsumism, subsumic philosophy, and a subsumic philosophical system are valuable tools for use in the effort to facilitate such reconciliation as well as an immediately useful philosophical system capable of facilitating urgently needed harmonious, cooperative existence within humanity's already shockingly altered societal reality.

Subsumism

To *subsume* is to "include or place within something larger or more comprehensive" (Merriam-Webster, n.d.-i). Subsumic is the adjectival construal of the word subsume. Subsumic philosophy is herein developed as a necessary foundation for benevolutioneering. Without subsumic philosophy underlying benevolutioneering, benevolutioneering would be difficult to conceptualize logically and likely just as ethically unjustifiable as most species-wide moral bioengineering models and endeavors would likely be. Markham's (2012) poem conveys something of subsumism's essence:

> He drew a circle that shut me out—
> Heretic, a rebel, a thing to flout.
> But Love and I had the wit to win:
> We drew a circle that took him in! (Markham, 1915, p. 1)

Subsumic philosophy, benevolutioneering's philosophical foundation, treats all honest ontological perspectives as valid although partial, as illustrated by the ancient Buddhist parable of blind persons examining an elephant. According to the well-worn parable:

> "The king said to a certain man, 'Come, my good man. Gather together all the people in Sāvatthī who have been blind from birth.'"
>
> "Responding, 'As you say, your majesty,' to the king, the man–having rounded up all the people in Sāvatthī who had been blind from birth–went to the king and on arrival said, 'Your majesty, the people in Sāvatthī who have been blind from birth have been gathered together.'
>
> "'Very well then, I say, show the blind people an elephant.'
>
> "Responding, 'As you say, your majesty,' to the king, the man showed the blind people an elephant. To some of the blind people he showed the elephant's head, saying, 'This, blind people, is what an elephant is like.' To some of them he showed the elephant's ear, saying, 'This, blind people, is what an elephant is like.' To some of them he showed the elephant's tusk… the elephant's trunk… the elephant's body… the

> elephant's foot… the elephant's hindquarters… the elephant's tail… the tuft at the end of the elephant's tail, saying, 'This, blind people, is what an elephant is like.'
>
> "Then, having shown the blind people the elephant, the man went to the king and on arrival said, 'Your majesty, the blind people have seen the elephant. May your majesty do what you think it is now time to do.'
>
> "Then the king went to the blind people and on arrival asked them, 'Blind people, have you seen the elephant?'
>
> "'Yes, your majesty. We have seen the elephant.'
>
> "'Now tell me, blind people, what the elephant is like.'
>
> "The blind people who had been shown the elephant's head said, 'The elephant, your majesty, is just like a jar.'
>
> "Those who had been shown the elephant's ear said, 'The elephant, your majesty, is just like a winnowing basket.'
>
> "Those who had been shown the elephant's tusk said, 'The elephant, your majesty, is just like a plowshare.'
>
> "Those who had been shown the elephant's trunk said, 'The elephant, your majesty, is just like the pole of a plow.'
>
> "Those who had been shown the elephant's body said, 'The elephant, your majesty, is just like a granary.'
>
> "Those who had been shown the elephant's foot said, 'The elephant, your majesty, is just like a post.'
>
> "Those who had been shown the elephant's hindquarters said, 'The elephant, your majesty, is just like a mortar.'
>
> "Those who had been shown the elephant's tail said, 'The elephant, your majesty, is just like a pestle.'
>
> "Those who had been shown the tuft at the end of the elephant's tail said, 'The elephant, your majesty, is just like a broom.'
>
> "Saying, 'The elephant is like this, it's not like that. The elephant's not like that, it's like this,' they struck one another with their fists." (Dhammatalks.org, n.d., paras. 6–23)

In stating that subsumic philosophy treats all honest ontological perspectives as valid, by honest I mean accurately reported with the intention of truthfully conveying a portrayal of one's own perspective. This means that dishonest perspectives are not treated as valid perspectives. Subsumism is conceptualized as regarding dishonest perspectives as not actually being perspectives. By "dishonest perspective" I mean a falsely reported or self-deceptively recalled perspective.

Treating all honest perspectives as valid is decidedly not the same as considering every proposition valid or considering every proposition important. Herein, a *perspective* is defined as

a mental point of view (Merriam-Webster, n.d.-f), and, distinguishing subsumism from any of the many varieties of relativism requires, among other important distinctions, avoiding confusing perspectives with propositions. Herein, a *proposition* is defined as "an expression in language or signs of something that can be believed, doubted, or denied or is either true or false" (Merriam-Webster, n.d.-g).

Treating every honest perspective as valid is herein referred to as omnivalidity. The prefix omni means "all[,]…in all ways, places, etc.[,]…without limits" (Merriam-Webster, n.d.-d). Validity is the noun form of the adjective valid. Incorporating validity in the term omnivalidity conveys, from the definition of *valid*, "well-grounded or justifiable[,]…being at once relevant and meaningful [as in] a *valid* theory[,]…logically correct [as in] a *valid* argument [or a] *valid* inference[,]…appropriate to the end in view" (Merriam-Webster, n.d.-l). Omnivalidity in this dissertation means regarding equally valid every actual perspectival construct or conceptualization and its associated ontology.

Although I have not found omnivalidity in a dictionary, the term is not herein original. This dissertation's use of omnivalidity is similar to Nietzsche's (1911) use: "Parmenides and Zeno inversely hold fast to the truth and omnivalidity of ideas and condemn the perceptible world as the opposite of the true and omnivalid ideas, as an objectivation of the illogical and contradictory" (p. 131). Nevertheless, this dissertation's use of omnivalidity does not perpetuate the Eleatic school's condemnation of the perceptible world as invalid. Herein, omnivalidity encompasses the perceptible world as valid, particularly in the sense of "appropriate to the end in view" (Merriam-Webster, n.d.-l). The following poem matter-of-factly validates multiple views of what is expected or hoped for after death. In so doing, it contributes an important sense of subsumism's inclusivity of perspective, a sense of subsuming multiple views regarding one of

life's commonly contemplated questions, a question for which we have little or no evidence, the question of experience in and after death.

The Afterlife - Billy Collins

While you are preparing for sleep, brushing your teeth,
or riffling through a magazine in bed,
the dead of the day are setting out on their journey.

They're moving off in all imaginable directions,
each according to his own private belief,
and this is the secret that silent Lazarus would not reveal:
that everyone is right, as it turns out.
You go to the place you always thought you would go,
The place you kept lit in an alcove in your head.

Some are being shot into a funnel of flashing colors
into a zone of light, white as a January sun.
Others are standing naked before a forbidding judge who sits
with a golden ladder on one side, a coal chute on the other.

Some have already joined the celestial choir
and are singing as if they have been doing this forever,
while the less inventive find themselves stuck
in a big air conditioned room full of food and chorus girls.

Some are approaching the apartment of the female God,
a woman in her forties with short wiry hair
and glasses hanging from her neck by a string.
With one eye she regards the dead through a hole in her door.

There are those who are squeezing into the bodies
of animals--eagles and leopards--and one trying on
the skin of a monkey like a tight suit,
ready to begin another life in a more simple key,

while others float off into some benign vagueness,
little units of energy heading for the ultimate elsewhere.

There are even a few classicists being led to an underworld
by a mythological creature with a beard and hooves.
He will bring them to the mouth of the furious cave
guarded over by Edith Hamilton and her three-headed dog.

The rest just lie on their backs in their coffins

> wishing they could return so they could learn Italian
> or see the pyramids, or play some golf in a light rain.
> They wish they could wake in the morning like you
> and stand at a window examining the winter trees,
> every branch traced with the ghost writing of snow.
> (Collins, 1990, pp. 267–268)

Subsumism is not identical with trivialism. The word trivialism derived from the Latin term *trivialis* ("Trivialism," 2021), meaning "found everywhere" ("Trivialism," 2021, para. 4) and/or from the

> Latin adjective triviālis, 'pertaining to a crossroads or to public streets; common, vulgar, ordinary,' is a derivative of the classical Latin noun trivium meaning 'the place where three roads meet, crossroads' [since a crossroads was very public, all kinds of people might show up]. (Dictionary.com, n.d.)

Trivialism, almost universally rejected (Kabay, 2008), is the logical theory that all statements, i..e., propositions, are true (Bueno, 2007) and that all contradictions of the form "P and not P" (e.g., the ball is red and not red) are true. Accordingly, trivialists believe "that everything whatsoever (including every contradiction) is true" (Priest et al., 2018, para. 9). Although trivialism and subsumism share, to a point, the characteristic of omnivalidity, subsumism does not regard all statements as true. Some statements are false; they do not describe the way reality actually is. The subsumic model does not preclude falseness and falsehood. Partial perception and misperception from one's actual perspective can result in false statements. Faulty reasoning stemming from one's perceptions, from one's actual perspective, often result in false statements. Statements made about others' perspectives very often result in statements that are not true. Dishonest, deceptive, misleading statements are often not true. Strictly speaking, perspectives are subsumism's focus and domain. Statements are not.

Subsumic philosophy considers only actual perspectives. Many statements, including many statements trivialism would deem true, are actual perspectives, and many are not. Additionally, in terms of evaluating apparent contradictions such as "the ball is red and not red,"

subsumic notions of validity and truth involve several constructs introduced and discussed in the next section's exploration of subsumic ontology.

It is important to understand how subsumic thought is rooted in systems thinking. All eight of Capra's and Luisi's (2014) characteristics of systems thinking describe quite well the shift in perspective from more traditional Western ontology and epistemology to subsumic ontology and epistemology.

1. Shift of perspectives from the parts to the whole
2. Inherent multidisciplinarity
3. [Shift of perspective from] objects to relationships
4. [Shift of perspective from] measuring to mapping
5. [Shift of perspective from] quantities to qualities
6. [Shift of perspective from] structures to processes
7. [Shift of perspective from] objective to epistemic science
8. [Shift of perspective from] Cartesian certainty to approximate knowledge (pp. 81–82)

There are, of course, philosophies and worldviews that differ from subsumic thought, from subsumic philosophy and subsumic worldviews. As its name implies, subsumism subsumes many contrasting philosophical systems and worldviews. In so doing, subsumic thought recognizes that many epistemologies are inherently structured around competitive processes. Subsumic epistemology is not structured around competitive processes. That means, in part, that when multiple notions, derived from varying perspectives or from the same perspective at different times, seem to be in tension, subsumic epistemology does not, in effect, structure zero-sum contents of conflicting perspectives or notions and then procedurally decide by some criterion or another which notion is the winner and which is the loser as a means of deciding verity or legitimacy. Some prevalent epistemologies and methodologies, either by convention or even mere habit, decide between what are regarded as notions in contention by judging between them which is more parsimonious, elegant, fitting with currently accepted models, or otherwise better conforming than the other and then deem the less parsimonious or otherwise less

conforming notion false or spurious and then proceed, often syllogistically, assured that the more parsimonious notion is factual. Subsumic thought acknowledges such epistemologies and methods as valuable in many practical arenas of human endeavor, thereby subsuming those epistemologies and methods. Although subsumic thought recognizes competitive approaches and conventions as useful for purposes such as engineering, commerce, and mythology, subsumic thought does not recognize such simplifications as absolutely ontologically authoritative. Dogmatism, when reasoning downstream from such simplifications, although common, is unwarranted and is not subsumed. Narrow-minded enforcement of orthodoxies based on conclusions stemming from practical but oversimplified epistemologies are not subsumed. Varying axiologies influenced by such orthodoxies can appear intractably irreconcilable. Much wasteful and sometimes even tragic human conflict, including much political and religious animosity, can be modeled as stemming from epistemologies that competitively oversimplify differing notions.

Subsumic Ontology

There are “is” questions. Such questions are questions of fact. There are also “ought” questions, normative questions, including axiological questions and aesthetic questions differentiated from questions of fact. In treating questions of fact, subsumism determines to be reasonable. Such reasonableness involves internal logical consistency and avoiding internal contradiction. Such reasonableness also involves avoiding resorting to authority and avoiding adamantly merely stated strong opinions in attempts to settle matters that are apparently intractable. How could subsumism be reasonable in those respects, while insisting that one person’s perspective in a matter of historical explanation of events causally involved in bringing

about present circumstances is valid while also insisting that another person's seemingly divergent perspective regarding the same events is also valid?

First, seemingly divergent, apparently mutually exclusive perspectives can be axiomatically deemed subsumable even without a definitive or even seemingly plausible reconciling synthesis or explanation. There is no more reason to reject this notion than the axiom that the coexistence of such apparently mutually exclusive perspectives necessarily represents a zero-sum contest, the winner of which is to be awarded truth value greater than its opponent perspective. Intellectual humility, an operationalized epistemological aspect of subsumic philosophy, necessitates relentless awareness and application of the reality that there are no situations for which human cognition possesses all relevant information and no situations of which human cognition is fully capable of exhaustively ascertaining, processing, and synthesizing to even nearly approach omniscience. There are many possible courses of cognitive processing besides simply picking a winner in an axiomatic, uncritically inherited a priori zero-sum contest between seemingly mutually exclusive opponent perspectives. Subsumic thought involves the recognition that even humanity's best, most collaborative attempt to discover, deduce and list every imaginable course of cognitive processing besides picking a winner in an axiomatic, uncritically inherited a priori zero-sum contest between seemingly mutually exclusive opponent perspectives would produce a vanishingly small fraction of actually plausible courses of subsumically processing any seemingly intractably mutually exclusive authentic perspectives.

There is a range of possible subsumic approaches to processing apparent impasses of honest, valid perspectives. At one end of that range are ultra-complex construals of conventional Western logic that are absolutely correct, but that are out of reach of human cognition. At the other end of that range are metaphysical constructs, some far beyond all human attainment to

date, some, perhaps, even beyond human attainability. To appreciate the uncomfortable reality of ultra-complex, although cognitively extremely out of reach, construals of conventional Western logic, it is useful to consider the history of a counter-intuitive probability puzzle, the Monty Hall Dilemma. This brain teaser was posed in 1990 to the famous super-genius Marilyn vos Savant in her *Parade Magazine* column, "Ask Marilyn" by Craig Witaker, as follows:

> Dear Marilyn:
>
> > Suppose you're on a game show, and you're given the choice of three doors. Behind one door is a car, behind the others, goats. You pick a door, say number 1, and the host, who knows what's behind the doors, opens another door, say number 3, which has a goat. He says to you, "do you want to pick door number 2?" Is it to your advantage to switch your choice of doors? (vos Savant, 1997, p. 6)

Marilyn vos Savant replied in her column:

> Dear Craig:
>
> > Yes, you should switch. The first door has a 1/3 chance of winning, but the second door has a 2/3 chance. Here's a good way to visualize what happened: Suppose there were a *million* doors, and you pick door number 1. Then the host, who knows what's behind the doors and will always avoid the one with the prize, opens them all except door number 777, 777. You'd switch to that door pretty fast wouldn't you? (vos Savant, 1997, p. 6)

According to Tierney (1991), vos Savant received approximately 10,000 responses, almost 1,000 from readers with PhDs, including many who were extremely prominent scholars, nearly all confidently telling vos Savant that she was wrong, some even including in their responses arrogant personal insults and flagrantly misogynistic dismissals. Even Paul Erdős, one of the greatest mathematicians of the modern era, arguably the most prolific mathematician of all time, rejected vos Savant's answer and explanation, and was not convinced that vos Savant was correct until Erdős was confronted with a computer simulation clearly verifying, by demonstration, that vos Savant was correct (Vazsonyi, 1999). Massimo Piatelli-Palmarini (as cited in vos Savant, 1997) said:

> No other statistical puzzle comes so close to fooling all the people all the time… The phenomenon is particularly interesting precisely because of its specificity, its reproducibility, and its immunity to higher education… . Even Nobel physicists systematically give the wrong answer, [and]…they *insist* on it, and they are ready to berate in print those who propose the right answer. (p. 15)

There are many apparent impasses in which honest, valid perspectives can seem to contradict one another. There are various ways to handle, cognitively, such impasses. One of the ways such impasses could be handled involves considering each varying perspective a contender. Each perspective can be weighed against other involved perspectives. One of the contending perspectives can then be selected. The prevailing perspective can be selected for belief, considered true, or regarded as factual. The prevailing perspective can be selected as the basis for some action or employed in subsequent reasoning processes. In some such cases, contending perspectives that do not prevail can be set aside, dismissed, disbelieved, devalued, considered inferior, considered wrong, considered nonfactual, considered false or otherwise disregarded. Such ways of handling, cognitively, seemingly contradictory perspectives are like zero-sum contests in which varying perspectives are considered opponents. Some epistemological conventions function, in effect, as such contests between seemingly contradictory perspectives. Those epistemological conventions can involve axiomatic criteria for selecting from among contending perspectives. It is possible to accept such epistemological conventions a priori. Subsumic thought does not accept such epistemological conventions a priori. Subsumic thought does not consider such contests, in which seemingly contradictory perspectives are axiomatically considered mutually exclusive, as the only way to handle apparently contradictory perspectives. Subsumic ontological thought acknowledges that some seemingly mutually exclusive perspectives might even indicate multiple aspects of deeper, transcendent constructs beyond human understanding, Subsumic ontological thought does not rule out such constructs to manifest as paradoxes. Subsumic thought values intellectual humility and does not rule out

metaphysical constructs. To appreciate allowing for the actuality of such incomprehensible metaphysical realities, it is useful to recall Albert Einstein's persistent refusals to accept and deal with the quantum mechanical fact of entangled particles, ramifications of which Einstein derisively referred to as spooky action at a distance. Of course, the Dunning-Kruger effect suggests that it is very difficult to accurately assess one's own relative cognitive ability (Kruger & Dunning, 1999). Nevertheless, hopefully, even quite modest cognitive ability probably adequately equips most people with the capability to gain at least some sense of relative personal cognitive limitation in light of the demonstrated limitations of such celebrated intellectual giants as Erdős and Einstein.

Subsumic philosophy is open to metaphysical possibilities even beyond the spookiest already considered ramifications of quantum mechanics and various string theory models. Subsumic philosophy even abstains from ruling out, a priori, such wild possibilities as the non-singular temporal directionality of the many universes model. In other words, subsumism does not rule out, a priori, reversal of time's arrow to allow for possibilities such as retrocausality at certain scales and consideration of the many universe model as omnidirectional on space-time continua: multiple paths leading, consistent with each honest perspective, to each present ontological arrangement, rather than only considering, as possible, multiple universes branching only toward the future—which would allow for roots rather than branches, helping to allow for plausible co-existence of seemingly mutually exclusive equally valid honest perspectives.

The Western intellectual tradition, arguably the prevalent worldview of our era, includes a great mythology comparable to other mythologies. As with other important mythologies, the Western myth is characterized by archetypes, including the archetypical hero's journey (Campbell, 1949/2008). The ontological authority of Western society is, of course, forged

according to Western Society's prevailing mythology. Inherently competitive constructs fundamentally shape Western Society's philosophies, including Western Society's ontologies, axiologies, and epistemologies. Humanity seems to need champions to revere and defend, victors who have dominated contenders whose incorrect views and unacceptable ways of life have represented various threats to cultural orthodoxy and orthopraxy. Such champions are concocted, venerated, or even theologized into whatever narrative might be needed for the plot of a culture's schema. Such has been the case with Western society's journey through the development of the Darwinian tradition. Consider the notion of a celebrated victory of Charles Darwin over the supposed reprehensibility of Lamarckianism, among other significant challengers. Proctor and Capaldi (2006) provided a fitting example in defense of their idea of the smoothly developing scientific enterprise from Kuhn's (1962/1996) epistemological threat to the highly regarded principle of inference to the best explanation as a sound basis for deciding among competing scientific theories. According to Kuhn's (1962/1996) view, what science considers solid, impartially established ontological facts actually stem from a well-blended mixture of biased perceptions, axiologies, and actions that exist within and can never be separated from paradigms, which could never be free of human values.

It is valuable to ask how, within an internally consistent subsumic framework, any kind of consensus could be possible regarding modification targets in terms of undesirable axiological constructs and personal characteristics such as evil, bad, wrong, malicious, unacceptable, etc. If each honest perspective is valid, then how could it be possible to subsume any perspective within which the interests of another person are trumped by self-interest? Although subsumism seeks to validate each honest perspective, subsumism does not consider to be a valid perspective an assertion that another person's honest perspective is invalid. Within subsumism, an ideology that

prioritizes or condones prioritizing one's own interest above another's interest, such as the ethical egoism of Rand and Branden (1964/2005), is not considered to be a perspective. Instead, any opinion or ideology that seeks to invalidate, inadvertently dismisses or neglects another's perspective, or prioritizes one's own interest or perspective above another's interest or perspective is considered a mere critique of another's perspective by one lacking complete access to the other's perspective rather than a genuine perspective. The term *valid perspective* conveys, first, the meaning of perspective, a mental point of view. In terms of determining validity, subsumism can be thought of as relying on exclusionary criteria to function as a filter or gatekeeper. As subsumic thought is herein conceptualized, there are multiple exclusionary criteria. The opinion that other's perspectives are not valid is not considered a perspective. The belief that another person's perspective is wrong is not considered a perspective; it is, instead, a comparison of one's perspective with another's perspective. A parroted or meming political opinion is not considered a perspective. A priori assumptions are not considered perspectives; they are assumptions. Assumptions are not perspectives. The beliefs shared within a culture, discipline, family, or religious community are not considered perspectives if accepted merely as aspects of affiliation. A dishonestly portrayed claim of one's personal mental point of view is not considered a perspective. The developing list of exclusionary criteria is neither complete nor closed. Recall that subsumism admits only perspectives, not mere opinions or propositions, and certainly not dismissals or other critiques of others' honest perspectives.

For centuries, increasingly beneficial technologies have been establishing value and demonstrating certain kinds of validity of characteristically Western cultural trajectories of schemas, ontologies, and epistemologies. Certainly, significant credibility of Western epistemologies' theory-making conventions has been established by life-changing engineering

marvels such as lunar landings, microwave ovens, passenger jets, computers, cell phones, vaccines, and the World Wide Web. No such technological goodies, however treasured, necessarily reduce validity of other schemas, ontologies, and epistemologies. There is no justification for oversimplifying assumptions that ontology must be, in any way, a zero-sum contest.

Instead of models and lenses of power, profit, and other competing self-interests, subsumism also considers models and lenses of freedom and love. Inherently, foundationally, subsumic philosophy involves models and lenses of freedom and love. Models and lenses of power, profit, and other competing self-interests necessarily involve not regarding all perspectives as equally valid and valuable. Regarding all perspectives as equally valid and valuable precludes limiting one's perspective to models and lenses of power, profit, and competing self-interests. Regarding all perspectives as equally valid and valuable results in and is necessarily associated with models and lenses of freedom and love. Regarding all actual, honest perspectives as equally valid and valuable is, fundamentally, one way to model subsumism as defined and conceptualized herein.

Awareness involves perception, subjective experience, phenomenological aspects of being alive and conscious. Perspectives are phenomenological. There is something that it is like to have a perspective just as, according to Nagel (1974), being a conscious entity means there is something that it is like to be that entity. The subsumic model of consciousness and of subjectively experiencing a perspective subsumes and validates all honest, valid perspectival theories and perspectival models of consciousness and phenomenology. Each perspectival theory and perspectival model is subsumically incorporated. Each perspectival theory and model of consciousness and its foundational ontology is considered a valid and valuable perspective.

Among those models of consciousness subsumism subsumes are models that are not strictly materialist and do not limit consciousness to being a classical, Newtonian entity or process. Consciousness, and, therefore, experiencing having a perspective, can be modeled as a kind of surface representation, a representation at the interface of common four-dimensional (4D) and transcendent (>4D) ontologies.

Ultratetradimensionality and 4-D Flatland

Ultratetradimensionality refers to that which pertains to dimensionality beyond Euclidean space, beyond the four axes of space-time, extending into Hilbert space. The prefix *ultra* means beyond, transcending "beyond the range or limits of" (Merriam-Webster, n.d.-k). The prefix *tetra* means four, having four parts (Merriam-Webster, n.d.-j). *Dimension* means "a measurement in one direction" (Merriam-Webster, n.d.-c). Geometric measurements can be taken in three directions: left and right, up and down, in and out. The fourth dimension has been credibly considered to be time (Lafleur, 1940). As human beings, our empirically experienced physical world, our normal space-time ontology, is four dimensional (4D). Those four dimensions are width–x, height–y, depth–z, and time–t. *Ultratetradimensionality* (>4D) is coined to herein characterize a thing or a system having more than four dimensions. A five-dimensional ontology (5D) would involve width–x, height–y, depth-z, time–t, plus a dimension outside the capacity of most, if not all, human imagination.

Abbott (1884/1984) created and populated Flatland, a planar although temporal world, and portrayed a solid character's eventful visits to Flatland. Flatland had three dimensions: width–x, height–y, and time–t. Abbott's (1884/1984) brilliant allegory, reminiscent of Plato's (1959) allegory of the cave, illustrated how difficult it is for humans to imagine ontologies involving additional dimensions. Humanity's normally experienced ontology involves four

dimensions: width–x, height–y, depth–z, and time–t. What dimension comes next? How can a fifth dimension be visualized or even conceptualized? Abbott (1884/1984) called his planar world Flatland, and he referred to Flatland's 4D visitor as a solid. Because Abbott's (1884/1984) name for 4D world, Spaceland, today conjures astronauts and rockets, our 4D world is herein called *Solidland*.

Extending Solidland's ontological absolutes to >4D ontologies yields absurdities. Without 4D notions of time as the unidirectional linear sequence of discreet moments, cause and effect has no analogous >4D function. In >4D ontologies, material notions of discreet identity of objects, even the concept of mass, are implausible (Jammer, 1997). What does that imply for personal identities and finite lifespans? Indistinguishability, a common theme in mystics' accounts of transcendent experience (Jahn & Dunne, 1987), seems conceptually inescapable. Beyond 5D ontology, >4D can be contemplated as ambiguous dimensionality. Beyond atemporality, >4D omnivalidity-based paradoxy contemplates temporal anisotropy-isotropy dialectic, the inconceivable synthesis of which is paradoxically shadowed in our Solidland notions of consciousness.

Consider our understanding that a certain statement of fact can be true and accurate at a specific location, although simultaneously dishonest and inaccurate at another location. If, on September 7, 2018, at 1:00 PM, while talking to my wife on my cellphone as I stand in line at the Delta Airlines counter checking my suitcase, I say, "I am calling from the airport," that statement would have been accurate and honest. If, on September 7, 2018, at 1:00 PM, while sitting in my living room talking on the phone to my wife, I say, "I am calling from the airport," that statement would have been inaccurate and likely dishonest.

We also understand that a certain statement of fact can be honest and accurate at a specific point in time, whether or not the same statement of fact would be inaccurate and dishonest at another specific point in time. When, on September 7, 2004, at 1:00 PM, I said, "I am a deputy sheriff," that statement was accurate and honest. If on September 7, 2020, at 1:00 PM, I said,"I am a deputy sheriff," that statement would have been inaccurate and likely dishonest. If both statements had been made while standing on my front porch, although apparently identically spatially located each time, the 2004 statement would have been true and the 2020 statement would have been false.

Time, the fourth dimension, has a certain relationship with three other dimensions, length, width, and height. Let us pretend that the letter t in the word *time* derived from τέσσερα, the Greek word for four. Let us also pretend that the word *pime*, derived from πέντε, the Greek word for five, is the English word for another dimension. Imagine that pime relates to length, width, height, and time in ways somewhat analogous to time's relationships with length, width, and height. This allows a statement of fact to be valid, i.e., accurate and honest, at a specific point in pime, whether or not the same statement of fact would be invalid, i.e., inaccurate and/or dishonest, at another specific point in pime. Analogous to our understanding that a certain statement can be accurate at one time but inaccurate at another time, even if spoken at the same location, a certain statement can be accurate at one pime but inaccurate at another pime, although spoken at the same time on the same porch. The subsumic model labels one's situatedness in space, time, and pime—x, y, z, t, and p—one's perspective. It is, of course, possible that certain higher dimensionalities clump in ways similar to the way x, y, and z combine as space and the way x, y, z, and t make up the space-time continuum. Perhaps what we call time is made up of more than one dimension. Perhaps pime clumps conceptually with t or with x, y, z, and t.

Nevertheless, some ontological ramifications of pime are conspicuous. Might one perspective's fundamental constants be another perspective's variables? Are there not examples in every society of persons who insist that what was true at one point in time must be true at all times? Consider, also, how difficult it is to accept or even fathom such apparent anomalies of special relativity as the twin paradox or the fact that an object's length has been theoretically and experimentally proven a function of that object's velocity.

Paradoxy and Magic Eye Stereograms in Considering Fractal Ontological Levels

A paradox is "an argument that apparently derives self-contradictory conclusions by valid deduction from acceptable premises" (Merriam-Webster, n.d.-e). A paradox transcends or contradicts common opinion (Cantini, 2012), and, although seemingly saying opposite things, can still be true (Merriam-Webster, n.d.-e). Subsumism is open to the possibility of certain of philosophy's intractable challenges, such as various intractable problems of consciousness, free will, creativity, some types of putative synchronicities, and aspects of various claims of transpersonal psychology being factual while unexplainable and as, essentially, paradoxical. I coin the term *paradoxy* to describe an aspect of subsumism's approach to such apparently intractable considerations. Paradoxy views every 4D manifestation somewhat like a reductio ad absurdum of an ultratetradimensional reality. Consequently, recognizing a paradox does not signal a subsumic thinker to conclude or expect the existence of a faulty premise or of any erroneous deduction. A subsumic thinker, must, of course, continue to critically scrutinize all premises and every step in logical reasoning from premises to apparently self-contradictory conclusions. However, the subsumic thinker must strive to relinquish, or at least acknowledge and bracket, all bias and all personal preference for or expectation of either of two outcomes of careful, ongoing reconsideration. The first type of bias and personal preference a subsumist must

relinquish, or at least acknowledge and bracket, is hoping for or expecting the eventual discovery of a faulty premise or erroneous deduction that would effectively rescue the construct and its syllogism from all the trouble and trappings associated with recognizing, acknowledging, and reporting possible metaphysical phenomena. Secondly, the subsumist must not be an eager woo woo hunter and so must relinquish, or at least acknowledge and bracket, hoping for or expecting the eventual conclusion that the apparent paradox under consideration is a metaphysical shadow with glaring, unresolvable 4D contradictions.

Notions closely related to paradoxy appear within many philosophical, religious, and scientific systems. The Hindu god Shiva appears "simultaneously in paradoxical roles: as creator and destroyer, exuberant dancer and austere yogi" (Amore et al., 2015, p. 297). Modern physics grapples with "the physical antithesis of mass and force," (Jammer, 1997, p. 5) foreshadowed by the "ancient metaphysical opposition of matter and spirit" (Jammer, 1997, p. 5). Hesse (1962), discussing the irreconcilable wave and particle models of atomic entities, said that "both kinds of models seem to be required, and yet they contradict each other" (p. 53). Jung (1951/1959) pointed to models of complementary opposites: Judeo-Christian deity and devil in tension uniting "opposites just as yang and yin are united in Tao" (p. 58), Manichaean dualism, alchemy, gender, and, most relevant within this discussion, consciousness. Jung (1951/1959) said: "Union of opposites is equivalent to unconsciousness, …as human logic goes, for consciousness presupposes…differentiation into subject, …object and…relationship between them. Where there is no 'other,'…all possibility of consciousness ceases" (p. 193).

Single image random dot stereograms (SIRDS) utilize a "two-dimensional image containing almost identical horizontally repeating patterns…[arranged such that] a hidden three-dimensional scene is observed as emerging from the plane of the stereogram" (Gómez et al.,

2012, pp. 146–147). SIRDS involve "dissociation of the automatic and natural coupling between accommodation and convergence" (Gómez et al., 2012, p. 151) functions of the human visual perceptual system. Used both for researching visual perception (Gómez et al., 2012; Tyler & Clarke, 1990) and for entertainment (N.E. Thing Enterprises, 1993), SIRDS can serve as a metaphor for conceptual paradoxy.

What could it mean for paradoxy to function in a way that SIRDS would be a fitting metaphor for paradoxy? Think of what it is like to experience the initial mental emergence of a 2D stereogram's hidden 3D scene. Imagine a human mind simultaneously considering a paradox's two or more intractably self-contradictory four-dimensional conclusions, to meta-observe a hidden five-dimensional construct emerging from the paradox's convoluted topology. Is there even a remote possibility that the left eye and right eye viewing a two-dimensional stereogram could in any way be analogous to the left hemisphere and right hemisphere considering a paradox's two intractably self-contradictory four-dimensional conclusions?

Imagine the possibility of such stereogramatic paradoxy phenomena in the consideration of the hard problem of consciousness. Is it possible for an ultratetradimensional construct of consciousness to emerge stereogramatically as a kind of dialectic synthesis of the 4D objective thesis and the subjective antithesis or, equally valid, as dialectic synthesis of subjective thesis and objective antithesis?

Much more about paradox remains to be conceptualized and explored. There are countless questions worth asking. Would paradoxy regard increasingly epistemologically satisfying more than two proven, although impossibly coexisting, facts? Moving from monism, from essential is-ness (e.g., the I Am), from the unity themes which characterize the thought of the world's mystics, into and through progressive degrees of differentiation and distinction, does

increasing paradox become apparent? As situated within subsumic thought, how useful might paradoxy be in contemplating seemingly intractable problems of physics?

Subsumic Conception of Free Will and Determinism

We can do whatever we want, within our design parameters and opportunities, but how can we want whatever we want? Are we free to want whatever we want to want? How can we access and change what we want? Can we? I believe we can. It is, however, not direct. It is indirect—or less direct. We can choose behaviors hypothesized (or, more loosely, "known") to tend to result in our starting to learn to want and even (or maybe the better word here is "essentially" rather than "even") enjoy certain things that we formerly did not want/enjoy. For example, choosing to condition oneself to the point of enjoying going running every day. Also, choosing to develop an "acquired" taste. Similarly, this could be the case with learning how to play chess quite well or learning enough about mathematics or the symphony or bowling—to actually enjoy or want or even (again, maybe the better word here is "essentially" rather than "even") value the formerly non-enjoyable, non-valued thing. How, though, could we establish that we have freely chosen to want to undertake the indirect or less direct course of action in our attempt to begin enjoying or wanting or valuing that formerly non-enjoyable, non-valued thing? Logically, it seems, necessarily, that this would be an infinite interrogative sequence. This apparently logical necessity is similar to the apparently logical necessity that many of our universe's essential physical aspects—such as, length/space, mass/matter, time, and energy—must be infinitely subdividable and continuous. We know, however, that our universe's fundamental reality is granular, quantized, rather than continuous and infinitely subdividable. We know also that, according to quantum mechanics, particles—units of mass/energy—continuously alternate existing and not existing in what we regard as the realm of reality.

At the quantum scale, space is a writhing, frantic, ever-changing foam, with particles popping into existence and disappearing in the wink of an eye. This is not just a theoretical idea—it's confirmed. How can this bizarre idea be true?

Even though in classical physics we are taught that energy is conserved, which means it cannot change, one of the tenets of quantum mechanics says that energy doesn't have to be conserved if the change happens for a short enough time. So even if space had zero energy, it would be perfectly OK for a little energy to pop into existence for a tiny split second and then disappear—and that's what happens in empty space. And since energy and matter are the same (thank Einstein for teaching us that $E=mc^2$ thing), matter can also appear and disappear.

And this appears everywhere. At the quantum level, matter and antimatter particles are constantly popping into existence and popping back out, with an electron-positron pair here and a top quark-antiquark pair there. This behavior is the reason that scientists call these ephemeral particles "quantum foam": It's similar to how bubbles in foam form and then pop.

Another name for this phenomenon is "virtual particles," which just means the particles exist only because the rules of the quantum world allow it, and only for a brief time. This phenomenon is also called "zero point energy," and there have been many pseudoscience claims about being able to extract some of this energy. To the best understanding of the scientific community, it is impossible to use it. So beware of any opportunities you encounter that promise you a great return on an investment in a company that claims to exploit zero point energy.

The idea that space is a bubbling brew of ephemeral particles sounds like complete nonsense, but the idea has been confirmed. In 1948, a physicist named Hendrik Casimir realized that if you placed two metal plates near each other, separated by a very small distance, the quantum foam would cause them to move. To visualize this, remember that quantum particles are also waves. Between the plates, only waves (particles) with wavelengths smaller than the separation between the plates can exist. Outside the gap, waves (particles) of all wavelengths can exist. Thus there are more particles outside the gap than inside, and the imbalance pushes the two plates together. This effect has been observed.

Another well-known manifestation of the quantum foam will be studied by Fermilab's proposed Muon g-2 experiment. The muon is a charged particle with a spin of 1/2, and a spinning charged object is a magnet. It is easy to calculate exactly what the strength of the muon magnet should be. When the magnetism of the muon was measured, it was found to be off from the prediction by 0.1 percent—a significant amount, caused by the quantum foam. Physicists are able to calculate the effect of the quantum foam on the muon's magnetism, and it agrees with the theory to incredible precision, better than a part in a billion. The same effect has been seen for electrons as well. This is one of the most precise measurements particle physicists have made and is excellent confirmation of the idea of the quantum foam. On the other hand, there is still a residual discrepancy between the measurement and calculation of the muon's magnetism, which the Muon g-2 experiment intends to study. It may be that the experiment's outcome will change our understanding of the quantum foam, though there are other possibilities.

> The quantum foam is real. The microcosm is in continual motion. Scientist J.B.S. Haldane's aphorism is true: "The universe is not only stranger than we imagine, it is stranger than we can imagine." (Lincoln, 2013, para. 3–9)

Mysteriously, our intuitive, empirically verified sense of the physical world is a macro aggregate of miniscule fundamental ontological pixels, existing and behaving according to neither intuitive nor Newtonian ontological and mechanical principals. Perhaps an analogous calculus aggregates into other seemingly logical macro notions—such as cause and effect—fundamental components uncharacterizable by the four-dimensional logic of intuitive reality. If so, then endeavors to establish that we have freely chosen to want to undertake an indirect course of action in attempting to begin wanting or valuing a formerly unwanted, non-valued thing would not necessitate an infinite interrogative sequence. As with limits in differential calculus and integral calculus, we can conceptualize limits of volitionality. Consider Kaku's thoughts regarding free will in light of modern physics.

> Newtonian Determinism says that the universe is a clock, a gigantic clock that's wound up in the beginning of time and has been ticking ever since according to Newton's laws of motion. So what you're going to eat 10 years from now on January 1st has already been fixed. It's already known using Newton's laws of motion. Einstein believed in that. Einstein was a determinist. Does that mean that a murderer, this horrible mass murderer isn't really guilty of his works because he was already preordained billions of years ago? Einstein said well yeah, in some sense that's true that even mass murderers were predetermined, but he said, they should still be placed in jail. Heisenberg then comes along and proposes the Heisenberg Uncertainty Principle and says: "Nonsense. There is uncertainty. You don't know where the electron is. It could be here, here or many places simultaneously." This, of course Einstein hated because he said God doesn't play dice with the universe. Well hey, get used to it. Einstein was wrong. God does play dice. Every time we look at an electron it moves. There is uncertainty with regards to the position of the electron. So what does that mean for free will? It means in some sense we do have some kind of free will. No one can determine your future events given your past history. There is always the wildcard. There is always the possibility of uncertainty in whatever we do. So when I look at myself in a mirror I say to myself what I'm looking at is not really me. It looks like me, but it's not really me at all. It's not me today now. It's me a billionth of a second ago because it takes a billionth of a second for light to go from me to the mirror and back. (Big Think, 2011, 0:00–1:46)

Additionally, the entire construct of cause-and-effect requires linearity of time as well as unidirectionality of time's arrow. If that was not the case, then effect could precede cause. Unidirectional linear time is a four-dimensional phenomenon in which time is the fourth dimension. Beyond four dimensions, cause-and-effect might be an absurdity. Conceptualizing consciousness as fundamentally involving more than four dimensions, as in quantum mechanical consciousness models, such as Penrose and Hameroff's Orch-OR hypothesis (Penrose & Hameroff, 2011), might be able to help in expanding the consideration of possibilities of free will beyond insistence upon deterministic models required by strictly reductionistic materialist Newtonian mechanical orthodoxy.

Subsumic Epistemology

One way of conceptualizing subsumic thought is as a primarily epistemological notion. Certain procedures help to characterize subsumic epistemology. All potential conceptual input encountered by a subsumic thinker must first pass through a filter for subsumic processing. Such subsumic processing admits only genuine perspectives.

Each important perspective is a minute subset of possible perceptions and conceptions of staggeringly vast ontology. Thus, every perspective is a simplification. This is epistemologically unavoidable and indispensable. Oversimplification occurs when any form of simplification conceptually bleeds out of one's epistemology into one's ontology. Although practicality necessitates that this is sometimes unavoidable, it must, nevertheless, be acknowledged and not subsequently forgotten. Awareness of the difficult nature of this challenge profoundly affects one's epistemological treatment of each person's perspective, especially one's own.

Certain candidate assertions cannot be accurately characterized as genuine perspectives. Subsumic epistemology does not treat dogmaticism as a perspective. Dogma is not considered

perspectival. Rather, it is the embrace and defense of a deteriorated representation of another's perspective. It involves substituting a retold, certainly distorted account of an account of another's perspective or even an account of a certainly distorted memory of one of one's own earlier perspectives. But dogma is not a perspective. A visual metaphor might be helpful. If I honestly, accurately, and precisely describe what I am, at this moment, seeing, my description is an account of my perspective. If, instead, I close my eyes and somebody else describes to me what they are seeing or what they remember having seen at some earlier time, then, when I later describe what I remember of that other person's account, my description is not a perspective. Rejection, negation, or devaluation of another's perspective is not an actual perspective.

Another category of non-perspectives are assertions of mutual exclusivity stemming from false dilemmas resulting from mistakenly classifying various paradoxes as binary contests of verity, as competitors in zero-sum ontological contests. Beliefs disguised as established facts are reclassified as beliefs and eagerly subsumed as important perspectives. Epistemological constructs mistakenly deemed ontological constructs are reclassified as epistemological and eagerly subsumed as important tools for informing various perspectives. One extremely important example: the misclassification of the incredibly valuable epistemological tool known as Occam's Razor as a somehow ontologically authoritative construct.

Subsumism recognizes the axiological mechanisms consistently motivating thinkers to conflate epistemology and ontology. That is one reason subsumic epistemology involves continually asking honestly and vulnerably "What do I honesty prefer to be true (about this matter under consideration)?" and "Why might that be my preference?"

There is preferring, there is prioritizing, and then there is relentlessly insisting. Do I prefer being proven correct (and, perhaps, having others proven incorrect) over curiosity,

discovery, finding useful information, intellectual honesty, collegiality, fellowship, love, benevolence, expanding or otherwise enhancing my schema, reducing suffering, increasing joy, etc.? Is it possible that I prefer experiencing closure and declaring mastery of a consideration or exploration over acknowledging that the complexity of a subject under consideration is, ultimately, beyond my or any human's cognitive capacity? If so, why might that be my preference? Could it be that the issue under consideration demands timely practical application so that a certain extent of simplification is, at some point, adequate for all apparently relevant practical purposes?

Epistemological competition can serve as an indicator of prioritizing being proven correct and having others proven incorrect. Epistemological competition is often extremely practical, and it relieves the tension of indecision. Nevertheless, it can truncate curiosity and halt exploration of "defeated" explanations, thereby compromising the quest for increasing learning and deeper understanding. Epistemological competition also reduces collaboration, resulting in the inefficiencies of duplicated effort and unfortunate instances of competitors holding pieces of a puzzle that could otherwise be better or more quickly solved if discoveries were shared in real time. Epistemological competition can result in reluctance to make contributions to a quest for which one would eventually see another person credited and rewarded. Species-wide, this can retard or even preclude very important progress, even life-saving and profoundly life-enhancing progress.

Why might Western thinkers prefer what is often referred to as elegance, the notion that it is actually mutually exclusively true that the simplest of "competing" explanations is the most accurate and somehow has actual ontological status while "defeated" explanations, those with more variables, lacks ontological validity? Do such contests somehow reify "victorious"

explanatory constructs? Is it really established that the simplest explanation, the explanation with the fewest variables, somehow inherently correctly represents reality or is even more likely to correctly represent reality? Of course not. But what might motivate strong belief that parsimony carries actual ontological authority rather than simply serving as an extremely practical epistemological tool?

Subsumic epistemology insists that a priori assumptions are identified, examined, very precisely characterized, and axiological roots of and connections with a priori assumptions are exhaustively explored as far as possible. To the extent of practical limitations and another thinker's willingness and availability to engage in such exhaustive clarification, the subsumic thinker will remain cognizant of those limitations and reason accordingly.

Also characteristic of subsumic epistemology is relentless insistence upon exhaustively pursuing and developing ever more precise terminology, until, in each case, apparent disagreement is traced all the way to its core as reflecting valuable perspectival triangulation, as essentially axiological, or as stemming from lexical limitation. No matter how subtle limitations of lexical consistency nor of lexical precision, not the subtlest private definitional nuances of particular words, not even the ultimate intractability of how each person's qualia uniquely corresponds to shared encounters, all the way to the basic, relentless other minds problem.

Subsumic epistemology recognizes apparent differences between perspectives of two or more thinkers as an opportunity for perspectival triangulation rather than as a zero-sum contest for acceptance or any other quest for competitive victory. If, from your perspective, your perception and conceptualization of something—object, concept, phenomenon, etc.—differs from mine, and it always does to one or another extent, then subsumic epistemology involves considering your perception valid, valuable, informative, another indispensable tile in the

endlessly developing mosaic of incomplete understanding of something so staggeringly complex that any human conceptualization—individual or collective—of that thing would necessarily always be akin to metaphor. This involves intellectual honesty, from which, in turn, necessarily stems intellectual humility. Deep curiosity is unlikely, if not implausible, without intellectual honesty and resultant robust intellectual humility.

Subsumism involves striving for particularly rigorous intellectual humility, relentlessly acknowledging knowledge as finite, insisting that there is always vastly more additional important information that could be obtained than what has so far been obtained, and that there will always be potential for additional understanding of the information one already has available. In fact, a foundational premise of subsumic epistemology is the awareness that all knowledge is perspectival. Statements by theoretical physicist Jim Gates (BlackJesusTV, 2017) embody such a flavor of intellectual humility.

> A lot of people will raise the question about whether mathematics is the language of the universe? And my response is: Mathematics is the language that we humans are capable of using in describing the universe. It may have little to do with the universe, but, in terms of *our* capacity, it's the microscope, it's the telescope through which we—it's the lens through which we are able to view the universe with the precision that no other human language allows. So, could there be other universes? Well, I don't even know if *this* one looks like I think it does. (Lex Fridman, 2019, 15:02–15:37).
>
> [Interviewer] There's folks, perhaps in philosophy, called panpsychists, that believe consciousness underlies everything, [that] it is one of the fundamental laws of the universe. Do you have a sense that could possibly fit into—
>
> [Gates] I don't know the answer to that question. One part of that belief system is Gaia, which is that there is a kind of conscious life force about our planet. And, you know, I've encountered these things before. I don't quite know what to make of them. I—my own life experience, and I'm—I'll be 69 in about two months—and I have spent all my adulthood thinking about the way that mathematics interacts with nature and with us to try to understand nature, and all I can tell you from all of my integrated experience is that there is something extraordinarily mysterious about our universe. This is something that Einstein said from his life experience as a scientist. And this mysteriousness almost feels like the universe is our parent? It's a very strange thing, perhaps, to hear a scientist say, but there are just so many strange coincidences that you just get a sense that something is going on. (Lex Fridman, 2019, 17:58–19:13)

As stated in this dissertation's methodology chapter, subsumic epistemology involves consideration of as many perspectives as possible, assuming each is valid and important, and assuming any arguments or positions or beliefs about the invalidity of other's perspectives are not actual perspectives. They are statements of beliefs that one's own perspective is the only perspective. That is not a perspective. Instead, that is a blind spot in one's own perspective, a speculation about what one cannot see because it is outside one's field of view, focal area, of focal length but is nevertheless subconsciously interpolated or extrapolated and is experienced as if it is actually being viewed.

Connectedness, Integration, Complexity and Systems Theory

Subsumism is premised on the connectedness and integration of all reality such that everything is connected to and integrated with everything else. Subsumism treats simplicity, simplification, and simple models as valuable epistemological technique but not as ontological insight. The staggering complexity of reality challenges oversimplification, all too prevalent dichotomous thinking and humanity's almost universal, albeit herein forecast to soon become vestigial, obsessive overreliance on competitiveness. Ideally, acceptance of complexity helps to moderate the human preference for dichotomy. Some believe that among needed expansions of the prevailing order of things is the overdue abandonment of various dualistic models, including the sharp distinction between the human organism and certain technologies and between material and cyber ontology (Skordili, 2013).

Systems theory's departures from the fragmentation, empiricism, and, ultimately, scientism, stemming from the influence of landmark thinkers in the tradition of Descartes and Newton, represents many steps in the direction of subsumic philosophy. Subsumic philosophy could be viewed as an uber-systems theory.

Subsumic Epistemology and Parsimony: Subsuming Occam's Razor

In attempting to understand how subsumism treats every perspective as valid, it is helpful to recognize that subsumism treats various perspectives, even seemingly contradictory perspectives, as complementary rather than as contending for mutually exclusive correctness. As mentioned earlier, subsumism does not treat seemingly contradictory perspectives as zero-sum contests in which varying perspectives are considered opponents. It was also mentioned that there are epistemological conventions that function as such contests between seemingly contradictory perspectives. Some of those epistemological conventions involve axiomatic criteria for selecting from among contending perspectives. Some such epistemological conventions are accepted a priori. As mentioned, subsumic thought does not accept such epistemological conventions a priori and does not consider such contests, in which seemingly contradictory perspectives are axiomatically considered mutually exclusive, as the only way to handle apparently contradictory perspectives. One commonly a priori accepted epistemological convention involving axiomatic criteria for selecting from among contending perspectives is Occam's Razor, the epistemological tool designed around favoring parsimony. Preference for parsimony stems from perspectives in which, for reasons that vary from person to person, simplicity is more desirable than complexity. There are probably no good reasons not to view such perspectives as valid, valued perspectives. That is consistent with subsumic thought. Consequently, Occam's Razor is subsumed as an extremely useful epistemological tool. Occam's Razor, however, has no ontological authority. Reality is neither discovered nor determined by choosing, when confronted with multiple explanations, the candidate that appears the simplest or appears to have the fewest variables. Reality is overwhelmingly complex. It helps us to have cognitively manageable working models and explanations. This facilitates countless

practical engineering endeavors and allows people to develop theories, models, and myths within humanity's cognitive reach, but it does not reliably and accurately characterize the complex actual nature of reality. Intellectual humility demands that we bracket our use of simplification and carry forward our awareness of having simplified, somewhat like carrying units forward in dimensional analysis.

Subsumic Axiology

Definitions, conceptualizations, models, and expectations of human enhancement and human enhancement technologies vary significantly. Preferences regarding human enhancement technologies also vary. Transhumanists expect, advocate, and pursue development and implementation of technologies to bring about what they variously consider profound enhancement of human beings. Significantly resourced efforts are well underway to develop various human modification technologies (Bickford, 2021; Jessup, 2021; Ranisch, 2021; Regalado, 2021; Shaw, 2021). Whether or not such modifications would be considered enhancements is an inescapably axiological consideration.

Is it possible for human beings to develop and implement effective, substantial, human enhancement technologies? This question is inescapably axiological because the notion of enhancement depends upon what one values. Enhancing something is a matter of making that thing better. Making something better means somehow increasing a quality one regards as good, and what one considers good or better instead of bad or worse is determined by what one values.

If a person values military dominance, then developing a human or cyborg supersoldier would be considered an enhancement. If another person loathes warfare and violence, valuing, instead, peace, then developing a human or cyborg supersoldier would not be considered enhancement; it would be considered a regressive perversion of humanity. The question of

whether human beings can, should, or will develop human enhancement technologies is first an axiological question, and values vary significantly among human beings.

Because benevolutioneering considers only entirely voluntary enhancement, and because human beings' values vary, benevolutioneering faces the hurdle of achieving axiological consensus. Although the challenge of axiological consensus might seem intractable, by backing up and developing a philosophical system, the primary concern of which is establishing axiological consensus, such consensus is not necessarily impossible. That is the primary reason benevolutioneering requires a subsumic philosophical foundation. Reading this chapter, it should not be very difficult to detect that subsumism has been developed by starting with axiological consensus and then working backward all the way through basic ontology.

There probably are certain recognized values that most people and even most other animals share. These values shared with most animals might include survival, having their offspring survive and thrive, maximizing pleasure and minimizing pain. Most people seem to value living to a very old age, being valued as a person and finding meaning. But most people is not the same as all people. There are people who prefer having no offspring and never becoming old. They do not share the value of having offspring who survive and thrive. They might value, instead, maximum utilization of existing and potential resources to bring about maximum sensational adventure, pleasure, and convenience for themselves during a brief young adulthood and then having their own life end, unexpectedly, instantaneously, before middle age, while engaged in progressively riskier adventures such as squirrel suit gliding or cave diving. Establishing any useful axiological consensus is challenging, but it is not necessarily impossible. Where, though, could we even start?

Consider statements such as the following three statements. It is what it is. You want what you want. They value what they value. Such statements might appear to be hopeless loops and, therefore, frivolous. However, although reflexive, these statements can be considered neither mere identity statements nor useless tautologies. In rhetoric, a tautology is a pointless redundancy, just saying the same thing twice. In mathematics, an identity relation is conceptualized as a set in which each element is related only to itself, as in the set: {(a,a), (b,b), (c,c), (d,d)}. In mathematics, a reflexive relation is conceptualized as a set in which each element is related to itself but not only to itself, as in the set: {(a,a), (b,b), (c,c), (d,d), (a,c), (b,d), (c,d)}. It is important to keep in mind, also, that, in a sense, not all sets have to be thought of only as closed systems, because elements within a set can also be elements of other sets. Given either the set {(a,a), (b,b), (c,c), (d,d)} or the set {(a,a), (b,b), (c,c), (d,d), (a,c), (b,d), (c,d)}, there is no basis to assert that a, b, c, or d are not elements in other sets. It is important to acknowledge the fact that people each value what they value and the fact that those values are not identical to everyone else's values. It is also important to recognize that it does not follow from these facts that each person's axiology is a closed, intractable system that just is what it is and only what it is, in which each element is related, within the set, only to itself, and is not an element of any other sets. The fundamental axiological challenge associated with modeling enhancement of sociality, although incredibly challenging and extremely complex, is not intractable. We can identify, as potential avenues for improvement, even axiological improvement, for each person, conflicting values, even mutually exclusive values, those aspects of their own value system that conflict with other aspects of their own value system. I want what I want. Having what I want is desirable. Not having what I want is undesirable. I want to not have what I want to not have. Having what I want to not have is undesirable. What I want is a set with more than one element.

My objectives involve having what I want. Having or obtaining some of what I want would make it impossible to have or obtain other elements of the set of things that I want. Some of my values and some of the objectives stemming from my values are compatible with the nature of reality and of my environment or my potential environments. Others are not. This compatibility function exists on a continuum. Values and associated objectives, therefore, can be more or less realistic. Some of the behaviors that constitute my lived life contribute effectively to meeting my objectives. Some of the behaviors that constitute my lived life do not contribute effectively to meeting my objectives. Some of the behaviors that constitute my lived life detract from or even prevent meeting my objectives. The set, what I want, includes elements which, if and when I obtain those elements, I discover that the experience of obtaining or having that element which I wanted proves not to provide the quality of experience I had anticipated, proves to not satisfy as I believed it would satisfy. Some things that are not included in the set of things which I want, the set of things from which my objectives stem, although I am presently ignorant of them, would, if obtained, result in experiencing profound satisfaction. If, for any reason, and by any cause or means, my nervous system is configured such that it does not have the capacity to facilitate satisfying experiences and states, then enhancement, benevolutioneering, for me, could include configuration of my nervous system to facilitate experiencing and even longitudinally maximizing satisfaction. There is evidence that satisfying states and longitudinally maximizing satisfaction are positively associated with prosociality. It is possible to conceptualize enhancement approaches that extend and transcend the effects of values clarification processes inherent in various counseling and psychotherapeutic approaches. Whatever beneficial effects might come about in talk therapies involving values clarification, those effects do have structural and functional neurocorrelates. Whatever differences in values and in clarity, internal

compatibility, or realism of values might exist from one person to another person, those differences do have structural and functional neurocorrelates. Potential modifications of neurocorrelates represent intervention potential conceptualizable as enhancement, including moral bioenhancement such as benevolutioneering.

It is also important to note that what one prefers, what one experiences oneself valuing, is dynamic rather than static. Values change from one day to the next, one hour to the next, from one social setting to another, from one mood to the next, and from one developmental stage to the next. A person's values may be very different in crisis than during sustained mundane periods. I have witnessed dramatic examples of profound axiological plasticity while serving in law enforcement, emergency medical services, pastoral ministry, and education.

Many of what are thought to be people's values are not really core values. Many of people's experienced and manifested preferences might really be more usefully thought of as transient axiological phenomena rather than authentic core values. I propose that much of what is commonly thought of as values are actually derivative values, axiological alloys and compounds of actual values; social, cultural, and religious expectations; drives; beliefs; conditioning; self-image; etc. It is important to distinguish between derivative values and core values. I believe that there is far more consensus of core values than of experienced derivative and compound values. In fact, I believe that, although prioritized differently from person to person and occurring in different ratios from person to person, core values are very nearly universal. A person who experiences and expresses a cherished value of out-group hostility is very possibly not expressing a core value. Possible underlying core values might be safety for them and for their loved ones, self-worth, or acceptance and affiliation found by associating with others hostile to members of one or more out-groups. Core values can be identified and fulfilled, and, many

times, when they are, derivative values lose importance and sometimes even disappear. It is not even always necessary to identify a core value. Often, having a core value effectively fulfilled, even without ever identifying it in conscious thought, can result in evaporation of derivative values. This seems to be one plausible explanation for former Arizona skinhead neo-Nazi Michael Kent who spent decades active within and fully dedicated to a White supremacy movement until his probation officer, Tiffany Whittier, an African American woman, unilaterally treated him with loving concern and acceptance. Kent responded by dramatically changing his life, completely abandoning all involvement and identification with White supremacy, tattooing over his numerous racist tattoos, taking and loving a job where he was the only White employee, and establishing and maintaining a warm, lasting friendship with Whittier. After Kent completed probation, when Kent got married, Whittier, who, by then, Kent regarded as family, was the only person of color at his wedding. Kent said he was sure he would have either been back in prison or dead if not for his friendship with Whittier. When asked why he was initially open to Whittier's guidance and then, eventually, to her friendship, Kent responded:

> Honestly, nobody liked me. Nobody wanted to be around me. If you would have seen me with shaved head, swastikas and everything [tattooed] on my body, nobody approached me. Feeling hate with hate. People looked at me with hatred because of what I was, and then I looked at them even more hateful because of the way they looked at me, and I wasn't supposed to like them. And when she…came up to my house that first day, it totally stumped me.…She was one person that treated me like a man, treated me like a human being instead of a number. I didn't have anybody treating me like that for a very, very, very long time. It's like, this woman that I'm supposed to frickin' hate, why is she doing this? Why is she there? …We've been friends now for a very long time. We still don't know why we're in each other's lives. (*The Kelly Clarkson Show*, 2021, 12:03–13:36)

It seems, from the way Kent described his journey, that, for at least 2 decades, Kent had been experiencing and exhibiting, as his primary, driving, guiding values, bigotry, and hatred. One woman treating Kent with respect and allowing him to feel human acceptance and concern was all it took for Kent to abandon what really was not a core value, racist hatred. Concerned,

respectful human acceptance is more likely a core value that Kent probably shares with almost every human being. Subsumic axiology is premised on the likely universality of such inherent, authentic human values as core values and on the understanding that such wholesome prosocial values are obscured and alloyed with more transient preferences, societal expectations, self-reinforcing self-images and cultural constructs.

Subsumic Logic

In 1874 three traditional fundamental laws of logic, subsequently known as the laws of thought, were codified by Jevons (1951/2015). Here is a concise representation of these traditional laws of thought.

> Laws of thought, traditionally, the three fundamental laws of logic: (1) the law of contradiction, (2) the law of excluded middle (or third), and (3) the principle of identity. That is, (1) for all propositions p, it is impossible for both p and not p to be true, or symbolically $\sim(p \cdot \sim p)$, in which ~ means "not" and · means "and"; (2) either p or $\sim p$ must be true, there being no third or middle true proposition between them, or symbolically $p \vee \sim p$, in which ∨ means "or"; and (3) if a propositional function F is true of an individual variable x, then F is indeed true of x, or symbolically $F(x) \supset F(x)$, in which ⊃ means "formally implies." Another formulation of the principle of identity asserts that a thing is identical with itself, or $(\forall x)\ (x = x)$, in which ∀ means "for every"; or simply that x is x." (The Editors of Encyclopedia Britannica, n.d., para. 1)

Subsumic Logic and the Law of Contradiction

Although the law of contradiction states that, for all propositions p, it is impossible for both p and not p to be true, trivialism stipulates that every statement is true, including the statement that both p and not p are true ($p \cdot \sim p$). Subsumic logic classifies both the law of contraction and trivialism as simplifications, although each could be components of potentially honest, valid perspectives, provided that the notion of perspective is conceptualized to include, among many other parameters, focal length, field of view, and relativistic frame of reference. However, there certainly are countless important perspectives within which it is true that it is impossible for both p and not p to be true. Either I wrote this sentence, or I did not write this

sentence. Either I attended the third grade while I was 8 years of age, or I did not attend the third grade while I was 8 years of age. The oversimplification arises in the claim that the law of contradiction applies to all propositions: "For all propositions *p*, it is impossible for both…". In order for the statement "For all propositions *p*, it is impossible for both *p* and not *p* to be true" to itself be true, there could exist no proposition *p* for which it is true that both *p* and not *p* are true. Even a single proposition *p* for which it is true that both *p* and not *p* are true would mean that it is not actually the case that "for all propositions *p*, it is impossible for both *p* and not *p* to be true.." In fact, according to quantum theory's concept of superposition, rather than following conventional rules of logic, quantum decay of a radioactive particle follows quantum laws. Quantum decay's wave function simultaneously involves two solutions. The two solutions are decayed and not decayed. These solutions could be represented by *p* and not *p*, respectively. The proposition, the particle under consideration has decayed, could be represented by *p*, and the proposition, the particle under consideration has not decayed could be represented by not *p*. Before a measurement is taken of the particle's state of decay, the two solutions are equally valid. The particle has simultaneously both decayed and not decayed. In this case, both *p* and not *p* are true. It is, therefore, demonstrated that it is not the case that for all propositions *p*, it is impossible for both *p* and not *p* to be true.

Trivialism oversimplifies by asserting that for every *p* both *p* and not *p* are true. Subsumic logic does not. Subsumic logic treats perspectives, not propositions. There are countless cases in which not *p* is represented by no actual perspectives while *p* is represented by actual perspectives. There are also countless cases of the converse. These are instances of perspectival consensus. Subsumism does assert, though, that in some (but not all) cases both *p* and not *p* are valid perspectives (or components of valid perspectives) and are true according to

constructs of truth stemming from subsumic ontology—a decidedly non-competitive, non-simplified ontology.

Subsumic Logic and the Law of Excluded Middle

Subsumic logic holds that the law of excluded middle, "either p or $\sim p$ must be true, there being no third or middle true proposition between them ($p \vee \sim p$, $\vee$ meaning or)" (The Editors of Encyclopedia Britannica, n.d., para. 1), may well generally apply in instances limited to reasoning within a single valid perspective. Unlike conventional logic, however, subsumic logic accommodates differing, although equally valid and valued, perspectives. As such, it follows that, within one perspective p is true and $\sim p$ is false, while within another perspective p is false and $\sim p$ is true, and within a third perspective, p is false and $\sim p$ is also false. This reflects actual cases involving propositional statements regarding the relativity of simultaneity. The special theory of relativity (Einstein & Lawson, 1916/2012) explained the impossibility of stating absolutely that two events separated in space take place at exactly the same time. This notion is neither fanciful nor merely applicable in astrophysical events separated by millions of light years. Consider the following illustration.

> For example, a car crash in London and another in New York appearing to happen at the same time to an observer on Earth, will appear to have occurred at slightly different times to an observer on an airplane flying between London and New York. Furthermore, if the two events cannot be causally connected (i.e. the time between event A and event B is less than the distance between them divided by the speed of light), depending on the state of motion, the crash in London may appear to occur first in a given frame, and the New York crash may appear to occur first in another. However, if the events are causally connected, precedence order is preserved in all frames of reference. (Relativity of simultaneity, n.d., "Description" section, para. 2)

Subsumic Logic and the Law of Identities

If a propositional function F is true of an individual variable x, then F is indeed true of x, or symbolically $F(x) \supset F(x)$, in which $\supset$ means "formally implies." Another formulation of the

principle of identity asserts that a thing is identical with itself, or $(\forall x)\ (x = x)$, in which $\forall$ means "for every"; or simply that *x* is *x*.

This is complicated by the pregnant construct of the self. Is self a static and enduring entity, a dynamic and evolving entity, a succession of distinct entities, etc.? Also, is the self describable by simultaneously varying Venn diagrams involving variously shared or overlapping identity properties? Is the notion of the self, as modeled in one or another valid perspective, a 4-D construct or a >4-D construct? Subsumic philosophy, of course, subsumes the various perspectival constructs of the self. Given the fact that the notion of the self is a construct, that subsumic approach is not a stretch. While it is reasonable to accept the law of identities, to accept that a thing is identical with itself, it is also possible to ask, "Which self? To which construct of self are we referring?" Note that the notion of the self is not necessarily exclusive to conscious or animate entities. There are valid perspectives in which everything, in order to exist, is dynamic.

$(\forall x)\ (x = x)$ is not necessarily the same assertion as $(x = x)$.

$(\forall x)\ (x = x)$ is not necessarily the same assertion as $(\forall x)\ (x_1 = x_1)$.

$(x \stackrel{?}{=} x)$ is sometimes understood as $(x_1 \stackrel{?}{=} x_1)$ although what is being unknowingly considered is actually $(x_1 \stackrel{?}{=} x_2)$, in which $\stackrel{?}{=}$, the questioned equality symbol, conveys the instruction to question whether entities on either side of the symbol are indeed identical.

$(\forall x)\ (x = x)$ is not true if, when more closely considered, $(\forall x)\ (x = x)$ is found to actually, unknowingly be $(\forall x)\ (x_{t1} = x_{t2})$, in which x_{t1} means x at time 1 and x_{t2} means x at time 2.

Subsumic Ethics

Subsumic ethics is, of course, subsumic. This means that the major ethical systems, treated as perspectives, are equally valued and are subsumed. For example, subsuming consequentialism and deontology first means that these two approaches are not regarded as

competing for exclusive correctness or for legitimacy, and their proponents are not considered rivals. It is assumed that there are duties, that those duties are important and will be honored. One of those duties is the duty to do one's best, even seeking assistance, as needed, to model and forecast likely outcomes for each candidate course of action in any ethical decisions one faces. This process is to be approached with humility and without any arrogance. It should also be recognized that any actions will affect all of humanity and all of reality, not just the actor, the actor's immediate affiliates and the people apparently most directly affected. Because every action affects all of reality, each actor's duty is infinite. Because subsumic ethics is based on love and benevolence, actions will be selected for their likelihood to increase the freedom of each person directly impacted and of the system of all sentient life.

Subsumic Moral Philosophy

As stated in Chapter 1, in the section Previous and Ongoing Considerations of Moral Bioenhancement, throughout this dissertation, as the term morality is used and whenever the concept of morality is involved, my definition and notion of morality most nearly matches Ugazio et al.'s (2014) characterization of morality as "the expression of judgments classifying behaviors into good/right and bad/wrong ones" (p. 157). Descriptive rather than prescriptive, that definition of the term morality is what I understand the term to mean as I encounter its use in my community and, usually, even in the literature of prosociality. Although there is overlap between prosociality and morality, and consideration of moral behavior is important for conceptualizing benevolutioneering, "prosocial behavior is not necessarily the same as 'moral behavior'" (Wiseman, 2016, p. 293). Many moral ideas and moral expectations depend on whether a particular behavior is toward an ingroup recipient or an outgroup recipient. Leviticus 25:39–46 indicates that ancient Israelites were forbidden to treat any fellow Israelites as personal property,

even if fellow Israelites may have contracted to live for a limited time as servants to repay debt, but it was considered morally acceptable to enslave and treat as permanent, bequeathable personal property, human beings from neighboring people groups. Also, it is possible to be strictly following a rigid moral code without experiencing any empathy and without any perspective-taking. Ideally, "empathy contributes to moral judgments by providing information about the emotional reactions of people affected by an action and by motivating a person to act in a certain way" (Ugazio et al., 2014, p. 171). Haidt (2013) asserted that, from a psychological perspective, morality stems from an emotional basis rather than a cognitive basis. This dovetails with Jesus' teaching of the golden rule, which promotes empathy fostered by self-other blending. Jesus' iteration of the golden rule, "Do to others what you would have them do to you" (Matthew 7:12, *New International Version*), is aspirational, because few people are fully neuropsychologically capable of completely simultaneous self-distinction and the experience of oneness with another person. Without any degree of self-distinction there would be no first-person actor to perform any action toward anyone. Without fully experiencing oneness with the other person, we are not likely to be able to fully take the other person's perspective in evaluating, while fully in the role of the recipient of the action, the experience of receiving the action. Jesus' iteration of the golden rule differed from that of Confucius. Confucius' form of the golden rule was "What you do not want done to yourself, do not do to others" (Gong, n.d., para. 24). Logically, Jesus asked for something that could be bottomless and endless. One could accomplish what Confucius counseled by just avoiding a person completely. Subsumic moral philosophy subsumes both of these forms of the golden rule and idealizes their conscientious practice.

Subsumic moral philosophy, in considering Kohlberg's stages of moral development (Kohlberg & Hersh, 1977), views the stages subsumically, as additive, as cumulative rather than phases to pass through and then leave each behind as one has outgrown it and adopted a supposedly more mature basis for moral reasoning and behavior. Subsuming each of the stages means that, throughout one's entire life, each of the staged moral motivations will continue to be fully functional and considered a valid and important component of moral reasoning.

Subsumic moral philosophy as herein modeled considers the fundamental moral concepts to be, for each person, a compound of some or all of: one's culture, one's moral training and moral education, one's core values, one's loyalties, one's belief system, one's fears, one's empathetic functions, and what one deems sacred. The subsumic conception of right and good in specific cases of individual conduct depends on subsuming the perspective of both the actor and of the recipient in their present situations. No perspective, however, warrants being considered more valid than another's perspective.

Rawls (1958) said that "no study of the development of moral ideas and of the differences between them is more sound than the analysis of the fundamental moral concepts upon which it must depend" (p. 194). Presumably, Rawls was referring to studying the historic development of existing moral ideas, the unintentional, evolutionary cultural development of certain moral ideas. It seems reasonable to extend that insight to benevolutioneering's endeavor to intentionally develop fully prosocial and even profoundly benevolent moral ideas, shared ideas appropriate for egalitarian moral consensus.

Subsumic morality expands simple binary notions of good/right and bad/wrong to multidimensional spectra that can vary from perspective to perspective. Rumi's poem amplifies this notion:

> Out beyond ideas of wrongdoing and rightdoing,
> there is a field.
> I'll meet you there.
> When the soul lies down in that grass,
> the world is too full to talk about.
> Ideas, language, even the phrase *each other*
> doesn't make any sense (Rumi, 1995, p. 36).

Subsumic Justice

It has been reported that Leonardo da Vinci said that "He who does not punish evil commands it to be done." This belief, infused with a spirit of rivalry and the expectation that competition is necessary and desirable in every kind of human interaction, has led to a modern justice system that is fundamentally adversarial. This is unnecessary.

> In a courtroom, many stories are told, and the task is to winnow them to a single true story: Someone is guilty of a crime, or they aren't. In a restorative-justice dialogue, every story, or history, can be true at once, even those that seem to contradict one another. Inevitably, these dialogues mean different things to each person who takes part, and each person remembers them differently. (Schonbek, 2021, para. 51).

In a spirit much more similar to that of subsumic thought, December 11, 1964, in Stockholm, Sweden, Martin Luther King, in his Nobel Peace Prize acceptance speech, said that "Man must evolve for all human conflict a method which rejects revenge, aggression, and retaliation. The foundation of such a method is love" (Ibrahim, 2019, para. 4). Aspects of currently important constructs of justice, useful as they might be for maintaining adequately orderly societies, can be understood as forms of socialized revenge. Lex talionis, the ancient notion of an eye for an eye and a tooth for a tooth, likely represented substantial social progress when introduced to cultures accustomed to overwhelmingly disproportionate retribution, such as killing a person and their family because that person has stolen a small, inexpensive item or slandered a powerful citizen's spouse. Current penal economies of punishment require a person

who has violated a law to repay an imaginary debt created by their violation, to an entity we call society, by serving a period of incarceration or paying a monetary fine. Rehabilitation, intervention that facilitates actual change in persons who victimize others, such that victimizers no longer represent a significant threat of harm, does not need to be associated with any kind of debt which must be paid.

As Wang et al. (2019) modeled schadenfreude, at schadenfreude's core lies dehumanization. Also, the model of schadenfreude proposed by Wang et al. (2019) developed a tripartite taxonomy of aggression, rivalry, and justice. I propose that dehumanization, certain kinds of aggression, rivalry, schadenfreude, and certain currently important notions of justice are interconnected social adaptations long overdue for prosocial update. The model of benevolutioneering developed in this dissertation involves targeting all five. Imagine living in society with people who have been freed of aggression, rivalry, and schadenfreude.

> Amongst an association of saints, if such a community could really exist, the disputes about justice could hardly occur; for they would all work selflessly together for one end, the glory of God as defined by their common religion, and reference to this end would settle every question of right. The justice of practices does not come up until there are several different parties (whether we think of these as individuals, associations, or nations and so on, is irrelevant) who do press their claims on one another, and who do regard themselves as representatives of interests which deserve to be considered. (Rawls, 1958, p. 175)

Subsumic Philosophy of Futurism

Because it might be common to think of futurism and futures studies as something one does without expecting oneself, one's actual person, me or even you, to be present in the significantly distant future, futurism is, and futures studies are, in some respects, always etic. That tends to preclude humanistic-existential dimensions from our considerations of the future. I propose that we consider enhancing our futurizing by incorporating some of the positive aspects generally associated with emic perspectives and approaches. What about, even if only as a

device, a technique, considering operating as if you and I are, as real individuals, as our actual personal selves, going to be alive for at least the next 800 or 900 years—or even much longer? Consider the potential of this operational assumption to impact our perspectives about and approaches to considerations of the future. Popularized, this could result in ecological and political benefits, actual improvements. A subsumic approach to transhumanism, in terms of treating transhumanists' perspectives as entirely valid and subsuming those perspectives, could facilitate a lived, emic approach to the future and, consequently, a stakeholder perspective regarding the future, a sense of personal environmental responsibility and personal commitment to an increasingly prosocial global society.

CHAPTER 5: BENEVOLUTIONEERING CONCEPTUALIZED AND EXPLORED FOR CONCEPTUAL PLAUSIBILITY

What is Benevolutioneering?

I have coined the term benevolutioneering to represent the intentional evolution of prosocial neuropsychology. Benevolutioneering is herein conceptualized as entirely voluntary, freedom-increasing, species-wide, profoundly benevolent autopoiesis, by technological means, of the human organism as a system. The term benevolutioneering combines the words benevolence, evolution, and engineering. Benevolence, defined as "disposition to do good" (Merriam-Webster, n.d.-b) and as "the quality of being well meaning; kindness" (Lexico, n.d.), is from the Old French word *benivolence*, from the Latin word *benevolentia* (good feeling, good will, kindness) which combined *bene* (good or well) and *volantem* (to wish or will) (Harper, n.d.). In addition to conveying the idea of a good or the good, that etymology also significantly conveys the important aspect of volition. Beyond seeking to increase compliance with an external behavioral standard or any other constraint, benevolutioneering seeks to preserve, enhance, and increase personal volition, voluntariness, and freedom. Benevolutioneering would involve technologically enhancing prosocial neuropsychology through interventions that would fundamentally increase freedom-based qualities of being well-meaning, kind, and loving. Inclusion of the word *evolution* is intended to indicate a paradigm shift away from long-term, ongoing, mechanistic, and stochastic adaptation and development to a new reality of deliberate autopoiesis, intentional self-making. Engineering is included in conceptualizing and naming benevolutioneering because one of the best models for operationalizing benevolutioneering is the notion of reverse engineering.

Conceptualizing benevolutioneering involves, first, conceptualizing profoundly benevolent prosociality. What would profound benevolence look like? What would a person be

like who was characterized by profoundly benevolent prosociality? What would it be like to be a profoundly benevolent person? What would it be like to be with a profoundly benevolent person?

Second, benevolutioneering involves classifying common, almost universal, nonprosocial, antisocial, and even less than profoundly benevolent prosocial human traits as treatable pathologies.

Third, benevolutioneering endeavors to develop a model in which every sociality-impacting pathology is considered to be afflicting everyone, according to a spectrum of extent. That contrasts with the current model in which each sociality-impacting pathology is considered to be only afflicting each specific individual outlier currently considered diagnosable with one or more sociality-impacting pathological conditions. This facilitates identifying numerous avenues of potential improvement for every person, furthering the possibility of a unique intervention tailored precisely for every individual.

Fourth, conceptualizing and exploring the possibility of developing benevolutioneering involves proposing multiple strategies for conceptualizing and then developing therapeutic prosociality-increasing interventions. Means of conceptualizing and developing interventions are modeled to include identifying exemplars of profoundly benevolent prosociality then reverse engineering componentry, including structural and functional physiological correlates, of such prosociality. Identification of structural and functional physiological correlates of various sociality-related traits is expected to potentially inform development of actual strategies of therapeutic intervention associated with reduction or mitigation of antisocial and nonprosocial traits and behaviors. Genetic and epigenetic clues also represent potential guidance for development of therapeutic strategies for various degrees of antisociality and nonprosociality. Genetic clues could include genetic mutations associated with corresponding abnormal sociality-

related characteristics and patterns. Such genetic clues also include contrasting sociality-related characteristics corresponding to genetic differences between closely related species such as bonobos and chimpanzees, discussed later in this chapter.

Benevolutioneering's Conceptual Boundaries and Distinguishing Characteristics

Consideration of moral bioenhancement is certainly not original with this dissertation's exploration. What, then, distinguishes benevolutioneering, as conceptualized and explored in this dissertation, from other proposed moral bioenhancement models? What is contributed by conceptualizing and exploring benevolutioneering that is not contributed just as well by other proposed moral bioenhancement models?

Most importantly, benevolutioneering is distinguished by its philosophical scaffolding. Benevolutioneering is importantly premised on subsumism, a philosophical system capable of facilitating, at least conceptually, axiological compatibility of divergent cultures and personalities and offers hope of transcending relentless competition for resources and primacy, up to now prominently characterizing human sociality. This dissertation's exploration identified no other proposed models of moral bioenhancement appearing to attempt reconciliation of intractably incompatible axiologies in any way comparable to subsumism's axiology-reconciling philosophical scaffolding. Subsumic philosophy values and subsumes the scientific method as a powerful epistemological tool. Subsumic philosophy, while respecting and subsuming the worldviews most prevalent within the scientific community, does not limit its perspective to scientism's dogma—or any other biased dogma. Subsumic thought is open to consider transpersonal dimensions of reality, including transpersonal aspects of life, consciousness, volition, creativity, and sociality. Although Chapter 4 provided an introduction to subsumic philosophy and an overview of a few of subsumic philosophy's important aspects, subsumic philosophy, subsumism, subsumic thought has been developed throughout this dissertation, and

there are important aspects of subsumic philosophy that are beyond this dissertation's scope.

Benevolutioneering is conceptualized as entirely voluntary and as increasing freedom. Benevolence, as modeled herein, stems from love. Genuine love is conceptualized as necessarily involving freedom. Herein, personal autonomy and freedom are considered indispensable within any truly prosocial model. Consequentially, a species-wide moral bioenhancement model that fails to reconcile seemingly incompatible axiologies could not be considered truly prosocial. Subsumic philosophy subsumes the notion of authentic free will, suspecting that actual agency, actual volition, is possible for sentient creatures. Subsumism does not conclude that what seems like free will is actually randomness or determinism with mere illusions of volition, but subsumism is open to the possibility that some or even most experiences that seem like personal decision-making might actually be randomness or determinism with mere illusions of volition. The next subsection expands the discussion of this distinguishing characteristic of benevolutioneering.

Another conceptual characteristic distinguishing benevolutioneering, shaped as it is by its subsumic philosophical scaffolding, is the extent of benevolutioneering's eclecticism. Subsumism epitomizes eclecticism. Situated within cultures and disciplines, various moral improvement aspirations and endeavors are associated with particular axiologies, ontologies, epistemologies, orthodoxies, orthopraxies, traditions, and a priori assumptions. Moral bioenhancement models are no exception. It is possible for moral bioenhancement models to be limited by tunnel vision inherent in orthodoxies of ontology, epistemology, and axiology embedded in various disciplines and cultures. That would, of course, narrow a bioenhancement model's perspective and focus. Without the benefits of multiple divergent perspectives and understandings, such narrowing of perspective and focus could perpetuate blind spots and

weaknesses. In human modification pursuits, blind spots could be tragic. Arguably, influential Silicon Valley, Ivy League, and other influential research communities tend to share certain prevailing belief systems. Seemingly associated with such belief systems are commitments to certain conventional a prioris including the notion that the mind is only what the brain does and the notion that consciousness must be modeled as exclusively local and conforming in every way to assumptions that are acceptably Newtonian, materialist, reductionist and non-transpersonal. That prompts certain concerns. Research pioneers proposing brain modifications or even cyborg constructs blending nervous systems with inorganic components would never, could never, consider the possibility that certain modifications might reduce or even eliminate brain structures and functions that might be facilitating subjective phenomena or an individual's nervous system structures that facilitate subtle nonlocal interfaces if such interfaces happen to exist. Subsumic philosophy involves regarding each person's honest perspective as valid, taking care to avoid acting in ways that are unacceptable within a person's honest perspective, and demanding extreme caution to avoid eliminating or even compromising subtle aspects of essential humanness, including aspects poorly understood, aspects about which many are skeptical, even aspects with possible transpersonal dimensions uncritically dismissed by skeptics as woo woo or hokum. It is possible that some such aspects of human functioning might not be experienced in the same ways or to the same degree by every person. It is not impossible that some such characteristics might be least commonly experienced by persons inclined to skepticism, persons with traits often associated with the autism spectrum, traits more common among persons working in science and engineering fields. The eclectic nature of subsumic thought and of benevolutioneering acknowledges and validates each person's experience, but it does not consider to be a valid perspective the dismissal of another person's perspective.

Benevolutioneering is conceptualized as regarding extreme prosociality, even to the extent of benevolence and fondness, as critical to humanity's continued surviving and thriving. To many people, it would probably seem unnecessarily extreme to aim for loving fondness and profound benevolence rather than aiming for somewhat less excessive, less radically increased prosociality such as acceptably improved respect for others' rights along with some adequate, measured increase in concern for the common good. For many people, those more modest proposals might raise fewer concerns and weaker objections and might even seem somewhat more appealing. That appeal would nicely illustrate the tepid nonprosocial axiology, the universal, barely detectable trace of actual antisociality underlying the universally distributed solute of subtle selfishness, individually imperceptible in its minute contribution to the massive calculus of our species' cumulative, collective condition of existential hazard, unnecessary suffering, and unrealized joy. This matter is further explored later in this chapter in the discussion of the banality of evil and humanity's harmful attachments.

Benevolutioneering models as pathology every aspect of human nature that is non-prosocial, non-benevolent, ecologically unsustainable, extinction-promoting, freedom-reducing, failing to minimize suffering, alienating, divisive, life-robbing, perspective-narrowing, or joy-reducing. Further, benevolutioneering considers moral enhancement from within and as a necessary aspect of the modern transhumanist agenda and transhumanist expectations. As such, benevolutioneering is conceptualized as a requirement for accessing radical life-extension technologies.

Benevolutioneering models technologically improving sociality as importantly an individually tailored, customized, individualized matter rather than as any kind of one-size-fits-all program. Rather than any kind of one-time upgrade, benevolutioneering is conceptualized as

ongoing, progressive, continuous, ever-developing, ever-refining with progressively available enhancements as they are conceptualized and developed. Tiered implementation is anticipated.

Stemming from subsumic philosophy's inherent intellectual humility, benevolutioneering is conceptualized with recognition of the overwhelming complexity of technologically improving sociality. Such staggering complexity is assumed to be far beyond the limitations of human cognition. It is expected that strong artificial intelligence will be required to assist in fully conceptualizing and then actually developing and implementing technological interventions.

The following subsections amplify the discussion of seven of benevolutioneering's most important characteristics, benevolutioneering as (1) freedom-based, (2) grounded in love, (3) individualized, (4) tiered and nuanced, (5) incremental, (6) reversible, and (7) subsumic.

Freedom-Increasing, Freedom-Enhancing, and Entirely Voluntary

Perhaps the easiest axiological consensus, the lowest hanging fruit in the search to identify core values shared by nearly every person, is the desire to be free to do and think as one chooses. Benevolutioneering is first and most importantly premised on the value of freedom. It must follow that benevolutioneering is herein conceptualized as entirely voluntary. That does not, however, preclude incentivization. Incentives are expected to prove extremely important in making possible species-wide implementation. Benevolutioneering is to be freely chosen at every stage and at every level. One problem, though, with people who do not value benevolent behavior is that they do not want to become people who behave more benevolently. For benevolutioneering, this is, by no means, a trivial hurdle. This presents enormous challenges. Benevolutioneering seeks to reshape human nature by dramatically increasing benevolence, increasing love, and loving behavior. Conceptually, in its very essence, even etymologically, benevolence is absolutely voluntary. Beyond being merely voluntary, benevolutioneering, in

every way, at every level, at every stage will increase freedom or it will have become something besides benevolutioneering.

> And when there is freedom, there is energy; and when there is freedom it can never do anything wrong. Freedom is entirely different from revolt. There is no such thing as doing right or wrong when there is freedom. You are free and from that centre you act. And hence there is no fear, and a mind that has no fear is capable of great love. And when there is love it can do what it will. (Krishnamurti, 1969/2004, p. 11)

When Socrates famously claimed that to know the good is to do the good, his model of human nature might not have adequately accounted for the critical factor of freedom of choice in shaping the actualities of the human condition. Here is a helpful supplement to Socrates' intellect-heavy model of human moral functioning:

> The space between knowing the good and doing the good is a region entirely inhabited by freedom. Knowledge of the good is sufficiency to have stood, but freedom to fall is all. Without the freedom to fall, good cannot be a choice; and freedom disappears and along with it virtue. There is no virtue in doing what you must. (Harris, 2011, p. 104)

Benevolutioneering is conceptualized as consistently profoundly increasing, and in no respect decreasing, at any point, personal and collective freedom. Fortunately, the kind of enhancement associated with benevolutioneering would increase personal autonomy.

> With respect to the requisite of self-determination or autonomy, the consent of the participant in any research involving human subjects has been an international ethical requirement since Nuremberg. This requisite of respect for autonomy, however, has two aspects with respect to neuro-enhancement. First, respecting the autonomy of subjects' consent requires that their consent be informed. Some ethical guidelines specify "fully informed" consent, but it is now recognized that if fully informed involves detailed technical information, it may in fact confuse subjects to a point of undermining consent. The preferable criterion is information that is sufficient (from the perspective of the subject) and adequately understood by the subject so as to make his or her consent valid. This criterion may actually eliminate some potential research subjects from participation in neuro-research if they cannot understand the possible risks and benefits of their participation. A second aspect of the requisite of respect for the research subject's autonomy is that neuro-enhancement should not diminish the participant's autonomy. Diminished autonomy is a direct harm to the subject of research, and I would say (leaving aside for now the philosophical question of what constitutes autonomy) that irreversibly diminishing autonomy even of informed volunteers ought to be prohibited. The focus of Lara's analysis, however, is specifically moral enhancement and autonomy is a requirement of any reasonable moral perspective. Of course, neuro-enhancement is often

> seen as a potential benefit to people precisely because it increases autonomy. The objective of neuro-enhancement is that people with Alzheimer's or Parkinson's disease, for example, or obsessive-compulsive disorders may have increased autonomy once they are relieved of conditions that inhibit their decision-making freedom. (Hall, 2019, pp. 64–65)

How would benevolutioneering actually bring about increased freedom? By what means or by what reckoning could this be true? Benevolutioneering could bring about increased freedom by multiple means, according to each person's characteristics. Some people whose core values are already quite prosocial are afflicted with pathologies that reduce and limit their freedom to behave as benevolently as they otherwise would. In such cases, effective therapeutic intervention for their freedom-robbing afflictions would result in profoundly more benevolent choices, behaviors, and practices.

Benevolutioneering is premised upon freedom and modeled to be, in every case and at every step, freedom-increasing, never freedom-reducing. Every recipient's freedom would be profoundly increased and enhanced. This, in fact, is conceptualized as informing the list of target characteristics considered for enhancement. Questions to be asked throughout the process of identifying areas of potential enhancement include: In what ways could human freedom be increased? What sorts of constraints on human freedom could be beneficially mitigated? In what ways are human beings' actual lived experiences compromised by limitations of their freedom, including internal and external constraints? Which personal freedoms might now be necessarily limited by the logic involved in facilitating collective freedom or, simply, the freedom of others, and are there possible innovative ways to increase such now limited freedoms without compromising either collective freedom or others' freedom?

Many conditions significantly reduce personal freedom, and treatments for such conditions, including even currently effective treatments, significantly increase freedom. Consider examples of people whose freedom would be increased by enhancements that increase

their volitional control over processes to which they are enslaved. Super-morbidly obese people with intractable eating disorders who daily consume more than 20,000 kilocalories. Pedophiles who must be locked up because they cannot control their destructive drives. OCD sufferers. People with Tourette syndrome or even those just bothered by a persistent behavioral tick they wish they could rid themselves of but seem powerless to do so. Tinnitus sufferers. Restless leg syndrome sufferers. Alien limb syndrome sufferers. Heroin addicts. Compulsive gamblers. Alcoholics. Tobacco addicts. People with extreme anger management problems. Pornography addicts. Hoarders. Money hoarders. People with less self-control than they wish they could develop but have been unable to develop. People with attention and focus challenges. Anyone who now struggles to modify intractable troubling behavior patterns.

Autonomy, consent, permission, and voluntariness are not freedom's only components. Nobody is stopping a quadriplegic person from running a marathon. Freedom requires ability, means and opportunity. Consider how much more freedom so many people would have if they were not the losers in the competitive dog-eat-dog economic game so consistently won and dominated by a few of the most skillful competitors. How much more freedom would there be for billions of people if our species was overwhelmingly concerned to make sure everyone was able to enjoy our world's best resources and experiences. Think of how much more freedom there would be if humanity was characterized by sociality and economics of overwhelming generosity. Some people today with significantly less freedom than others are not even able to afford transportation to attend relatives' weddings or funerals. Other people own multiple jets and yachts.

Fear and anxiety also limit a person's freedom. A multi-millionaire living in a very permissive nation but suffering from agoraphobia may very well not experience the freedom to

run a marathon. Reverse engineering courage and tranquility could free such a person to enjoy running a marathon, attending an enjoyable concert or museum or their child's dance recital. Such bioenhancement would be an increase in freedom, certainly not a limitation of freedom.

A person living with borderline personality disorder (BPD) may experience profound disappointment in their inability to enjoy positive, mutually satisfying relationships such as those the person sees others in their community enjoying. They might try with all their might to have such positive relationships, but theirs has been a consistently miserable social life. They do not experience the freedom to enjoy the kind of relationships for which they long. If BPD could be directly eliminated through bioengineering—by reverse engineering brain functions characteristic of persons not suffering with BPD—freedom would be importantly increased.

Arguably, such examples are, for the most part, outliers. Benevolutioneering, grounded in the philosophy of subsumism, models all such extreme cases—and many other recognized pathologies—as protractions of species-wide, universal traits of human nature. Human beings all suffer from all such pathologies, albeit on broad continua of extent of each malady. Such traits, even when manifested sub-clinically, yield a species-wide cultural calculus of antisociality, underlying the universal suffering characterizing what has been called the human condition.

Love requires freedom, not restriction or control. A love-based consciousness and sociality is only possible if and to the extent that there is personal freedom.

> …love experience means freedom at its loftiest. To love anything is to act freely, without compulsion or coercion. And vice versa; to be free means to do what one loves to do. In this sense, love and true freedom are synonyms; love is the loftiest form of freedom. Compulsion and coercion are the negation of love. Where there is love there is no coercion; where there is coercion there is no love. And the greater the love the greater the freedom. A person who loves all humanity is free in this human universe; a person who loves the whole universe is free in the whole world. A person who hates the world is the greatest of slaves—subjectively and objectively. Anything or anybody is his enemy, anything or anybody hinders him, opposes him, presses upon him, limits his freedom incessantly, at every turn, in every thought, emotion, or volition. The whole world, from

> inanimate objects up to his fellow men, becomes his prison filled with innumerable executioners. (Sorokin, 2002, pp. 11–12)

Theodicies commonly involve a notion that reckoning the co-existence of evil and suffering with the existence of a deity conceptualized as omniscient, omnipotent, and infinitely loving necessarily involves considering that love requires freedom, and that freedom permits volitional creatures to choose unloving behaviors. If, as many believe, an omnipotent deity engineered reality such that optimal human functioning is based on love and such that love requires freedom, would it then be conceivable that the human species might reasonably be divinely afforded profound freedom of actual self-determination? What could better epitomize freedom of self-determination than using the best of human ingenuity to intentionally shape humanity's essential nature in a profoundly loving manner by means such as benevolutioneering? If, as many believe, the human species evolved from earlier species and simpler life forms, even spontaneously, then might the human species be poised to enter a potentially more love-based era, given that freedom fosters love, if self-organization becomes volitional in unprecedented ways? Either way, humanity, collectively and individually, could be becoming capable of unprecedented planes and aspects of love—of loving values—of loving phenomenology—of loving behavior—of loving culture—of loving society—if it is true that increased freedom could make possible increased capacity to love.

Grounded in Love

Benevolutioneering is grounded in love. That actually follows from the fact that benevolutioneering is first and most importantly premised on the value of freedom. This section explains that relationship and briefly characterizes the subsumic conceptualization of love within which benevolutioneering is grounded.

It has been argued that love requires freedom. This is at the heart of various theodicies. An all-loving, all-powerful, all-knowing God would allow suffering, it is often theologized, if the suffering somehow stemmed from allowing true freedom, because there could be no genuine love without genuine freedom, and truly free creatures are free to act in ways that cause suffering. Apparent love without freedom, such as romantic attraction toward one's captor as sometimes reported with Stockholm syndrome, is generally recognized as being something other than actual love. It might be equally important and defensible to also conceptualize freedom as requiring love. Perhaps freedom and love are constituents of a single construct. Both seem to be required for healthy human development. Perhaps both are required for peace, harmony, safety, joy, and other valued phenomena associated with thriving. How, though, might it be that freedom could actually require love?

Human beings are necessarily social creatures. Without other people's care, no human being would survive infancy or childhood. When infants or children are socially deprived, their minds do not properly develop. Studies of the Romanian orphan tragedy (Chugani et al., 2001; Fisher et al., 1997; Kaler & Freeman, 1994; Rosenberg, 1992), in which numerous infants' presumed minimal physical needs were met without loving affection, suggest that loving affection is essential for thriving and for proper development. We are who we are in connection with other people. If we refer to circumstances in which freedom is lacking or limited, the limitations are generally limitations other people have imposed. If sentient creatures are to survive and thrive, they must interact with their environment in ways that tend to promote surviving and thriving. Such interactions involve controlling, arranging, consuming, and otherwise utilizing resources to maximize fulfillment of needs. Desire tends to function as notification of needs and motivation for behavior that tends to result in needs being fulfilled.

Other sentient creatures, including other people, are important elements in the environment of every social person and thus are (1) potential resources subject to arrangement, consumption, and utilization; and (2) potential rivals for resources in overlapping environments. Any person who is controlled, arranged, consumed, utilized, or outcompeted is, thereby, subjected to reduction of their freedom. Stephen Post conceptualized love by saying that, "when the happiness and the wellbeing and the security of another person is as real to you…as your own, you love that person" (TEDx Talks, 2015, 11:53–12:06). To the extent that a person loves another person, the loving person regards and treats the other person in ways less like a potential resource subject to arrangement, consumption, and utilization, less like a potential rival for resources in overlapping environments, and more like the loving person regards and treats themself. To the degree that the loving person treats another person as they treat themselves instead of as a controllable resource or a rival, that person facilitates the freedom of the person they love. Each person is free to the extent that they are not treated by other people as a controllable resource or a rival and to the extent that they are treated and regarded by other people as those other people treat and regard themselves. Is it therefore possible that, to the degree that love is lacking, the absence of love somehow limits freedom? If we love somebody, are there ways in which we have more freedom than if we did not love them? If we conceptualize love such that this is the case, then how would our definitions of love differ from many of the ways love is variously defined? If we conceptualize freedom such that this is the case, then how would our definitions of freedom differ from many of the ways freedom is variously defined?

Matthieu Ricard defined altruistic love as "the wish that…all sentient beings find happiness and the causes of happiness" (Emory University, 2010b, 2:56–3:04). In the subsumic model, how is love to be defined? Subsumically. Conceptually, this involves subsuming various

perspectives' conceptualizations of love. Functionally, this includes subsuming all others and their interests into the fondness and into the prioritization of one's ingroup and of oneself.

Subsumic love elevates perspective-taking to another level, because, in addition to attempting to take another's perspective, subsumism involves valuing and validating another's perspective and being truly as fond of the other person and their perspective as one would be of one's self and of one's most loved and treasured family member, as of the person who is the object of one's deepest affection. This exemplifies benevolence and fuels kindness.

Subsumism is inherently non-competitive, and the subsumic model of love does not attempt to succeed in any ways that prevent or make more difficult another's attempts to succeed, not in sport, not economically, not in business or any other vocation, not in play, not in religion, not in education, not in conflict, not in combat. This involves appreciating and validating others' perspectives, having others included in one's ingroup, bringing all sentient creatures into one's ingroup. Oxytocin-mediated mother bear aggression directed toward some outgroup in defense of one's ingroup is transformed in subsumism, because everyone is subsumed into one's ingroup. Threats become depersonalized in that hazardous circumstances, rather than people, are the focus of any protective concerns and efforts. Revenge is abandoned. Notions of justice are recognized as socialized revenge and superseded by thoughtful efforts to (1) mitigate additional harm, (2) acknowledge the banality of evil and the fact that every person is prone to terrible atrocities and cruelty, (3) explore and address reasons and mechanisms underlying and precipitating any harmful, unloving behaviors, (4) restore in every way possible any and all persons harmed, (5) and expend any efforts necessary to effect forgiveness and reconciliation.

Individualized, Rather Than One-Size-Fits-All, Enhancing Individuality

It is unhelpful and inaccurate to think of any single human brain model as precisely characterizing every human brain, because every human brain is anatomically unique (University of Zurich, 2018; Valizadeh et al., 2018). Valizadeh et al. (2018) assessed only about 450 anatomical features of the brains of 191 older, healthy individuals, and confirmed "that the structure of people's brains is very individual" (University of Zurich, 2018, para. 4). According to researcher Lutz Jäncke, "The combination of genetic and non-genetic influences clearly affects not only the functioning of the brain, but also its anatomy" (University of Zurich, 2018, para. 4). The brain is, of course, vastly too complex to be adequately characterized with 450 parameters. Nevertheless, in spite of the extremely oversimplified characterization involving only 450 general brain anatomical characteristics, even such a gross assessment of general brain anatomical parameters facilitated over 90% identification accuracy in distinguishing each brain from every other brain assessed (University of Zurich, 2018; Valizadeh et al., 2018). I have found no research establishing or even estimating how many neuroanatomical characteristics would be required for 100% identification accuracy in distinguishing each brain from the brains of every other living human being or even from every other human being that has ever lived. I strongly suspect that the number of neuroanatomical characteristics uniquely characterizing the neuroanatomical correlates of each person's sociality would far exceed 450. I also suspect that such a large number of variable neuroanatomical features scaffolds each person's sociality that the uniqueness of sociality-affecting neuroanatomical characteristics of every human brain is very likely. Furthermore, that only considers structural correlates of sociality. It should be easy to recognize that uniqueness of functional correlates of sociality are far more complex than structural correlates of sociality. Functional correlates vary not only from person to person but

from moment to moment, underlying the fact that even structural correlates of sociality constantly change from one moment to the next and that tendencies characterizing the dynamics of such changes are unique to each person.

The uniqueness of the anatomy of each human brain and of the parts of each human brain involved in functions associated with sociality, suggests that any sociality-enhancing technological intervention, including benevolutioneering, should be individualized rather than one-size-fits-all. It should be expected that particular anatomical modifications or augmentations, no matter how precise, could produce varying outcomes from one person to the next. Also, consider sociality-associated anatomical characteristics that are, in part, at least, matters of extent such as the mass of a minute structure or cortical thickness at a precise region. If there was only a one-size-fits-all intervention applied species-wide, the affect could be counterproductive, possibly even catastrophic, for some individuals whose brains, for certain extensive anatomical characteristics, were already well within desirable specifications before undergoing one-size-fits-all intervention, resulting in moving those certain previously acceptable anatomical characteristics outside desirable specifications.

As herein conceptualized, benevolutioneering's individualization is not only expected to be tailored to each person's unique brain anatomy. Post-intervention, each person's resulting sociality would not only still be unique, but benevolutioneering is conceptualized such that individuality, personal specialness, would be enhanced. One possible way the enhancement of individuality could be effected might be by decreasing a person's tendency to have their susceptibility to peer pressure override their personal executive function.

Tiered and Nuanced

Not everybody would be well-suited for or preferring the same extent of pro-sociality. Some people would, ideally, be simply brought to a point of consistent respect, tolerance for others, and cooperation to reduce the likelihood of outrageous, willful damage to other people. Other people might actually desire to be endowed with much greater capacity for active, self-sacrificial benevolence on the order of Mother Theresa of Calcutta. Between such poles there would be quite a spectrum of personally desired and freely selected extents of pro-sociality with corresponding progression of joy and peace, and fulfilling life satisfaction, increasing as prosociality is increased. It is also conceivable that, on such a spectrum, increasing prosociality is accompanied by increasing availability of allowed technological enhancement of abilities, of augmented capabilities, adding desired superpowers only within reasonable limits according to the extent that a person is willing to be enhanced in their ability to prosocially manage superpowers.

Incremental: Baby Steps to Benevolence

While it is likely that some people would prefer their sociality to be immediately enhanced to an extreme level of benevolent prosociality, which would probably be beneficial for some but maybe not all who prefer maximizing immediate enhancement, it seems extremely likely that many people would prefer their sociality modifications to take place in smaller increments. Smaller incremental changes with adequate time between each incremental change would facilitate evaluating and adjusting to each incremental intervention and would allow time to consider the qualitative and quantitative character of each additional incremental enhancement.

Reversible as Far as Conceptually and Technically Feasible

Reversibility of each incremental prosociality intervention could be available after an already agreed upon, carefully determined waiting period of adequate duration purposed only to allow for reasonably well-informed decision-making, thereby prioritizing patient autonomy by maximizing informed consent. Especially at less extreme tiers of enhanced prosociality, the possibility of reversibility might be particularly valued. Although some of benevolutioneering's most extensive, extreme tiers of prosociality enhancements might not be as feasibly reversible, such extreme tiers of prosociality are not anticipated to be very likely appropriate for or preferred by most people.

If reversed, then all transhumanist enhancements implemented for which moral enhancement was a prerequisite would be reversed either simultaneously or before reversal of benevolutionary prosociality enhancements. Because life-span extension is one of the enhancements for which benevolutionary prosociality enhancement would definitely be prerequisite, if an enhanced person has outlived their non-enhanced expected life span, a 150-year-old, for example, then prosociality enhancements which were prerequisites for their life-extension enhancement would be ineligible for reversal, because reversing the person's life-extension intervention would represent ending their life. Nothing, however, would prevent a person, just because they were a recipient of benevolutioneering interventions, from choosing to end their own life. If a person was less able to choose the end of their own life after sociality modification than before sociality modification, then whatever sociality interventions they had undergone would have been something other than benevolutioneering. That is because benevolutioneering is conceptualized as never, at any point, reducing a person's freedom.

If it turns out that there is any validity to Kurzweil's predictions of uploadability of human minds, memories, personalities, etc., then it would be reasonable to expect that it would be possible to somehow preserve an archival back-up of that information. If that was the case, perhaps whatever kind of archival back-up was feasible could be created prior to any kind of neuroenhancement, including benevolutioneering. Such an archival back-up might help facilitate some aspects of reversibility.

Premised on Subsumic Philosophy

Benevolutioneering is conceptualized as both species-wide and entirely voluntary, even freedom-increasing. Benevolutioneering also clearly intends to increase certain kinds of traits and to decrease certain other kinds of traits. That requires some manner of discriminating between traits that are to be increased and traits that are to be decreased. Such discrimination inescapably involves valuing some kinds of traits and devaluing other kinds of traits. Valuations of this kind do not present as points of universal consensus. Rather, such valuations vary from culture to culture and from person to person within cultures. One of the distinguishing characteristics of benevolutioneering as conceptualized in this dissertation is that it is based on a philosophical scaffolding capable of facilitating reasonable consensus in exactly these seemingly intractable impasses.

Within an internally consistent subsumic framework, how could any kind of consensus be possible regarding modification targets in terms of undesirable axiological constructs and personal characteristics such as evil, hatred, malevolence, malice, sadism, etc.? If each honest perspective is valid, then how could it be possible to reckon any perspective within which the interests of another person are trumped by self-interest? Subsumism, in validating each honest perspective, does not classify as honest perspectives any propositions or opinions or any other

constructs that devalue, invalidate, dismiss, or even reduce any other honest perspectives. Within subsumism, an ideology that condones, within a zero-sum schema, prioritizing one's own interest above another's interest, such as the ethical egoism of Rand and Branden (1964/2005), is not classifiable as a perspective, because, since division by zero is undefined, it is absurd, as will be explained later in this chapter in the section, Exploring Candidate Constructs and Characteristics for Mitigation, and in the subsection, Competition, Conflictand Cooperation Reconsidered.

As considered in discussing the law of contradiction in Chapter 4's section entitled Subsumism in the subsection entitled Subsumic Logic, benevolutioneering's philosophical foundation, subsumism, is neither identical with nor distinct from dialetheism, the belief that there are statements which are both true and not true, that it is possible that both *p* and not *p* are true ($p \cdot \sim p$). Also, subsumism is neither identical with nor distinct from trivialism, modal realism, and related constructs. As such, subsumism treats all genuine perspectives as valid, infinitesimal puzzle pieces of staggeringly complex, boundless, hyper-interconnected reality. How could that suggest there might be any hope of reasonable axiological consensus adequate to facilitate entirely voluntary, species-wide, radically benevolent prosociality enhancement? Much of this hope stems from the nature of subsumic axiology. Subsumism was developed by starting with axiological consensus and then working all the way back to ontology.

Benevolutioneering is conceptualized as capable of providing catalytic experiences connecting each person to universal core values, thereby facilitating axiological consensus. This capability stems, in part, from both the tiered, incremental, baby-steps aspect of benevolutioneering and from benevolutioneering's insistence on reversibility. Because benevolutioneering is conceptualized as incremental and reversible, it would be possible to test-

drive the phenomenology of benevolent prosociality enhancement. I believe core values would reliably become clarified and fulfilled and could be counted on to move toward a wholesome prosocial consensus with even relatively short duration experiences of profound joy, release, forgiveness, satisfaction, reliably achievable cyclical satiety, contentment, profoundly increased freedoms, self-mastery, meaning, connectedness, intimacy, loving and being loved, positive outlook, and unparalleled peace of mind. I believe that, even test-driving benevolutioneering, human beings would unavoidably experience direct fulfillment of multiple core values, that those experiences would powerfully contribute to building species-wide axiological consensus one person at a time, and, of course, that recipients of benevolutioneering enhancements would be extremely unlikely to request reversal of such enhancements.

Exploring Candidate Constructs and Characteristics for Intensification

Imagine gathering a random international sample of one thousand people and asking each how they would use a magic wand to improve humanity. I suspect that the range of answers would be enlightening. Perhaps many people's answers would reflect what they most value and enjoy. Some answers might stem from what has brought the most suffering. Maybe a few people would not want to see any changes in humanity. Some are committed to the belief that life has certain unpleasant aspects that should never be alleviated, and there are clichés to support their conviction. It might trouble them to learn about today's realistic, well-resourced endeavors to cure age-related mortality and to render taxation obsolete. If those endeavors were suddenly successful, people would continue to hurt each other. Nearly everyone is routinely hurt by others. Nearly everyone could be kinder. "Paradigms in many if not most aspects of human life are premised on the necessity—even the desirability—to succeed only to the degree that success causes another person to fail" (Kurtz, 2017b, p. 1).

Inefficient zero-sum rivalry unnecessarily configures governance, commerce, education, careers, entertainment, even religion (Kohn, 1986). Institutionally and individually, "kindness is weakness" and "nice guys finish last" seem to be increasingly common credos.

> Some people even take particular pleasure in hurting others. Some people are indifferent to other people's suffering. Worse yet, those last two sentences are true of nearly everyone when the person being hurt meets or fails to meet certain criteria. (Kurtz, 2017b, p. 1)

This dissertation is, of course, exploring whether or not much of this can be fixed. What, though, would we fix? What should we use our magic wand to change? Do we all just know and agree about which specific thing or list of things should be added, increased, decreased, eliminated, or otherwise changed? Even if we had a magic wand, what would it take to eliminate our sociality-caused existential threats and to bring about a sustainable world with profoundly less suffering and profoundly more joy? I have considered many thoughtfully constructed lists of virtues, desirable characteristics strengths, and other candidate components of profoundly benevolent prosociality. Some lists are rather concise. According to Yuval Noah Harari, flexibility and emotional intelligence are the most important areas of personal development (Bilyeu, 2018) human beings need as we move into a radically changed future. The Apostle Paul, in Galatians 5, identified nine traits as being fruits of the divine Spirit: love, joy, peace, patience, kindness, goodness, faithfulness, gentleness and self-control. Identifying the six characteristics deemed, according to positive psychology, as virtues, Peterson and Seligman (2004) listed: (1) wisdom and knowledge, (2) courage, (3) humanity, (4) justice, (5) temperance, and (6) transcendence. Peterson and Seligman's (2004) entire volume is an outstanding exploration and treatment of the kinds of traits that are likely to be beneficially enhanced in such interventions as conceptualized herein as benevolutioneering. Conceptualizing benevolutioneering in terms of addition and enhancement of prosocial characteristics such as virtues and strengths includes:

1. Gathering lists of virtues and prosocial character strengths from cultures and subcultures around the world.

2. Developing an exhaustive taxonomy of such traits.

3. Fully conceptualizing each prosociality-related trait.

4. Characterizing to an extremely high degree of precision the physiological correlates of each trait.

5. Developing interventions and blends of interventions, then employing deep learning techniques to develop prosociality intervention blend-producing artificial intelligence systems in a manner similar to the current use of deep learning techniques to enable artificial intelligence to master protein-folding prediction models.

Nothing even approaching treatment of such an exhaustive list is within this dissertation's scope. What follows is a sampling of a few important constructs that appear to be likely elements of the kinds of traits benevolutioneering would likely intend to intensify or otherwise enhance. After this section's consideration of such candidates for intensification and amplification, the next section will consider a relatively small sample of the kinds of traits benevolutioneering would likely intend to reduce or mitigate. We begin with a general look at a very general category: prosociality and prosocial behavior.

Prosociality and Prosocial Behavior

Prétôt and Brosnan (2015) defined prosocial behavior as behavior that benefits others at little or no cost to the actor. Neither Dovidio et al. (2006) nor Schroeder and Graziano (2015) included in their definition of prosocial behavior that qualification stipulating little or no cost to the person performing the action. Generally, prosocial behavior is simply behavior that benefits another person (Dovidio et al., 2006; Schroeder & Graziano, 2015). Within this dissertation I use the terms prosociality and prosocial to convey the general sense of the concept of benefitting other people or of feeling positive emotions about them. Throughout social psychology literature the term prosociality is variously defined and it is used with varying degrees of specificity,

including the minimal notion of just being nice, benefiting another person in any way even if inadvertently or accidentally, and numerous conflicting private criteria such as Prétôt and Brosnan's (2015) stipulation that, in order to qualify as prosocial behavior, the behavior must cost the person performing the action little or nothing. The "prefix *pro* indicates…being for rather than against sociality. Sociality involves the interface of humans [sic] beings with one another. Considered from each involved human being's perspective, sociality involves the interface of oneself and one or more other human beings" (Kurtz, 2017a, p. 29).

Penner et al. (2005) characterized prosocial behavior as behavior involving actions performed with the intention to benefit others. It has been hypothesized that prosocial behavior represents, at the individual level, the critical process behind humanity's development of social systems (Churchland, 2011; Wilson, 2012).

Among important aspects of components of prosociality being researched are empathy, theory of mind, which is "reasoning about the contents of another person's mind" (Saxe & Kanwisher, 2003, p. 1835), ingroup-outgroup altruism, motivators of prosocial behavior including reward anticipation, and the conceptualization of the self and of others. Chakroff and Young (2014) have assembled a thorough and extremely well-presented discussion of the prosocial brain, offering a most useful neuroscientific, psychological, and philosophical overview of progress in the quest to characterize correlates of prosociality and to understand how the brain functions prosocially. Chapter 6 of this dissertation draws on the characterization of the prosocial brain modeled by Chakroff and Young (2014).

In characterizing his influential evolutionary model of prosociality, Frans de Waal said that, for survival, essential activities as reproduction, eating, and nursing, are self-rewarding (Emory University, 2010a). We are configured by nature to feel automatically rewarded by such

essential behavior. According to Frans de Waal, rewards for things we need to do are built in by nature (Emory University, 2010a), and:

> I think being prosocial is something animals in a group need to do. How I see the connection between compassion and altruism: Empathy is automatically activated. I don't think you choose to be empathic. You are empathic and you react to things around you. And you react more if you pay more attention. And you pay more attention to those who are close to you. And so empathy is a biased phenomenon, but it's an automated phenomenon, an involuntary reaction, actually. Now, you can get from empathy to compassion or to sympathy if you can take some distance, if you are not just overwhelmed by the emotions that are coming in, but you can sort of separate them out from the situation of the other and the situation of yourself, and that allows you to be compassionate.…To get from compassion to helping behavior or altruistic behavior, I think there's a lot of factors that go into that. If, for example, someone is drowning in a river and I cannot swim, I cannot dive in to help the person. So I need to make a cognitive evaluation—if that's the right thing for me to do to help. And so there are all kinds of selfish factors that go into whether you want to help or not, and, so, whether compassion is translated into altruistic behavior has a lot of filters on it that relate to the circumstances and your abilities and skills and so on and your relationship with the other, but animals, certainly, just like humans, fairly often make that decision, to be altruistic. (Emory University, 2010a, 20:36–22:55)

Reciprocity

Although reciprocity underlies much helping behavior, it can be motivated entirely by underlying selfishness. Reciprocity is about prosocial actions, actions that help another person, that are motivated by anticipated benefits for oneself. Within the context of the longstanding debates concerning the puzzle of altruism, behaviors that have been classified as mutually beneficial are "those that increase the fitness of both the actor and the recipient" (Bahçekapili et al., 2019, p. 1). Unfortunately, systems of reciprocal prosociality could leave people without help if those people have no help to offer in exchange.

I do not believe the construct of reciprocity is a reasonably adequate candidate trait that, by amplifying, benevolutioneering would significantly benefit our species. In the meantime, however, until dramatic intentional sociality enhancement such as benevolutioneering becomes common, reciprocity is important in so far as it helps to manage the problem of capable people

who function in our social systems as free-riders, people for whom certain consequences of failing to contribute when one is capable and adequately resourced to contribute are necessary to maintain social system stability (Boyd et al., 2010). If and when free-riding can be mitigated, through benevolutioneering or some other moral enhancement approach, then reciprocity could become vestigial.

Reciprocity is importantly related to cooperation. Cooperation is another prosocial construct that benevolutioneering is modeled to be likely to bypass in seeking candidate constructs for amplification.

Cooperation

Gulati et al. (2012) defined cooperation as the "joint pursuit of agreed-on goal(s) in a manner corresponding to a shared understanding about contributions and payoffs" (p. 533). Cooperation has been modeled as the foundation of sociability (Argyle, 2014).

I see competition and cooperation in one sense as two sides of the same coin. In another sense, I view them as dialectically related, each taking its turn as thesis and antithesis, with layers of associated societal synthesis. In still another sense, I see them as functioning complementarily or even symbiotically in the ingroup-outgroup dynamic: intergroup competition fostering intragroup cooperation, and, as some research seems to suggest, intragroup cooperation with other forms of prosociality fostering intergroup competition and antisociality. This dynamic appears to be a fundamental dynamic of human society and of the society of other species. I propose herein that, although (a) this is reasonably accurately descriptive, (b) this is not the only possible paradigm, (c) that this is not the best paradigm, (d) that this paradigm is now hurting humanity, (e) that this paradigm is likely to prove untenable when and if the transhumanist vision and agenda for immortality and resource ubiquity is realized, and (f) this paradigm can and

should be succeeded by a superior construct that is more rational, more effective, reduces suffering in ways unlikely to stem from the transhumanist project without such a new construct. This dissertation explored the creation of theoretical groundwork for such a candidate construct to succeed the competition-cooperation ingroup-outgroup construct, a fortified construct of particularly fond benevolence.

Empathy

Within scholarly discussions of prosociality, the term empathy is increasingly confusing, and that confusion has compromised prosociality research (Cuff et al., 2016). Pfaff (2015) noted that the term empathy, as used by many theorists and researchers, has generally represented the experience of warm, positive sentiments toward another person. It is also used to convey the very important idea of the sense of phenomenologically merging the otherwise dichotomous self-other representation in ways which facilitate prosocial behavior (Pfaff, 2015). The term empathy is used by others as a pejorative label (Bloom, 2016) conveying the notion of being excessively emotional toward a person or over-identifying with a person, thereby interfering with rational compassion (Bloom, 2016; Ricard, 2015). Iacoboni (2014) said that empathy is "the ability to understand and share the feelings of another" (p. 45). Siegel (2012) drew a distinction between emotional empathy and cognitive empathy. Ugazio et al. (2014) pointed out five definitions in use for empathy, "ranging from motor mimicry to prosocial or altruistic behavior" (p. 161). "Etymologically, empathy, conveys *feeling with* another. Experiencing the feelings of another person, even extremely accurately, does not necessarily result in prosocial behavior" (Kurtz, 2017b, p. 13). Empathy's *feeling-with* dimension, the ability to feel what is being felt by another, is used by some people to manipulate others and even to cause harm. Throughout this dissertation, I usually use the term empathy to convey the notion of empathy's *feeling-with*

dimension, “especially as that construct relates to the merging of the self-other representation …associated with altruistic behavior” (Kurtz, 2017b, p. 13). I acknowledge the importance of empathy’s broader taxonomy, especially in terms of distinguishing empathy from compassion (Ricard, 2015; Singer & Klimecki, 2014). I acknowledge, too, awareness of the fact that empathy is not always in every aspect entirely positive. The spectrum of empathy’s complex taxonomies, though, is not this dissertation’s focus. Any distinctions or nuances in this dissertation’s uses of the term empathy should be easily contextually discernable.

Empathy underlies behaviors interpretable as prosociality in human beings and in other species (Decety et al., 2016). Persson and Kajonius (2016) investigated the relationship between emotional and cognitive empathetic functions in search of a potential linkage between empathy and altruism in their quest for understanding why empathy is declining (Konrath et al., 2011; Luna, 2019) and self-enhancing values are rising dramatically in modern society. Persson and Kajonius (2016) reported that emotional empathy, but not cognitive empathy, accounts for significant variance in altruistic values “which further confirmed the emphasis on feelings, as postulated by the empathy-altruism hypothesis” (p. 610). Haidt (2013) reported similarly, from a psychological perspective, that morality stems from an emotional basis rather than a cognitive basis.

Various factors are thought to drive emotional empathetic functions. Among these factors is the role of oxytocin. Oxytocin, though, as it turns out, seems to be more than just a love, bonding, and lactation hormone. Somehow, oxytocin seems to foster ingroup prosociality and outgroup antisociality (Churchland, 2011; De Dreu, 2012; De Dreu et al., 2014; De Dreu et al., 2015). Nevertheless, in their review, Yamagishi and Mifune (2016) reported finding insufficient evidence to support the notion that there is a “legacy of evolution of cooperation through

parochial altruism in modern human psychology" (p. 42) in spite of the fact that our world is and has been "filled with various incidences of intra-group cooperation and inter-group aggression" (p. 42).

Compassion

One way that Ricard (2015) distinguished compassion from empathy was that, whereas "empathy, or affective resonance, can…provoke a distress that focuses our attention on ourselves and diverts us from other's needs" (p. 55) and can make us weary and worn out, compassion does not make us exhausted and can "help us surmount fatigue and rectify it when it occurs (p. 58). Ricard defined compassion as "simply what happens to…unconditional benevolence when it encounters suffering. It naturally becomes 'may all sentient beings be free from suffering and the causes of suffering'" (Emory University, 2010b, 3:08–3:23), but it does not multiply suffering by actually vicariously experiencing the other individual's pain. Strauss et al. (2016) stated that there is no widely accepted definition or agreed upon notion of compassion and proposed a new definition of compassion as:

> a cognitive, affective, and behavioral process consisting of the following five elements that refer to both self- and other-compassion: 1) Recognizing suffering; 2) Understanding the universality of suffering in human experience; 3) Feeling empathy for the person suffering and connecting with the distress (emotional resonance); 4) Tolerating uncomfortable feelings aroused in response to the suffering person (e.g. distress, anger, fear) so remaining open to and accepting of the person suffering; and 5) Motivation to act/acting to alleviate suffering. (p. 19)

Either as conceptualized by Ricard (2015; Emory University, 2010b) or by Strauss et al. (2016), compassion is a candidate construct likely appropriate for benevolutionary amplification. That is not to say, however, that empathy is viewed in the same light as Ricard's (2015) construct of empathy.

Altruism and Altruistic Behavior

Harman (2010) chronicled his sweeping, comprehensive quest to reckon the past few centuries of scientific discovery and dogma with what seemed to him at once the most enigmatic and most important phenomenon of all: altruism. Harman's (2010) thought-provoking, eclectic journey to attempt to understand prosociality reminded me of my own. Within the context of the longstanding debates concerning the puzzle of altruism, behaviors which have been classified as altruism are "those that decrease the fitness of the actor but increase that of the recipient" (Bahçekapili et al., 2019, p. 1). Sober and Wilson (2003) listed and expanded three theories of motivation: (1) hedonistic, (2) egoistic, and (3) altruistic. Hedonistic motivational theory models all behavior as solipsistically motivated by desire to minimize unpleasant sensations and maximize pleasant sensations. Egoistic motivational theory models human beings as concerned with only their own personal well-being. As altruistic motivational theory models human psychology, "people sometimes care about the welfare of others as an end in itself, [and] altruists have irreducible other-directed ends" (Sober & Wilson, 2003, p. 228). Feigin et al. (2014) classified and evaluated numerous definitions and taxonomies of altruism. Among distinguishing characteristics of the many models of altruism classified, they considered the most significant sorting characteristic to be how each model regarded motivation for a behavior as a criterion in deeming a behavior altruistic or not. Among their most important and divisive demarcations is whether or not it is believed that "any behavior is ever motivated exclusively by concern for another rather than [entirely] out of self-interest" (Kurtz, 2017b, p. 10). As modeled by Prétôt and Brosnan (2015), behavior is considered altruistic only if, in benefiting another person, a cost must by incurred by the one performing the behavior.

I consider altruism and altruistic behavior to be general terms describing behaviors that necessarily involve the intention to benefit others, whether or not the outcome proves beneficial, with or without positive sentiments for others, and whether or not the behavior is motivated exclusively by concern for another. It is commonly believed by evolutionary psychologists and social psychologists that selfish concern motivates all behavior toward others (Wilson, 2015). Typically, they believe that altruism, conceptualized as behavior that benefits another person performed without expecting to somehow benefit personally, especially when any personal cost is expected, is nonexistent (Wilson, 2015). Employing subsumic epistemology, that belief is not considered a perspective, because it is an opinion about others' perspectives regarding their own phenomenology. Additionally, Wilson (1978) distinguished two basic forms of cooperative behavior in terms of altruism:

> The altruistic impulse can be irrational and unilaterally directed at others; the bestower expresses no desire for equal return and performs no unconscious actions leading to the same end. I have called this form of behavior "hard-core" altruism, a set of responses relatively unaffected by social reward or punishment beyond childhood. Where such behavior exists, it is likely to have evolved through kin selection or natural selection operating on entire, competing family or tribal units. We would expect hard-core altruism to serve the altruist's closest relatives and to decline steeply in frequency and intensity as relationship becomes more distant. "Soft-core" altruism, in contrast, is ultimately selfish. The "altruist" expects reciprocation [p. 156] from society for himself or his closest relatives. His good behavior is calculating, often in a wholly conscious way, and his maneuvers are orchestrated by the excruciatingly intricate sanctions and demands of society. The capacity for soft-core altruism can be expected to have evolved primarily by selection of individuals and to be deeply influenced by the vagaries of cultural evolution. Its psychological vehicles are lying, pretense, and deceit, including self-deceit, because the actor is most convincing who believes that his performance is real. (pp. 155–156)

Well-Being

To promote benevolutioneering in good conscience and to have any chance of benevolutioneering's widespread acceptance, benevolutioneering must result in significantly increased well-being for each recipient. Well-being might not be well understood by many people. It is not uncommon for people to prefer and prioritize happiness, immediacy, self-

promotion, pleasure, thrill, or fun more than more inclusive, efficacious, sustainable, lasting constructs such as meaningfulness, belonging, mindfulness, peacefulness, joy, and contentment.

The term happiness, even in scholarly literature associated with positive psychology is not used consistently to represent the same notion from article to article, book to book, or lecture to lecture. As used by Baumeister et al. (2013) in the statement "Happiness was linked to being a taker rather than a giver, whereas meaningfulness went with being a giver rather than a taker" (p. 505), happiness is seen as less elevated, as juxtaposed with meaningfulness. In other cases, happiness appears to be describing a broader construct including meaning, joy, and positivity. That is the case in studies of well-being that have commonly identified prosociality as a necessary component of what is referred to as personal happiness (Bstan-'dzin-rgya-mtsho, 2003; Bstan-'dzin-rgya-mtsho & Cutler, 1998; Haidt, 2006, 2008; Ricard, 2007; Russell, 2013).

Using the broader sense of happiness, there has also been abundant indication of exactly the opposite role being played in the human psyche by competitiveness and competition. Russell (2013) said that "the root of the trouble [in contemporary Western competitive lifestyle] springs from too much emphasis upon competitive success as the main source of happiness" (p. 51). The Dalai Llama (Bstan-'dzin-rgya-mtsho, 2003; Bstan-'dzin-rgya-mtsho & Cutler, 1998) has very clearly and consistently related happiness to prosociality, as does Ricard (2007). Not surprisingly, there have been indications of an inverse relationship between selfishness and happiness (Dambrun, 2017; Dambrun & Ricard, 2011). There is also evidence that the sum of some large amount of pleasure is not happiness (Haidt, 2008). One construct which rivals happiness and pleasure in terms of being valued to a greater degree and in terms of contributing more to a person's well-being is meaningfulness. What, though, is meaningfulness? Baumeister et al.'s (2013) statement, quoted earlier, "Happiness was linked to being a taker rather than a

giver, whereas meaningfulness went with being a giver rather than a taker" (p. 505), offers one significant perspective. Baumeister et al. (2013) also said:

> Meaning can be a purely symbolic or linguistic reality, as in the meaning of a word. The question of life's meaning thus applies symbolic ideas to a biological reality. Meaningfulness is presumably both a cognitive and an emotional assessment of whether one's life has purpose and value. People may feel that life is meaningful if they find it consistently rewarding in some way, even if they cannot articulate just what it all means. (p. 506).

Meaningfulness, according to Martela's (2017) perspective, considers the element of time:

> we can look at meaningfulness from both a future-oriented and past-oriented perspective. Our present pursuits derive meaningfulness from being connected to some valuable goals that we strive to achieve in the future. And our past achievements derive meaningfulness from the actual positive impact they have been able to generate. (p. 253)

Entertaining the idea that our lives have been for nothing, that our lives have no meaning, that any suffering in our lives has been meaningless, can be experienced as most unpleasant, even, in some ways, painful. Robert A. Johnson conveyed the sense of the relationship between suffering and meaning in expressing that "half of the suffering is alleviated the moment one understands that there's meaning in it. The one unforgivable or unbearable form of suffering is meaninglessness" (KivaRecords, 2011, 2:36–2:48). According to Jung (1956), "a psycho-neurosis must be understood as the suffering of a human being who has not discovered what life means for him" (p. 29). Frankl (1946/2006), who certainly knew suffering, shared his hard-earned insight that, "In some way, suffering ceases to be suffering at the moment it finds a meaning, such as the meaning of a sacrifice" (p. 113).

Kauppinen (2017) recognized differences in the ways people conceptualize and experience meaningfulness:

> There are some who maintain, at least in the context of philosophical discussion and reflection, that it is ultimately all the same what we do—nothing really matters. Were such *meaning nihilism* to be true, it would be difficult, if not impossible, for us to have a

> high level of well-being. The best we could accomplish for ourselves would be a kind of shallow happiness or self-deceptive fulfillment with ultimately pointless activities. And perhaps nothing we do would matter, were we to live inside a computer simulation in an experience machine, boxing shadows. Alas, we don't. What we do can make a genuine difference. …both supernaturalist and naturalist views of what makes life meaningful say that our lives can have a point if we engage sufficiently with genuine value beyond our own good. Somewhat paradoxically, it may turn out to be better for us to throw ourselves into the challenges of doing right by others or achieving perfection in an artistic or scientific behavior than to strive for our own pleasure and contentment. (p. 290)

Might it be possible to characterize neurocorrelates of the experience of meaningfulness or of the process or condition of attaching meaningfulness construct? If so, could there be any way to neuroenhance meaningfulness? Would there be any utility or benefit in neuroenhancing meaningfulness? Maybe there would be in cases of apparent inability to experience any sense of meaning. Perhaps if such an inability or reduced capacity to experience a sense of meaning is neurogenetic or was the result of trauma, then neuroenhancement of the ability might have the potential to add a dimension to a person's life experience. It is easy to appreciate how increasing capacity to experience meaning could positively influence a person's mental health, sociality, and spirituality.

Certainly, human well-being involves more than happiness and meaningfulness. Equanimity, mindfulness, contentment, hope, peacefulness, and perhaps hundreds or even thousands of factors, thousands of ingredients, each varying from person to person, contribute to the valuable diversity of unique personalities within our species. Such characteristics and each of their complex sets of structural and functional neurocorrelates ought to be exhaustively catalogued and means should be devised to precisely adjust each of such characteristics for extent and nuance. That would be important for benevolutioneering's satisfactory conceptualization, development, and implementation.

Honesty

The ways honesty is conceptualized and valued might be changing. Presently, some of our notions of privacy and some of our preferences concerning privacy are related, for many people, to wanting to withhold information or misrepresent information. Such factors as increasing reliance on online functions for so many aspects of human beings' lives, continuous recording of location data, as well as the popularity of DNA testing services, are changing the realities associated with human privacy. People seem to be sharing more and more information on social media that would, in earlier generations, have been kept discreetly to oneself or within one's own household. It seems likely that, soon, expectations of privacy will have changed dramatically. Reduced privacy makes it more difficult to successfully deceive people about many important aspects of one's life. Progress toward linking people's conscious awareness via the Cloud, sharing with others our thoughts, feelings, and sensory information, seems capable of dramatically altering humanity's relationship with deception and honesty. Because of these considerations, I am not sure whether honesty and deception will need to be a deliberate aspect of benevolutioneering. Technologies and trends unrelated to moral enhancements or prosocial enhancements might inadvertently relegate deception to history's trash bin. Either way, though, elimination of deception is prosocial and benefits our species. Deception does not foster benevolence, love, intimacy, morality respect, kindness, or fondness.

Humility

Honesty begets humility. If I am honest about myself, then I necessarily acknowledge profound limitations. The universe is enormous and infinitely complex. Arrogance, lack of humility, motivates human beings' overestimations of their ability to comprehend nature and drives insistence on oversimplifying reality. This underlies allowing axiology to compromise

ontology in favoring and defending ontological parsimony rather than wisely, honestly restricting parsimony's important utility to epistemology.

Humility is also important in mitigating the human tendency to misperceive and misassign one's own importance relative to other human beings. Humility helps to prevent objectifying and dehumanizing other people. Humility helps to counteract traditions and inclinations to stratify humanity according to one or another status or value schema. Within prosocial schemas, people who clean hotel rooms are just as amazingly alive and conscious and valuable as heads of state who stay in hotels' costliest suites. Antisocial notions of caste, so entrenched in systems of inequitable resource allocation, are alienating and divisive, and they lead to decreased joy and increased suffering. Humility is an important characteristic, likely a significant enhancement target for benevolutioneering.

Intelligence

Harris (2012) said that he was in "in favor of cognitive enhancement, including chemical and biological methods of cognitive enhancement, because it enhances the thinking and reflection that makes moral judgment and moral behavior possible" (p. 303). Although Socrates believed that if a person knew what the right thing to do was, then they would do the right thing, I believe that people with much knowledge and powerful intellects opt, with full understanding, to inflict unnecessary suffering on others. A powerful mind is still free to choose antisocial behaviors. I do believe, though, that without adequate intelligence, a person cannot choose effectively prosocial behaviors. A highly intelligent prosocial person is going to reduce more suffering and help to bring about more joy than a cognitively challenged prosocial person.

Cognitive ability, though, is a trait general human enhancement projects are quite likely to prioritize. One risk, though, is that general human enhancement projects might make such

enhancements available mostly to powerful and wealthy individuals. Benevolutioneering is conceptualized as enhancements for all who would be benefited by them.

Self-Control: Self-Regulation, Executive Function, Behavioral Inhibition

There would probably be little or no objection to a new pharmaceutical which effectively cured impulse control disorders such as intermittent explosive disorder, oppositional defiant disorder, conduct disorder, kleptomania, and pyromania. In fact, if there was an over-the-counter medication that would dramatically improve a person's ability to keep their New Year's resolutions, stick to their diet and wellness routine, instantly overcome procrastination, and break all undesirable habits, that drug would be in great demand. Benevolutioneering is conceptualized as enhancing executive function, self-control, and self-regulation. A person can be very capable of excellent moral judgment although profoundly lacking in ability to follow through with what they know is the right course of action. The cliché "the spirit is willing, but the flesh is weak" reflects humanity's longstanding concern about these characteristics.

Exploring Candidate Constructs and Characteristics for Mitigation

Antisociality

Debates concerning antisociality's differing scholarly taxonomies are outside this dissertation's scope. Consistent with subsumic thought, the many models conceptualizing and classifying candidate constructs of antisociality are each regarded as valuable perspectives contributing to the broadest possible understanding of the various ways of getting along less harmoniously with other people. Conceptualizing benevolutioneering necessitates probing such constructs as psychopathy, mental illness, emotional disorders, personality disorders, sin, immorality, unethical behavior, and harmful crime. Significantly, however, benevolutioneering is conceptualized as determined to diagnose and explore mitigation of even much less salient nonprosocial functioning, such as meanness, arrogance, common unkindness, distressing

asociality, and apathy. Consequently, throughout this dissertation the terms antisocial and antisociality convey "such notions as hurting others or their interests, or having negative sentiments for others, whether or not self-benefit is involved" (Kurtz, 2017b, p. 11). Herein, generally, "antisociality is a broad category of sentiments, behaviors, and outcomes that are possible candidate targets for reduction, modification, or elimination" (Kurtz, 2017b, p. 11).

What if the United States spent as much or more on peace as on war? What if more was spent on international altruism than on preparing for and conducting war and military occupation? What if the U.S. had five or six entire branches of prosociality forces with various subspecialty branches staffed and supported to the extent we now staff and support the U.S. armed forces? What would be the mission of each of the analogous support agencies and departments such as DARPA, the NSA, the CIA, and Homeland Security? What if the U.S. was as committed to preparing to rescue, aid, and prosper other nations as it is now committed to preparing to defeat them? How would that change the world? In Chapter 1, I referred to Graffin's (2015) view that humanity's incessant warring resembles the "'warfare' between species that we see in nature" (p. 156), and I quoted Graffin's assertion that "war is an inevitable feature of all populations" (p. 156). I reiterate that, from humanity's relentless one-upmanship, stem some of humankind's greatest potential global catastrophic risks: nuclear war, nuclear terrorism, bioweaponry and bioterrorism, nanotechnological weaponry and terrorism, and totalitarianism (Ackerman & Potter, 2008; Caplan, 2008; Cirincione, 2008; Nouri & Chyba, 2008; Phoenix & Treder, 2008). As I stated, item-by-item, Geraci's (2010) list of possible apocalyptic artificial intelligence scenarios links to antisociality, reductionist materialist models of consciousness, or both. Without antisociality, we would not be facing such existential threats, and, as I asserted, a long list of more modest calamities and hurts would disappear with antisociality's elimination.

Perhaps society, with all of its ruses and complexity, can be quite simply explained: The big ones take it from the little ones, then the smart ones take it from the big ones. Do not most parents want to see their children to grow up to be among the wealthy and powerful instead of growing up to be needy and to fall to a lower rung on the socio-economic ladder (Kohn, 1986)? Reducing and harming others is encouraged as necessary, no matter how unfortunate, in our carnivorous world, in order to responsibly care for our own needs and the needs of our family and of our country (Kohn, 1986, 1990; Ricard, 2015; Svendsen, 2010). According to Svendsen (2010), although this reasoning is used to justify causing hurt to others, it is evil itself that drives such antisocial human behavior, and the same dynamics of war and violent harm to others exist independent of the false notion of the necessity to defeat and destroy others. In support of his position, Svendsen pointed to such senseless violence as was seen in the Nazi attempt to address what was portrayed as the Jewish problem. Baron-Cohen (2012) attributed such cruelty to an erosion of empathy associated with regarding other people as objects and then treating them accordingly. It might not, though, be quite that simple. In competing with a human opponent, which is really synonymous with trying to defeat the other person, regions of the brain, the functions of which are associated with theory of mind ability, are activated in contrast to the non-activation evidenced when the same participants knowingly compete with a computer opponent (Polosan et al., 2011). Although treating another person as a thing instead of as a person may well be evil, treating another person in a manner that hurts the other person, acutely cognizant that it is, in fact, another person one is presently hurting, might be viewed as evidencing another degree of evil. It seems somehow sicker. It seems to require the lack of a functioning conscience. Lack of conscience in treating others with disregard is what characterizes a psychopath (Blair et al., 2005; Fallon, 2013; Hare, 1999; Haycock, 2015; Kiehl, 2014).

Many ultra-successful C.E.O.s and others among the wealthiest of Western society's self-made icons have been identified as actually being psychopaths (Babiak & Hare, 2006, p. 239; Dutton, 2013; Dutton & McNab, 2017). Because there is "some overlap between things psychopaths do and good executives do, at least on the surface" (Babiak & Hare, 2006, p. 239), in the feverish campaign to become the very best competitors in the marketplace, there are American companies seeking out diagnosed psychopaths and retaining them as consultants to help identify and weed out empathy from within the ranks of their corporate leadership, and there are people buying self-help success books to learn how to become more like a psychopath (Dutton, 2013; Dutton & McNab, 2017).

Bloom (1995) asserted that in many species' social structures, among many primitive human cultures, and in post-World War Two American suburbia, males and females have found it necessary to occupy mostly separate spheres. Males have been stereotypically characterized as, and, perhaps, might even more often have been, in fact, inherently aggressive and competitive. Females are stereotypically characterized as, and, perhaps, might even more often be, in fact, less inherently aggressive and competitive and have been believed to be better off insulated from spheres of aggressive, even violent, male competition. The workplace is, by many, regarded as inherently aggressive because it is necessarily competitive, and, according to Nelson (1998) and Hornyak (2004), many women, feeling less equipped to succeed in such a testosterone-saturated sphere, must learn to how to succeed and thrive in competitive circumstances.

Competition, whether in sport or in war, or in competition for food and mates is widely regarded as "nature's way of testing any self-replicating device" (Bloom, 1995, p. 195). Some, though, have challenged the notion that selfish greed, aggression, and violence are inseparably woven into the essential nature of humanity and asserted that competition, an unnecessary and

unaffordable construct, rather than human nature itself, is really a human problem which must be solved (Graffin, 2015; Kainer, 2012; Karlberg, 2004, 2010; Kohn, 1986, 1990). According to Graffin (2015):

> Many narratives we use to explain our world are overly simplistic and therefore fundamentally flawed. Competition is one of them. We love the story that populations compete "to the death," as in warfare, with the stronger one wiping out the weaker. Yet, as we've seen with populations as diverse as pipe-dwelling bacteria and the Iroquoian people of North American [sic], this simply isn't true. Populations are rarely eradicated; instead they assimilate with larger populations or find a niche in which they can retain many of their traits and continue their way of life in an equilibrium of coexistence. (p. 191)

That possibility of over-reliance, or even insistence upon, every construct being construed as necessarily competitive is useful to keep in mind in considering Kurzweil's (2000, 2005; Ptolemy, 2011) response to the growing fear that machines created with strong artificial intelligence will wipe out humanity. He instead portrayed a beneficial merging of humanity with artificial intelligence.

Kohn (1986) claimed that he evaluated and found to be easily proven false the assertion that, without competition, play would not occur and determined the notion unfounded. Closely related to play, it could be argued, is creativity. Even creativity, the very engine of progress, perhaps the key determiner of the trajectories of human progress, has been conceptualized, by two of the scholars I most admire and hold in the highest regard, as necessarily an inherently competitive process (Csikszentmihalyi, 1996, 2004, 2009, 2013, 2014; May, 1959, 1975). If creativity is conceptualized (and fostered and practiced) within a competitive schema, then the trajectories of human progress could be entirely different than if creativity is conceptualized within a cooperative, harmonious, altruistic, loving (whatever that is), fondness-based schema.

According to Kohn (1986), openness to others' ideas and points of view is compromised by competitive thinking. Considering the allegory of the blind men and the elephant, everyone,

functioning as noncompetitive thinkers, could assume, as a rule, that any and all contrasting perspectives are a precious resource. More altruistic, less competitive thinking would result in increased openness to other points of view—to considering that other people might be capable of seeing what one does not see (Kohn, 1986). If, therefore, some people claim a rich phenomenological experience that one does not seem to be experiencing, rather than competing to be the one who is correct while defeating the other who must, of course, be entirely wrong, one could consider the possibility of an additional perspective that the other can use to benefit everyone in ways not open to the one not experiencing such phenomena. It seems this is a mechanism that would also foster enhanced creativity.

The neurocorrelates of competition and the relationship of social competition and cooperation have been studied using brain scanning techniques (Decety et al., 2004; Polosan et al., 2011), and a body of literature is accumulating. The neurocorrelates of psychopathy are also being explored (Blair et al., 2005; Fallon, 2013; Hare, 1999; Haycock, 2015; Kiehl, 2014), and, so far, there does not appear to be any sharp distinction between psychopathy and normalcy. According to Graham (2014), "realism about mental disorder is orthodoxy in psychiatry, of course" (p. 123). Psychiatric taxonomies, although seeming to reify distinct categories of pathology, are not as straightforward and boundary-setting as they might appear (Zachar, 2014a, 2014b). Fallon (2013), a successful neuroscientist, even discovered that his brain scans identified him with psychopathology. Dutton (2013) appeared to embrace and to celebrate aspects of psychopathy as strategic resources for being a better competitor in the marketplace (Dutton & McNab, 2017).

Not just our values, but our very ontologies and associated epistemologies stem from zero-sum, binary presuppositions. For example, is it possible that even Occam's Razor, based

upon multiple assumptions not in evidence, might condemn us to unfortunate, even tragic collective simple-mindedness? Upon what basis is it reasonable to conclude that multiple potential explanations should be treated as zero-sum competitors? Are not infinite other assumptions and associated epistemological devices possible with regard to the relationship of multiple explanations? Are we in jeopardy of oversimplifying consciousness by constructing competing models of consciousness? Are those constructs we are now developing being cast in relation to the assumption of underlying competitive schemas ideologically, dogmatically, including parsimony, too often assumed to ground reality instead of just serving as an epistemological tool to gain useful partial understandings of subsets of reality?

Low Hanging Fruit for Benevolutionary Modification: Profoundly Antisocial Constructs

Some antisocial constructs are far less controversial potential mitigation targets for benevolutioneering than others. Benevolutioneering would identify and modify neurocorrelates of certain conditions and behaviors which are generally considered particularly revolting, such as homicidal behavior, pedophilia and child molestation, rape, sadistic torture, kidnapping, arson, mayhem, cannibalism, and harming for amusement those who are helpless, weak, elderly, or severely disadvantaged. Certain other antisocial constructs would likely be less widely agreed upon as mitigation targets for benevolutioneering: domination, dehumanization, hatred, rage, schadenfreude, spite, and malice.

Homicidal Behavior

In very recent research, indications are emerging of genetic bases for some types of cases in which individuals exhibit extremely violent behavioral tendencies, including homicidal behavior. A relatively small sample-size study of male Pakistani prisoners indicated potential major genetic determinants, involving serotonin transporter gene polymorphisms, associated

with homicidal aggression. According to Qadeer et al. (2021), "the L and L_A variants of 5-HTTLPR VNTR polymorphism with demonstrated eQTL based functional significance are associated with homicidal behavior and self-reported aggression in this rare sample set of Pakistani prison inmates sentenced for murder(s)" (para. 29). It is extremely difficult to imagine societal resistance to developing and implementing safe, effective therapeutic genetic interventions which would correct various polymorphisms demonstrated to increase likelihood of violent aggression, especially homicidal aggression. Benevolutioneering would, of course, include somatic and prenatal screening for and correction of such potentially tragic transcription errors.

There is a fascinating neuropsychological aspect of the infamous 1966 University of Texas at Austin tower shooting. According to Ponder (2018), the shooter, Charles Whitman, recommended, in his last letter, that he be autopsied to look for any physical cause of what was wrong with him to help prevent future tragedies of the time he anticipated perpetrating. In fact, Whitman's autopsy revealed a hypothalamic tumor in the white matter above his amygdala, "a malignant glioblastoma multiforme tumor the size of a walnut compressing the amygdaloid nucleus" (Ponder, 2018, p. 3). Debate persists regarding if and how such a tumor caused his homicidal rampage.

Of course, there are quite likely many predisposing factors, genetic and otherwise, involved with violent aggression, including homicidal aggression. There might be tens of thousands of factors, and the combinations of predisposing factors might be unique to every individual, both in type and extent. Very much more research is required to confidently assert any specific intervention targets, genetic or otherwise. This research is very early and likely to be focused and refocused by upcoming studies involving larger samples and simultaneous

consideration of more candidate factors and interactions of those multiple factors. It is anticipated that benevolutioneering would likely be considering an extremely large number of possible combinations of underlying factors possibly uniquely predisposing each affected individual for potential tragic violence. Such imagined exhaustive screens would require artificial intelligence utilizing as yet undeveloped modeling techniques based on deep learning or successor paradigms.

Pedophilia and Child Sexual Offending

Burns and Swerdlow (2003) reported the case of acquired pedophilia. A 40-year-old man experienced an increase in his interest in pornography and a new sexual attraction to children, which led to him abusing his prepubescent stepdaughter. A right orbitofrontal hemangiopericytoma was revealed by magnetic resonance imaging.

> Orbitofrontal lesion research suggests that sociopathic behavior results from a loss of impulse control rather than a loss of moral knowledge. Functional magnetic resonance imaging studies indicate that orbitofrontal, dorsolateral prefrontal, and subcortical limbic structures are involved in behavioral self-regulation and response inhibition, including the conscious regulation of sexual urges. Our patient could not refrain from acting on his pedophilia despite the awareness that this behavior was inappropriate. (Burns & Swerdlow, 2003, p. 440)

The man's inappropriate sexual urges disappeared when the tumor was removed. Seven months after his surgery he was deemed safe enough to be around his stepdaughter again and to move back into his house. Fourteen months after his surgery, however, he started experiencing headaches and resumed collecting child pornography. Magnetic resonance imaging revealed regrowth of the tumor. The second tumor removal surgery again alleviated the patient's sexual attraction to children. Cases of this kind are atypical in that pedophilia is rarely initially acquired in mid-life. The study authors believed theirs was "the first description of pedophilia as a specific manifestation of orbitofrontal syndrome" (Burns & Swerdlow, 2003, p. 439), counseled against systematic use of magnetic resonance imaging for all pedophiles, but advised physicians to

carefully consider checking thoroughly for orbitofrontal abnormality in cases of acquired sociopathy.

It would be wonderful if there was always a straightforward surgical intervention that would effectively correct pedophilia, and, for that matter, all forms of sociopathy and other antisocial conditions. Creation of such interventions, surgical and nonsurgical, is anticipated within the hopeful model of benevolutioneering.

It is estimated that 11.8% of children are victimized by childhood sexual offenders (Stoltenborgh et al., 2011). Klöckner et al. (2021) identified possible neural impairments in childhood sexual offenders. Pedophilia and child sexual offending, distinct phenomena, have, until recently, generally been confounded. Formerly confounded data had indicated:

> Abnormalities regarding (prenatal) neurodevelopment markers, neuropsychological performance, and their neurofunction regarding various paradigms and connectivity. Structural gray matter reductions have been reported for regions in the frontal, parietal, and temporal lobe, including for limbic loci, as well as for the cingulate cortex, the insula, structures of the basal ganglia, and cerebellar loci. (Klöckner et al., 2021, p. 1).

Recently, initial neuroscience-based disentanglement of pedophilia and child sexual offending has involved differentiation according to "executive functioning, IQ, behavioral control, affect recognition, resting-state functional connectivity, and neurostructure" (Klöckner et al., 2021, p. 2), but it remains inconclusive whether or not the two conditions' structural and functional neurocorrelates are distinct. Nevertheless, increasingly precise identification of neurocorrelates, whether or not distinct for the two conditions, indicate potential for modification in benevolutionary intervention. Very little popular resistance is anticipated for interventions, moral enhancements, that correct these conditions which are both so devastating to children.

Objectification of Human Beings and Dehumanization

Businesses commonly have human resources departments. It does not seem ideal for human beings to ever consider other human beings, in any context, as resources. The

classification of human beings as resources seems illustrative of Sartre's (1992) notion of oppression as "exploitation of man by man" (p. 562). When we hear about employee evaluations, it seems to demonstrate that "people are used in the same way as objects and are evaluated according to their instrumental usefulness for achieving others' goals" (Crone et al., 2021, p. 9). The term evaluation conveys a sense of determining value. Assigning human beings relative value is stratifying, and it implies that the worth of human beings exists on a continuum and depends on the use that can be made of them. Treating a human being as an instrument, a tool or a toy amounts to treating human beings as things, as objects.

> The objectification process refers to a perceptive activity in which the person is encoded through his/her form (structural dimension) but also and above all through his/her functional properties (semantic dimension) that is to say in accordance with the same processes as the perceptive activity of objects. (Crone et al., 2021, p. 9)

People should use things, but people should not use people. Treating human beings as objects is dehumanizing.

"According to the dehumanization hypothesis, when a dominant majority describes an out-group as rats or lice they do so because they believe that group to be less than human" (Over, 2021, p. 11). Over (2021) criticized the oversimplification of the dehumanization hypothesis, pointing out that ingroup dehumanization is often associated with ascribing very positive attributes to ingroups, some nonhuman entities such as puppies are often very well-treated, and that outgroups are not actually regularly described as nonhuman entities. Over (2021) cautioned that "encouraging dominant majorities to reflect on the humanity of out-groups could even backfire in certain circumstances, if, for example, it leads to increased focus on the supposedly antisocial mental states and attributes of the group in question" (p. 11). Over's (2021) point, that dehumanization can be oversimplified, is important. Dehumanization and all other mistreatment

of human beings is very complicated and must never be oversimplified, but I do not believe Over (2021) provided justification for reduced confidence in the dehumanization hypothesis.

Workman et al. (2021), after exploring dehumanization in connection with perceived facial anomalies, suggested that

> dehumanization is underpinned by a suite of negative attitudes ([as measured using the] IAT [Implicit Association Test] and EBQ [Explicit Bias Questionnaire]), social cognitive biases (just-world beliefs), emotional dispositions (affective empathy), and undesirable behaviors (less generosity in the DG [Dictator Game])—all factors associated with the functioning of the left amygdala. (p. 13)

Workman et al. (2021) proposed that:

> the left amygdala integrates face perception with moral emotions (e.g., empathy) and social values (e.g., justice) to guide behavior—less emotional empathy and greater belief that the world is just together facilitate dehumanizing people with facial anomalies. The lateralization of our findings to the left amygdala is consistent with evidence that the left amygdala, specifically, is implicated in representing subjective value, in empathy, and in sociomoral cognition more broadly. The amygdala shares connections with frontomesolimbic regions implicated in prosocial emotions (e.g., guilt and empathy). (Workman et al., 2021, p. 12)

In general, modeling the actual, operationalized process of a person abusing another human being usefully considers the role of reduction of the abuser's humanity. In fact, it is useful to model human nature in general as ascribing less humanness to other human beings the more steps they are removed from oneself as working farther outward from the self through the concentric circles of moral concern (Singer, 2011).

> The strength of moral self-censure for harmful practices depends on how the perpetrators regard the people they mistreat. To perceive another as a sentient human being with the same basic needs as one's own arouses empathy and compassion for the plight of others through a sense of common humanity. This makes it difficult to abuse them. …It is difficult to inflict suffering on humanized persons without experiencing distress and self-condemnation. It is easy to do so without guilt if they're diminished to subhuman beings. Self-censure for cruel conduct can be disengaged or blunted by stripping others of human qualities. After they are sub-humanized, they are no longer viewed as persons with feelings, hopes, and concerns. They are portrayed as mindless "savages," "degenerates" and other despicable wretches. If stripping one's foes of humanness does not weaken self-censure, it can be eliminated by achieving demonic or bestial qualities to them. They

> become “satanic fiends,” “rats,” and other bestial creatures. It is easy to brutalize people when they are perceived lower life forms… (Bandura, 2016, pp. 84–85)

One of the most antisocial sentiments is schadenfreude, the enjoyment of another person’s misfortune and suffering. As Wang et al. (2019) modeled schadenfreude, at schadenfreude’s core lies dehumanization. Also, the model of schadenfreude proposed by Wang et al. (2019) developed a tripartite taxonomy of aggression, rivalry, and justice. I propose that dehumanization, certain kinds of aggression, rivalry, schadenfreude, and certain currently important notions of justice are interconnected social adaptations long overdue for prosocial update. The model of benevolutioneering developed in this dissertation involves targeting all five for mitigation.

Schadenfreude

Schadenfreude was defined by de Waal (2015) as pleasure a person experiences in perceiving the distress of a person regarded as their competitor. Baron-Cohen (2012) more simply defined schadenfreude as “the pleasure at seeing someone else suffer” (p. 68). According to Wang et al. (2019), schadenfreude is “the distinctive pleasure people derive from others’ misfortune” (p. 1). Perhaps it seems likely that schadenfreude would be the kind of phenomenon confined to flagrant sadists and psychopathic outliers. However, according to Cikara, Bruneau, and Saxe (2011), schadenfreude is likely experienced by almost everyone in cultural settings structured around ingroup-outgroup dichotomies that foster competitive intergroup dynamics. Schadenfreude’s ubiquity seems evidenced by internet popularity of stupid criminal tricks and instant karma videos, and enthusiastic reactions to reports of executions of particularly loathsome criminals (Feather et al., 2013; Wenzel & Okimoto, 2016). “The role of deservingness extends to negative outcomes that may have befallen another person by circumstance and the

pleasure that individuals may experience in such situations (schadenfreude)" (Wenzel & Okimoto, 2016, p. 245).

James et al. (2014) observed that "many of the behaviors characteristic of the Dark Triad are similar to those preceding schadenfreude" (p. 211). The Dark Triad, a profoundly nonprosocial personality profile combining three antisocial traits, is discussed later in this chapter. James et al. (2014) illustrated schadenfreude's association with the Dark Triad:

> For example, a lack of empathy or callousness (Jonason et al., 2013), competitiveness (Jonason et al., 2010), and a tendency to dislike others (Rauthmann, 2012). Lack of empathy is shared by all three aspects of the Dark Triad and provides a strong conceptual link between these dark personalities and the experience of schadenfreude (Porter et al., 2014; Wai & Tiliopoulos, 2012). There are two possible emotional reactions in the face of another's misfortune; a negative emotional reaction presented as sympathy, or a positive emotional reaction depicting schadenfreude (Heider, 1958). Therefore, someone who lacks empathy would be more likely to experience some degree of pleasure – or schadenfreude. (p. 211)

James et al. (2014) also said:

> Characteristics proposed to influence schadenfreude include resentment, deservingness (Feather & Nairn, 2005), envy (van Dijk, Ouwerkerk, Goslinga, Nieweg, & Gallucci, 2006), likability (Hareli & Weiner, 2002; van Dijk et al., 2006), self-esteem (van Dijk, van Koningsbruggen, Ouwerkerk, & Wesseling, 2011), and competition (Smith, Powell, Combs, & Schurtz, 2009). (p. 211)

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Spite

Fulker et al. (2021) modeled spite as "costly behavior that harms others" (p. 2) and said that, in humans and nonhumans, "costly harm can spread through a population, structured by

preferential interaction, via imitation" (p. 5) and that "individual agents are capable of learning [spite] by reinforcement and imitation. It has been recognized that dynamic networks can provide a mechanism for the spread of cooperation, and…can also cause the spread of spite" (p. 5). Within the context of the longstanding debates concerning the puzzle of altruism, behaviors that have been classified as spite are "those that decrease the fitness of both the actor and the recipient" (Bahçekapili et al., 2019, p. 1). Churchland (2011) defined spite as behavior knowingly harming or costing the actor while deliberately harming or costing the victim of the spiteful action. My own concept of spite matches Churchland's, and that is reflected in this dissertation.

Yu (2011) endeavored to characterize spite as potentially self-serving, citing the possibility of strategically harming self-interest to cause greater harm to a rival. I do not believe Yu's attempt succeeded. If an action was self-serving, then, by definition, it was not spiteful. Yu appears to have conflated spite with normal costs expected to be associated with many social behaviors. Incurring cost, as I conceptualize cost in defining spite, involves net cost. If coinage is scarce and I make change for somebody who has only a $100 bill and needs quarters for laundromat use, I might charge a fee for providing the service. After the transaction, it would be absurd for me to say that I have incurred expense because I have lost my coins. It is not unusual for ordinary competitive behavior to result in cost to the actor's interests in attempting to reduce the competitiveness of one's rival. That is not spite. If a rival is reduced in competitiveness or position more than I am reduced in competitiveness or position, then my interest is not reduced, and I am not harmed. This is true because, in a competitive arena, one's competitive resources have value, as such, only relative to the competitive resources of one's rival. This is conspicuously the case in the game of chess. If I sacrifice a pawn in capturing a queen and

opening an important center position for my rook to occupy after my next move, it is absurd to say that my move has been costly or harmful to my interest. It could, however, very well be the case that even such seemingly benign, entirely normal competitive behavior involved in the expected development of a competitive process, even with mutual attempts on the part of each rival to reduce one another's competitiveness, could be considered non-prosocial. As conceptualized, benevolutioneering includes normal mutually competitive behaviors among potential candidates for reduction, modification, or elimination through prosocial neuroenhancement interventions. Nevertheless, according to Churchland's (2011) definition of spite, although normal competitive behavior can occasion, foster, and include spiteful behavior, spite is not the same thing as normal competitive behavior. Those constructs are not synonymous.

Although very difficult, it is important to realize that emotional constructs are not stable across cultures or across history (Konstan & Rutter, 2003). Some of the ways important types of feelings and moods are differently grouped from culture to culture and from language to language can prompt new considerations of related emotions in one's own culture and language (Konstan & Rutter, 2003). Consider, in the following characterization of one subculture's conceptualization of a specific term, evidence for the differently nuanced emotional experience of the Stoics, as indicated by their conception of ζηλοτυπία (zēlotupía), to which the English word jealousy traces its etymology (Hacker, 2017), and which Arndt and Gingrich (1979) translated into English as jealousy:

> The Stoics' conception of zēlotupía seems more like malice or spite than jealousy, nastier than envy. Envy arises when another is better off than ourselves, whereas zēlotupía as the Stoics define it, occurs because another person has what we ourselves already possess: we want to be the only one who has it. There is no reference here to the role of a third party, to the alienation of affection, or to losing what is one's own. Stoic zēlotupía is

> rather a variant in the series of competitive emotions that includes envy, rivalousness and even pity. (Konstan, 2003, p. 13)

Competition, Conflict, and Cooperation Reconsidered

Even considering some of the constructs underlying the extremely radical moral enhancement associated with benevolutioneering is unavoidably iconoclastic. As such, it is, understandably, likely to be met with defensiveness. Such consideration requires an unusual measure of heretical openness to reconsider what might appear to us to be profoundly beneficial major features of our lives. These life features might seem inseparable from treasured sources and attributes of survival, meaning, purpose, and pleasure. A de-euphemizing process is necessary to strip away many layers of widely revered decorative camouflage concealing the fundamentally detrimental and ultimately limiting essence of many of the most cherished of our pillars of human society as society changes dramatically enough to render some such pillars harmful vestiges. Many of these life features involve sad little realities that have long been variously construed as individually ugly tiles artistically combined into a mosaic of reality regarded as profoundly beautiful as long as we are careful not to look too closely. Much like politely avoiding viewing the nakedness of an aging person who looks presentable only when dressed up and heavily made up, we are cultured to avoid discussing slaughterhouses while enjoying gourmet beef in formal dining contexts. While enjoying comforts of palatial living, elaborate etiquette insulates from dwelling on broken lives of those by whose abuse such comforts were amassed. Conspicuous among such revered phenomena is competition. Competition, in its various forms and extents, is sacred within the reigning religion of me-firstism. Selfishness per se seems less canonized. Many, but certainly not all, polite people even sometimes condemn selfishness. Their condemnation, although certainly not shared by everyone, at least does not seem overly bizarre or utterly revolting. Competition, though, especially forms

of competition most commonly regarded as friendly, productive and as helping people improve themselves, might be far too sacred, far too foundational to our very schemas of plausibility and systems of making sense of reality, and, sadly, still just necessary enough in society, as it is for the moment, for us to calmly and honestly tolerate suggestions that this widely believed source of all evolutionary progress might end up proven to be a construct we might have to get used to no longer being able to afford. Actually considering such suggestions, honestly and fully, with a completely open mind, is even more to expect. Nevertheless, I invite the reader to dwell with these disturbing possibilities.

Although happiness and the pursuit of happiness are not synonymous (Bstan-'dzin-rgya-mtsho, 2003; Bstan-'dzin-rgya-mtsho & Cutler, 1998; Haidt, 2006; Janes-Brown, 2014; Ricard, 2007), chasing the carrot of materialism might be today's most common *raison d'être*. If lottery prizes, platinum albums, and Super Bowl rings are any indication, actually catching the carrot can be devastating. Can absolute despair follow recognition that, because all carrots are in hand, there is no longer so much as irrational hope of any good feeling? Imagine a person's happiness paradigm constructed as contingent upon a desire, enjoyment, satiety, and satisfaction dynamic that is a compulsive algorithmic function. Within that compulsive algorithmic function, whatever is desirable, enjoyed, satiating, and satisfying cannot ever either equal nor include that which is presently or has been recently experienced, possessed, or attained. Structurally, such a dynamic prohibits enjoyment, satiety, satisfaction, and happiness. Is it possible to construct a model in which such a reliably ineffective happiness paradigm is considered unhealthy? Might it then be conceivable to pursue therapeutic interventions in the same manner that interventions are now sought for such conditions as severe bariatric disorders, Tourette syndrome, obsessive compulsive disorders, and other freedom-robbing conditions? Could such interventions, if

developed, make it less likely for people to experience the profound, even life threatening, ennui which could accompany suddenly obtaining every materialistic carrot, as might be expected with rather sudden onset of societal ubiquity of material, energetic, and chronological resources?

Imagine playing the board game *Monopoly* (Darrow, 2006). Imagine, also, that, throughout the game, each player uses a color printer to print unlimited amounts of the Monopoly play money at will. For many people, life in which everyone enjoys healthy, ageless immortality and resource ubiquity might seem quite like such a game. Much of human culture, especially in the West, is premised upon such arguably antisocial (Kohn, 1986; Ricard, 2015) constructs as zero-sum competition. Beyond leveling humanity's playing field, a future of resource ubiquity would de-reify many of life's competitive and cooperative dimensions. In light of current and future human technological and social developments and their byproducts, is it possible to imagine certain arguably less prosocial constructs, competition and competitiveness, for example, becoming vestigial? Might certain less prosocial constructs, such as competition and competitiveness, even become unacceptable in a world increasingly dependent upon extreme prosociality to prevent the extinction of our species? Arguably, some forms and aspects of constructs such as competition and competitiveness are not presently considered antisocial while other forms of competition and competitiveness already are generally considered antisocial. Some forms and aspects of competition and competitiveness presently considered antisocial might formerly have been regarded as acceptable or even virtuous. According to Puts (2010), that is likely the case with violent competition between human males for sexual access to females. It is imaginable that, if the human situation changes in certain ways, much of what is now identified as acceptable or even virtuous competition and competitiveness might necessarily be considered antisocial. It is possible that, even now, certain constructs are actually inherently

fundamentally antisocial even though many prevailing cultures consider them acceptable and even celebrate them. There might be value in carefully examining constructs such as competition and competitiveness and in exploring how they might be related to schadenfreude (Cikara, Botvinick, & Fiske, 2011; Leach & Spears, 2008). Competition and competitiveness per se might generally involve schadenfreude to one degree or another. What if ultra-resourced immortal humans retain what might today be a scarcity-based and possibly even schadenfreude-driven value system, a largely competitive *raison d'être*, and the requirement that success quite often necessitates another's failure? Some dystopian prophecies might then warrant careful attention. It might well be the case that, because of finite resources, to date, the survival of our species has, in many ways, relied on an ancient, well-honed competition-cooperation dynamic. Soon, though, as mentioned, our species could actually face ubiquity of previously scarce resources. In fact, we already live with ubiquity of many of the most important resources that were dangerously scarce for much of humanity for millennia.

As earlier mentioned, human beings have quite recently become dramatically more interconnected, and intensification of connectivity continues. Connectivity between geographically and politically remote private individuals has become direct and immediate. It is unprecedented and very significant that human beings can and do contact almost any other human beings at will in real time. As infrastructure develops, as interface devices become smaller, more intimate, and, perhaps, ultimately integrated with human nervous systems, human connectivity seems likely to continue increasing and intensifying.

Simultaneously, in terms of common notions of the putative scale of evolutionary time, human society certainly could be confronted with convergence of multiple unprecedented developments. Those developments include resource ubiquity, dramatic enhancement of motor

and cognitive functions, immortality, significantly increased population density, and ultra-connectivity. It is important to at least consider whether the convergence of these unprecedented developments could, for the first time in human history, render the competition-cooperation dynamic undesirable or impractical. Could the competition-cooperation dynamic even become an unsurvivable vestige? Is it possible that it already has?

What kind of person, fully enhanced, ultra-resourced, and immortalized, would represent no cause for concern? How competitive would they be? Although far from established, it is possible to argue that the net effect of a relatively cooperative person might today be adequately beneficial for our species, other species, and our planetary habitat. However, adequate post-enhancement beneficialness might require degrees of prosociality beyond mere cooperation or even beyond altruism in any of its present conceptualizations. Adequate post-enhancement beneficialness might even require novel constructs of beneficialness beyond the continuum of the present construct of sociality. That is why this dissertation explored conceptualizing enhancements likely to result in interpersonal association adequate to facilitate favorable continued existence of our species for, perhaps, centuries into the future. The term benevolutioneering as used herein is intended to represent even such adequate enhancement. I propose that benevolutioneering would render dystopian outcomes significantly less likely.

Benevolutioneering is conceptualized as inherently profoundly eudaemonic and therapeutically effective for alleviating such aspects of the human experience as insatiability, unhappiness, alienation, loneliness, ennui, and despair. As such, might benevolutioneering be desired and sought even by people formerly most averse to many prosocial constructs, people, for example, most decidedly dedicated to philosophies of self-prioritization, such as that of Ayn Rand (Rand, 1957/1996; Ayn Rand Institute, 2020; Rand & Branden, 1964/2005)? Imagine

widespread realization that benevolutioneering results in unrivaled, enduring happiness, intimacy, and joy. This might create very difficult choices for many people. How, though, in popular opinion, would such realizations fair against the incumbent stimulation, excitement, and pleasure associated with ancient, hardwired greed and competition? That question and related questions have been kept in focus throughout this dissertation. This exploration has explored these questions, their implications, and some ideas for addressing what might be widespread ambivalence surrounding these issues.

I am sensitive to the fact that suggesting competitiveness and certain other less prosocial constructs might one day be pathologized and is likely even offensive to some people. I have facilitated this iconoclastic endeavor, in part, by modeling certain recognized pathologies as excesses of universal human characteristics, each manifesting, for each person, somewhere on a continuum between inadequate and excessive. I have herein modeled a number of currently recognized pathologies and explored similarly modeling certain types and aspects of competition and competitiveness and a number of other constructs arguably non-prosocial. There would be value in future thorough investigation of the possibility of a present-day inverse relationship between certain less prosocial constructs and certain prosocial constructs, such as the relationship between competition and altruism. It is worth considering the usefulness of modeling certain less prosocial constructs as inversely related to certain forms or aspects of prosociality.

I propose continuing and expanding efforts to use every reasonable, ethical means to identify neurocorrelates of prosocial and antisocial phenomena. I also propose development of models characterizing, comparing, and contrasting the neurostructures and neurofunctionality of those most notably prosocial and those most notably antisocial. Through such efforts, might we

discover bases for conceptualizing and developing benevolutioneering? I propose exploring, influencing, modifying, or disabling the structural and functional correlates of certain less prosocial characteristics. This would include types and aspects of extreme self-centeredness, competitiveness, schadenfreude, spite, envy, greed, meanness, and outgroup-hatred. Might such exploration help to facilitate fuller development and function of prosociality in human beings who are otherwise neurologically equipped for adequate empathetic, transpersonal, and other consciousness-related functionality? I propose exploring whether it is likely that some measure of prosociality, even benevolence, exists in most people and whether its development and expression vary from person to person. I propose to explore whether certain less prosocial characteristics oppose, eclipse, and limit prosociality. Additionally, I propose to explore influencing, facilitating, enhancing, connecting, multiplying, strengthening, rehabilitating, or, when absent, even inserting or initially establishing the structural and/or functional correlates of certain prosocial characteristics.

To further consider what kind of person, profoundly enhanced, ultra-resourced, and immortalized, would represent no cause for concern, consider again possible champions of prosociality. How much cause for concern would there be in sharing a crowded planet with immortal, enhanced neighbors with characters resembling those of such people as Jesus, Buddha, the14th Dalai Lama, Mother Theresa, or Fred Rogers? Certain human enhancements would endow great power. When we (mis)quote that power corrupts and absolute power corrupts absolutely (Dalberg-Acton, 1887, para. 22), would that apply to such people as Jesus, Buddha, the 14th Dalai Lama, Mother Theresa, or Fred Rogers? Maybe, except a few champion altruists, everyone is competitive or otherwise less prosocial enough to be corrupted by some measure of power. Might we find that power tends to corrupt more prosocial people significantly less than it

does less prosocial people? Might power corrupt highly competitive people differently or to different extents than it corrupts particular exemplars of prosociality? I believe ongoing consideration of examples of such people in search of useful indications of how they related to and were influenced by power, especially in circumstances typically treated as competitive circumstances.

I propose considering that valuing competition, self-promotion in reference to others, is necessarily associated with inherently zero-sum schemas. Zero-sum schemas are premised upon ontological assumptions that are not in evidence. Such ontological assumptions circularly stem from particular inherently axiological a priori.

Among those axiologically generated, unwarranted ontological assumptions are insistence on application of binary templates to aspects of reality not necessarily binary. As discussed in Chapter 4's section Subsumism, in the subsection Subsumic Epistemology, binary preferences stem from unwarranted ontological assumptions associated with the fallacy of ontologically favoring parsimony rather than hygienically curtailing Occam's Razor to its legitimate and extremely practical, fruitful epistemological role. Those ontological assumptions are not in evidence, and they are circularly stemming from particular inherently axiological a priori.

Valuing competition, self-promotion in reference to others, is also necessarily associated with certain ontological assumptions about the nature of the self. I propose that among those assumptions about the self are notions that the self is an entity absolutely distinct and isolated in specific ways from other entities also regarded as absolutely distinct, isolated selves. Such constructs of the nature of the self are unwarranted ontological assumptions circularly stemming from particular inherently axiological a priori. Those constructs regarding the nature of the self

unjustifiably favor the perspectives of certain human cultures above the perspectives of other human cultures.

Valuing and preferring competition involves valuing one's own perspective more than the perspectives of one's opponents. If that was not true, then, as a competitor, one would not prefer one's own victory over one's opponent's victory. Valuing competition is a preference for trying to assert the validity and or value of one's own perspective and interests to the extent that one denies or seeks to reduce the validity and or value of another's perspective and interests. Competition necessarily devalues another's perspective and interest to the extent that one values one's own perspective and interest in the outcome of the contest. Within subsumism, this is absurd in a way not entirely dissimilar to the absurdity, within conventional Western mathematics, of attempting to divide by zero. The outcome is undefined. There is, essentially, no outcome because there is no way to execute the operation.

Please consider, as relative valuations, the amount that I value my own perspective and interests compared to the amount that I value your perspective and interests or anyone else's perspective and interests. Although probably impossible to precisely unitize, such valuations can be ranked. Such ranking might even reflect, somewhat, Singer's (2011) popular construct of expanding circles of moral concern. For my valuation of anyone's perspective and interests, there exists a ratio of my valuation of my own perspective and interests to my valuation of that other's perspective and interests. For any construct I treat as a binary construct, such as my desired outcome in a chess match, my valuation of my opponent's perspective and interests is zero. My valuation of my own perspective and interests is 100% of the valuation with which I value the entire construct. The ratio of my valuation of my own perspective and interests to my

valuation of an opponent's perspective and interests is, therefore, 1/0, an indefinable notion, an absurdity (Cajori, 1929). This, of course, extends far beyond chess.

	Subsumism	Selfishness (zero sum)	
$\frac{p_m \text{ (=my perspective \& interests)}}{p_o \text{ (=others' perspectives \& interests)}}$	$\frac{100}{100}$	$\frac{100}{0}$	(undefined: division by zero)

It might be argued, though, that many people besides subsumists, are not always functioning entirely within zero-sum axiologies. Consequently, the ratios of valuing one's own perspective and interests to valuing others' perspectives and interests might be better represented as follows. Again, p_o = others' perspectives & interests; p_m = my perspective and interests.

	Subsumism	zero sum	Typical, somewhat less antisocial liberalism (oversimplified)
$\frac{p_m}{p_o}$	$\frac{100}{100}$	$\frac{100}{0}$	$\frac{p_m}{p_o}$ where $0 < p_o < p_m < 100$

Typical, somewhat less antisocial liberalism, however, inaccurately oversimplified by being portrayed as a consistent trait even though people represented by this category alternate between putative liberality and zero-sum axiology modes, characteristically ineffectually cobbling together positions that attempt to combine liberalism with zero-sum modes. The function is the sum of those times one in this category spends in zero-sum axiology modes ($p_m / p_o = 100/0$) and time spent in $0 < p_o < p_m < 100$ mode. The resulting sum would, of course, be undefined and thus absurd because it attempts addition of defined addends to undefined addends.

	Subsumism	zero sum	Typical, somewhat less antisocial liberalism (with proposed correction)
$\frac{p_m}{p_o}$	$\frac{100}{100}$	$\frac{100}{0}$	$\frac{p_m}{p_o}$ (where $0 < p_o < p_m < 100$) + $\frac{p_m}{p_o}$ (where: $p_m = 100$; $p_o = 0$)

I see competition and cooperation in one sense as two sides of the same coin. In another sense, I view them as dialectically related, each taking its turn as thesis and antithesis, with layers of associated societal synthesis. In still another sense, I see them as functioning complementarily/symbiotically in the ingroup-outgroup dynamic: Intergroup competition

fostering intragroup cooperation, and, as some research seems to suggest, intragroup cooperation/prosociality fostering intergroup competition/antisocialty. I believe this model is a/the major playbook. I want to propose that, although (a) this is reasonably accurately descriptive, (b) this is not the only possible paradigm, (c) that this is not the best paradigm, (d) that this paradigm is hurting humanity now, (e) that this paradigm is likely to prove untenable when/if the transhumanist vision/agenda for immortality and resource ubiquity is realized, and (f) this paradigm can and should be succeeded by a superior construct that is more rational, more effective, reduces suffering in ways the transhumanist agenda could not do without such a new construct. I want to begin laying the theoretical groundwork for such a candidate construct to succeed the competition/cooperation ingroup-outgroup construct.

Competition, Aggression, and Violence

Nelson and Trainor (2007) defined aggression as an "umbrella term for behaviours that are intended to inflict harm" (p. 536) and characterized such behaviors as "adaptations to deal with competition" (p. 536).

As Wang et al. (2019) modeled schadenfreude, within schadenfreude's core lies dehumanization. Also, the model of schadenfreude proposed by Wang et al. (2019) developed a tripartite taxonomy of aggression, rivalry, and justice. I propose that dehumanization, certain kinds of aggression, rivalry, schadenfreude, and certain currently important notions of justice are interconnected social adaptations long overdue for prosocial update. The model of benevolutioneering developed in this dissertation involves targeting all five.

Rivalry

Rivalry has been defined as "two or more striving to reach or obtain something that only one can possess" (Merriam-Webster, n.d.-h), as "striving for competitive advantage" (Merriam-

Webster, n.d.-h), and as “the act of rivaling; the state of being a rival; competition” (Merriam-Webster, n.d.-h). Rivalry, as often used, conveys a sense of a long-standing or repetitive competitive relationship. I think of rivalry as a kind of longitudinal competition or competitiveness. Sometimes two high school football teams are described as rivals. One usage of the word has been to describe two men who would each like to have a romantic relationship with a woman they have each dated. Persons with a longstanding, unsettled territorial dispute regarding a fence-line are sometimes described as rivals. Rivalry implies that competition is protracted or has extended beyond a single match or incident of conflict. I suspect that there might be some sort of functional neurocorrelates associated with rivalry that could be distinguished from the functional neurocorrelates of competition. Perhaps rivalry could be conceptualized as compound competition. As already stated above, rivalry would be among benevolutioneering’s mitigation targets.

Dichotomous Thinking

“Dichotomous thinking is a propensity for individuals to understand events as opposites, in a binary way” (Bonfá-Araujo et al., 2021, p. 1). Bonfá-Araujo et al. (2021) reported that they had been able to “clarify that the dichotomous way of understanding events occurs, in general, in the presence of maladaptive traits of personality” (p. 1), correlating significantly with such constructs as narcissism, personality disorders including borderline personality disorder, eating disorders, aggression, the Dark Triad traits and the tendency to devalue others (Bonfá-Araujo et al., 2021).

> Dichotomizing and hierarchizing facts simplifies the processes involved when an individual has to choose, generating less anxiety (Grenier, Barrette, & Ladouceur, 2005). Reactions to uncertain phenomena involve at least one of three distinct processes. In [sic] first place, in face of a dubious situation, individuals will tend to form a simplified, binary representation of events (e.g., it is “bad” or “good”), which is the cognitive

> reaction. Second, individuals will likely experience discomfort and anxiety (e.g., "feeling apprehension"), which is the emotional component. Lastly, after a given individual has formed a dichotomized representation of the event and an emotional reaction has been elicited, avoidance and flight behaviors can occur (e.g., escaping from the situation), the behavioral response (Bhushan & Amal, 1986; Grenier et al., 2005). It is worth mentioning that all of these cognitive, emotional, and behavioral responses might vary in intensity across individuals. (Bonfá-Araujo et al., 2021, p. 2)

Bonfá-Araujo et al. (2021) reported that people who adopt the cognitive style of dichotomizing "tend to be hostile, antagonistic, rigid, and have conflicting interpersonal relationships" (p. 10) and that "the binary worldview is a common feature to socially undesirable traits" (p. 5).

In terms of sociality and personality models, dichotomous thinking tends to correspond with antisocial tendencies and low Honesty–Humility (Mieda & Oshio, 2021). Mieda and Oshio (2021) found that dichotomous thinking is negatively associated with cognitive ability and educational attainment and positively associated with thinking in terms of profit-and-loss. Dichotomous thinking is a common tendency that affects, to one extent another, every member of the human species.

The dichotomous thinking which affects everyone, to varying extents, is accompanied, to varying extents, by the antisocial tendencies associated with dichotomous thinking. There is room for every person to improve by reducing their reliance on dichotomous thinking in personally modeling reality and in their participation in collectively modeling reality. Dichotomous thinking can be thought of in connection with human beings' general tendency to create oversimplified models and thereby misrepresent reality in ways that allow unjustified notions of mastery or near mastery of nature, of reality. Humanity's reluctance to adequately appreciate reality's staggering complexity reflects our species' general lack of intellectual

humility. Intellectual humility is a trait that benevolutioneering, as herein conceptualized, seeks to enhance.

Some within the transhumanist community believe that among needed expansions of the prevailing order of things is the overdue abandonment of various dualistic models, dichotomous models, including the sharp distinction between the human organism and certain technologies and between material and cyber ontology (Skordili, 2013). Those dichotomies might dissipate spontaneously as people accept more and more embedded technologies into their bodies and just get used to the idea over time. There are, however, dichotomies and dichotomous ways of thinking that perpetuate and deepen antisociality and, with antisociality, the unnecessary suffering it causes and the existential risks humanity is now facing. Prominent among those dichotomies are the self-other dichotomy and the ingroup-outgroup dichotomy.

Self-Other Dichotomy and the Self-Other Distinction

Within this discussion, I distinguish the self-other dichotomy from the self-other distinction. The self-other distinction is herein conceptualized as the necessary, practical ability to discriminate between what constitutes, bodily, oneself from that which constitutes nonself, including the bodies of other persons, and the ability to "discriminate between what originates from ourselves and what originates from others" (Quesque & Brass, 2019, p. 943). Subsumic thought neither denies the importance of functioning practically in the everyday world nor denies the existence of the regular environment of matter and time and practical living. Rather, subsumic thought subsumes the regular world, one's own perspective, the perspectives of all other sentient beings, and broader ontological possibilities beyond the reach of human senses and comprehension. We must each, for very good reasons, know where our own body starts and stops and where others' bodies start and stop. Without these important distinctions, it would be

impossible to extend appropriate respect and consideration to one another. Prosociality would not be possible without the practical aspects of accurate self-other distinctions.

Within this discussion, the self-other dichotomy is regarded as a nonprosocial phenomenon. The self-other dichotomy is conceptualized as a divisive, oppositional, competitive taxonomy with a net negative influence on human sociality. Spiritual traditions promoting oneness with all people consider the self-other dichotomy, as conceptualized herein, a dichotomy humanity would benefit from eliminating or at least substantially reducing. The self-other dichotomy makes various exceptions for oneself which are not extended to others. The self-other dichotomy incorporates an epistemology within which the perspectives, values and wellbeing of others are regarded as less valid and less important than one's own perspective, values, and wellbeing or even as invalid and unimportant.

I suspect the existence of distinctly identifiable although overlapping and very complexly intertwined structural and functional neurocorrelates of each of these phenomena, which I refer to herein as the self-other dichotomy and the self-other distinction. The search for neurocorrelates of each probably necessarily involves searching for both, but discovering and untangling structural and functional neurocorrelates of the two phenomena might actually empirically support the distinction between them as more than merely conceptual. "What then might be the neuronal substrate of the self–other distinction? It is unknown whether the self–other distinction is underpinned by a unitary or distinct mechanism across cognitive, affective, and motor domains (Lamm et al. 2015)" (Isoda, 2021, p. 298). Although, "the neuronal substrate for distinctly encoding aspects of self and other" (Isoda, 2021, p. 299) is still unclear, there are indications of some brain regions likely involved in conceptualizing self and conceptualizing others:

> Cognitive requirements of the self–other distinction, as well as its consistent activation during other-mentalizing, raise the possibility that the MPFC [medial prefrontal cortex] is equipped with neural machinery capable of separating observed aspects of others from those of oneself. Such separation at the neural level helps to avoid self–other confusion, to see the world from others' perspectives (often by inhibiting prepotent self-perspectives), and to better predict others' future behavior. Lower levels of this ability to distinguish between the self and others, in both cognitive and neural terms, may be associated with the difficulties that children with ASD [autism spectrum disorders] have performing false-belief tasks compared to those without ASD. (Isoda, 2021, p. 298)

Beyond conceptualizing self-other distinctions and the self-other dichotomy, one's behavior with reference to others appears likely to also involve the medial prefrontal cortex:

> The medial prefrontal cortex (MPFC) plays a critical role in coordinating one's own behavior with respect to that of others. Current literature demonstrates that single neurons in the MPFC encode behavior-related variables such as intentions, actions, and rewards, specifically for self and other, and that the MPFC comes into play when reflecting upon oneself and others. The social moderator account of MPFC function can explain maladaptive social cognition in people with autism spectrum disorder, which tips the balance in favor of self-centered perspectives rather than taking into consideration the perspective of others. (Isoda, 2021, p. 295)

Ingroup-Outgroup Dichotomy

The ingroup-outgroup dichotomy is conceptualized herein as a phenomenon, importantly related to the self-other dichotomy, involving a potentially dynamic association of certain people with one's construct of oneself. The ingroup-outgroup dichotomy is conceptualized as an often divisive, oppositional, competitive, tribalistic taxonomy with a net negative influence on human sociality. In spiritual traditions promoting oneness with all people, the ingroup-outgroup dichotomy, as conceptualized herein, is another frequently nonprosocial dichotomy humanity would benefit from eliminating by expansion of each person's ingroup to include all persons or even all sentient beings. Typically functioning, the self-other dichotomy makes multiple exceptions for oneself that are not extended to others. The self-other dichotomy incorporates an epistemology within which the perspectives, values, and wellbeing of people outside one's

ingroup are regarded as less valid and less important or even as invalid and unimportant than the perspectives, values, and wellbeing of those within one's ingroup.

The ingroup-outgroup dichotomy complicates the use of intranasally applied oxytocin to increase prosocial phenomena and behavior within humanity. Oxytocin tends to foster ingroup prosociality and outgroup antisociality (Churchland, 2011; De Dreu, 2012; De Dreu et al., 2014; De Dreu et al., 2015).

Human characteristics, heritage, and affiliations, even affiliations associated with philosophies and religions stemming from exemplars of profound prosociality, are conscripted and distorted to advance tribalism, racism, nationalism, and all other flavors of bigotry. This is true also of science, history, economics, jurisprudence, education, medicine, art, parenting, etiquette, and most every other human pursuit. Structural vestiges of ancient psychological and sociological immune systems are deeply, fractally systemic. Our efforts to move beyond tribal rancor are going to require much more than social and legal Band-Aids. Based as it is upon subsumic philosophy, benevolutioneering considers tribalism and numerous other primitive but no longer sustainable nonprosocial character structures as grave, species-wide neurological and neurogenetic pathologies for which we must develop effective therapeutic interventions. Well-entrenched power structures are unlikely to welcome such prosocial change.

> The discovery that the quantum realm is both a subjective and an objective reality opens new possibilities in critiquing the Newtonian-Cartesian-Darwinian belief that organizations ought to be governed by competition and self-interest. Rather, quantum physics shows us that the universe is made of both properties of waves and properties of particles, that is, a sense of inexplicable wholeness and connectedness that is governed through entanglement, potentiality, and indeterminism. A quantum perspective therefore enables us to radically reframe our understanding of reality through eliminating dichotomies. Because [the] quantum [perspective] relies on our direct-intuitive experience, our personal experiences and practices become central to this shift in awareness. The result of this increase in awareness is to critique how our actions impact on others and on the world… (Pavlovich, 2020, para. 2)

Social Dichotomies as Immune System Componentry

Systems theory's principle of fractal repetition of structural and functional patterns implicit in a system at each level of organization is an important principle of subsumic thought. Many examples of this valuable fractal epistemology can be recognized in comparing multiple levels of human organization. Employing that thinking mode, it is useful to compare the immune system at the level of the individual human specimen to immune system-like analogous functions at various levels of society. The self-other dichotomy cooperates with the body's immune system to effect certain protective functions in shielding the body from disease. This mechanism might be apparent in such phenomena as the disgust likely evoked in seeing a person in a restaurant going to a stranger's place setting and using the stranger's spoon to sample the stranger's soup while the stranger is away from the table using the restroom. That is clearly an extension of the notion of the self-other dichotomy. It is not hard to conceptualize various manifestations of the ingroup-outgroup dichotomy as similarly functioning within an analogous family immune system or cultural immune system or religious group immune system. Within a competitive model, it is conceivable that some of the effectively antisocial and even normally nonprosocial aspects of the ingroup-outgroup dichotomy, facilitated and amplified by oxytocin's effects, could be viewed as analogous to autoimmune disorders and severe allergies as those conditions exist as dysfunctions of the specimen-level immune system. In such a comparison, oxytocin could be viewed as analogously playing some of the roles in nonprosocial ingroup-outgroup dichotomy dysfunctionality as the roles histamine and cytokines analogously play as analogues when the specimen-level immune system dysfunctions in anaphylaxis and profound inflammatory cytokine storms. Systems thinking, in facilitating modeling analogously, in this case with regard to the immune system, affords us potential tools. In this case, we might explore the pathology

models and therapeutic approaches proven effective within immunology and then model analogous approaches at various population group levels.

Personality, Character, Temperament, and Sociality

If personality psychology was extremely precise and involved thousands of continua, then it would be a much more powerful tool for analyzing personalities in terms of sociality. Ultimately, it might be useful to develop finer-toothed taxonomies of personality. The Big Five traits are not all simply a seesaw of the logically necessarily inseparably bundled upsides with their accompanying downsides of clustered human characteristics.

> There is more to personality than what can be captured by the B5 [Big 5 Personality Traits] and that broadening the domain of personality beyond the B5 can improve the prediction of important outcomes, such as perceived stress. Narcissism is a unique trait and studying its connection with MT [Mental Toughness] may be the key to moving forward from a dichotomous way of perceiving personality traits, as beneficial or malevolent, to focusing on a dynamic continuum of personality. (Papageorgiou et al., 2019, p. 1250)

The Big Five model might generally seem to serve as quite descriptively accurate in 2021. That does not, however, limit future remixes of what are now very nearly always conjoined desirable and undesirable human traits. This section offers a very rough, possible general configuration of prosocial personality in terms of the Big Five personality traits, wide open for debate and within which infinite diversity of personality would be quite feasible.

Prosociality and the Big Five

DeYoung et al. (2010) investigated and found support for correspondence between the neuroscience of personality and the Big Five personality theory, including, for this exploration's purpose, the component of agreeableness, which has been associated with traits most associated with prosociality (DeYoung, 2015; DeYoung et al., 2016). Important for species-wide applicability of implications, Gurven et al. (2013) demonstrated cross-cultural applicability of

the Big Five. The findings of DeYoung et al. (2010) lend strong support to biological basis for the Big Five.

Following, in terms of each of the traits associated with the Big Five model of personality, is a very general characterization of personalities that tend to be prosocial.

Openness

Being relatively high in openness while still respecting and appreciating culture and tradition has been associated with prosociality (Lawn et al., 2021).

Conscientiousness

Being relatively high in conscientiousness, but dynamic enough for beneficial spontaneity, has been associated with prosociality. According to Rossberger (2014), conscientiousness refers to the degree to which a person is achievement oriented, dutiful, gives importance to planning and is persistent. The study conducted by Afolabi (2013) revealed that the factor conscientiousness [$r|198| = .633$; $p < .01$] had a significant relationship with prosocial behavior. Pursell et al. (2008) revealed that conscientiousness has a probable relationship with prosocial behavior during adolescence. Shiner et al. (2003) showed that conscientiousness in children 8–12 years of age corresponded with success in adult life 20 years later.

Extraversion

Extraversion is more likely associated with prosocial behavior (Trishala, 2021). Better, though, than consistently manifesting extraversion-related traits, is the ability to be dynamic in terms of extraversion-related traits. It is best to be capable of matching various contexts. It is important not to be dominating others as some high in extraversion tend to do. It is, of course, more prosocial to not always be avoiding others.

Agreeableness

Prosociality is associated with being very high in agreeableness, but with excellent capacity to be caringly honest in sharing one's own perspective without disparaging another's perspective. It is not gullible, though, and it is able to discern deception and disregard. As modeled by Caprara et al. (2012), agreeableness is at the foundation of prosociality.

Agreeableness is more likely associated with prosocial behavior (Trishala, 2021). As mentioned earlier, dichotomous thinking tends to correspond with antisocial tendencies associated with low agreeableness (Mieda & Oshio, 2021). According to Schoormans et al. (2018), who explored relationships between leukocyte telomere length and Big Five personality traits, low agreeableness was associated with shorter leukocyte telomere length, which is an indication of cellular aging, one of many components involved in a sort of countdown to senescence.

Neuroticism

A negative association between neuroticism and prosociality has been repeatedly demonstrated (Guo et al., 2018, p. 55). Neuroticism is consistently associated with lower levels of relationship satisfaction (Watson, 2001). Schoormans et al. (2018) explored relationships between leukocyte telomere length and Big Five personality traits. According to Schoormans et al. (2018), high neuroticism was associated with shorter leukocyte telomere length.

The HEXACO Model's Honesty-Humility Factor

A significant model, similar to the Big Five (Lee & Ashton, 2012; Lee et al., 2008; Trishala, 2021), is the six-factor HEXACO model (Ashton & Lee, 2008). HEXACO's sixth factor, honesty-humility, represents the tendency to be modest and fair (Lee & Ashton, 2012; Lee et al., 2008; Trishala, 2021). This factor, honesty-humility, is a tendency towards altruism

and a tendency to cooperate with others, even though it can also involve some vulnerability to being exploited (Hilbig et al., 2013). As mentioned earlier, dichotomous thinking tends to correspond with antisocial tendencies associated with low honesty–humility (Mieda & Oshio, 2021). The HEXACO honesty-humility factor would be a valuable trait for amplification as a component of benevolutionary enhancement.

Prosocial Personality Inventory

Gouveia et al. (2021) "aimed to develop the Prosocial Personality Inventory (PSPI+), gathering evidence of its validity (content, factorial and criterion) and reliability" (p. 1474). This proposed instrument so far involves three factors: altruism, forgiveness, and gratitude. This study is claimed to have confirmed three hypotheses: (1) that some of what were labeled its bright traits correlated positively with agreeableness, (2) that some of its bright traits negatively correlated with the dark triad traits which are discussed briefly next, Machiavellianism, narcissism, and psychopathy, and (3) that "people scoring higher in bright traits show more prosocial behaviors" (Gouveia et al., 2021, p. 1474).

Gouveia et al. (2021) was a minor project considering only relatively monocultural convenience samples of undergraduate students. To its credit, this study was candid about its serious limitations. It is worth watching for additional validation of the Prosocial Personality Inventory, but, for now, it is really still under development, so further consideration in this dissertation is not warranted.

The Dark Triad of Personality Traits: Narcissism, Machiavellianism, and Psychopathy

Three probably partly heritable (Koehn et al., 2019; Vernon et al., 2008) antisocial traits, narcissism, Machiavellianism, and psychopathy (Koehn et al., 2019; Paulhus & Williams, 2002) have been clustered to represent a personality type tending to be characterized as lacking

compassion, disagreeable, non-empathetic, dissatisfied with life, and unlikely to believe in goodness in themselves or in others (Kaufman et al., 2019). Illustrating the axiological disparity between some of modern human society's regular expectations and the profoundly benevolent prosociality associated with benevolutioneering as conceptualized herein, even though narcissism, Machiavellianism and psychopathy, "have been traditionally considered negative, …a growing body of literature is emerging that argues that despite the costs, [Dark Triad] individuals…[successfully obtain] what they want…via an exploitive…social style" (Jonason et al., 2010, p. 116). In other words, behaviors characteristic of the Dark Triad make people more competitive (James et al., 2014; Jonason et al., 2010). Movement toward acceptance and normalization of archetypically antisocial traits is important to recognize and evaluate in terms societal trajectories. Could humanity's present era likely afford the leeway for human cultures to trend toward more immediately exploitative, antisocial, individualistic functioning? Can our species afford, in the aggregate, increases in behaviors associated with antisociality? Modern culture's high esteem for competitiveness can make it difficult to discount strategies, styles, approaches or even personality disorders if there is any increase in effective competitiveness, even if such disorders are blatantly antisocial (Kohn, 1986).

> Many of the behaviors characteristic of the Dark Triad are similar to those preceding schadenfreude. For example, a lack of empathy or callousness (Jonason, Lyons, Bethell, & Ross, 2013), competitiveness (Jonason, Li, & Teicher, 2010), and a tendency to dislike others (Rauthmann, 2012). Lack of empathy is shared by all three aspects of the Dark Triad and provides a strong conceptual link between these dark personalities and the experience of schadenfreude (Porter et al., 2014; Wai & Tiliopoulos, 2012). There are two possible emotional reactions in the face of another's misfortune; a negative emotional reaction presented as sympathy, or a positive emotional reaction depicting schadenfreude (Heider, 1958). Therefore, someone who lacks empathy would be more likely to experience some degree of pleasure – or schadenfreude. (James et al., 2014, p. 211)

Consideration of the Dark Triad is useful both in conceptualizing benevolutioneering and in seeking to discern humanity's current sociality and axiology.

Conceptual Hints and Proofs of Concept

In the introductory chapter, I mentioned a man, who, after a stroke, became pathologically generous (Ferreira-Garcia et al., 2014; Kean, 2015). Although strokes are unintentional, indiscriminate tragedies, occasionally, the residual effects of a stroke or other type of brain injury include changes in sociality that could be considered beneficial. Significant moral enhancement resulting from a stroke is incredibly improbable. Nevertheless, the fact that it has occurred establishes that it is possible, albeit extremely improbable, for a stroke to inadvertently bring about desirable change. This makes it possible to conceive of using ultra-precise nanotechnological interventions to intentionally and extremely precisely bring about only desired changes exactly to desired extents. Because it is possible to conceive of developing a procedure to precisely enhance generosity to exactly a desirable extent, it is also possible to conceive of simultaneously developing thousands or even millions of additional procedures, each enhancing, to exactly a desired extent, an extremely precise aspect of a particular prosocial, even benevolent, characteristic, as long as that characteristic is associated with actual physical structures and functions. Conceptualizing benevolutioneering, attempting to imagine purposeful development of even remotely plausible technological means of allowing humanity to become profoundly more prosocial, even radically benevolent, is facilitated by certain knowns, which are conceptual hints, proofs of concept, even already successfully developed and implemented prosociality-increasing interventions. An important aspect of conceptualizing and exploring the possibility of benevolutioneering has involved researching and brainstorming conceptual notions and potential componentry of even remotely plausible neuropsychological, psychophysiological, endocrinological, neurogenetic, and other approaches to enhancing prosociality. In addition to a generosity-increasing cerebral vascular accident, conceptual hints and proofs of concept considered in this exploration include human functions and roles in which humans behave more

prosocially than in other modes, individual human beings who typify and exemplify contrasting types and extents of sociality, prosociality-increasing peak experiences and spiritual practices, sociality-impacting genetic disorders, and closely related species with significantly contrasting sociality-related traits, such as chimpanzees and closely related bonobos and wolves and closely-related domestic dogs, discussed later in this chapter. Exploring, for each of these conceptually significant opportunities, significant structural or functional, anatomical or physiological characteristics underlying remarkable aspects of sociality, could offer clues in the search for possible prosociality-enhancing interventions.

Maternal Prosociality

Pfaff (2015) modeled maternal love as the basis and origin of altruistic behavior and theorized that multiple prosocial aspects of maternal behavior that are beneficially generalizable to all others rather than just to a mother's offspring are selected for because such traits enhance survival fitness. Offering empirical evidence that maternal behavior is, indeed, generalizable to others rather than just to a mother's offspring, Hayashi et al. (2018) demonstrated that "mothers' emotion regulatory processes may differ from those of non-mothers in response, not only to a child's crying but also to expressions of emotions by others" (p. 1).

Usefully, in their imaging studies searching for neural bases of maternal behavior and maternal love, Kikuchi and Noriuchi (2015), based on their assumption that maternal love for an infant is very consistent across nearly every situation, observed that there are a limited number of maternal brain areas associated with loving maternal behavior. They observed involvement of the orbitofrontal cortex, striatum, anterior insula, and periaqueductal gray, likely indicating mediation of loving maternal behavior toward an infant involves concerted function of the interoceptive information processing system of the insula, the periaqueductal gray, and the

orbitofrontal cortex, and the dopamine reward system of the orbitofrontal cortex and striatum. In mothers viewing their infants in distress, Kikuchi and Noriuchi (2015) observed "significant activation in the dorsal OFC [orbitofrontal cortex], dorsolateral prefrontal cortex, ventrolateral prefrontal cortex, dorsomedial prefrontal cortex, dorsal anterior cingulate cortex, posterior cingulate cortex, caudate nucleus, supplementary motor area, and posterior superior temporal sulcus/temporoparietal junction" (p. 1). Kikuchi and Noriuchi (2015) proposed a "schematic model of maternal love" (p. 3) which, as mentioned previously, included the orbitofrontal cortex and the striatum in the "dopamine reward system that mediates reward evaluations for the mother's own infant and promotes maternal motivation for caretaking" (p. 3) and included the orbitofrontal cortex, insula and periaqueductal gray in the interoceptive information processing system which they associated with "homeostatic emotions" (p. 3), self-regulation ability relevant emotions functioning homeostatically. In their model, a "mother's brain is thought to be activated in such a way that the OFC [orbitofrontal cortex] integrates the reward and interoceptive processing systems, with the integration of these two systems serving to motivate maternal behavior" (p. 3).

Extending Pfaff's (2015) notion of mothers as providing the original seeds of prosociality, motherhood, maternal behavior, can also serve as a template of multiple aspects of prosociality, even benevolence. Mothers can serve as exemplars in seeking sources of characterizable structural and functional neurocorrelates, endocrinological conditions, etc. for benevolutioneering's endeavor to reverse engineer various components of benevolent prosociality. Fortunately, there are many other types of exemplars, perhaps few as well studied, so far, as maternal prosociality, but each potentially valuable for further study and for use in

developing models of the various underlying physical conditions, the correlates, likely to be involved in reverse-engineering prosociality.

Exemplars

Conceptualizing and exploring the possibility of developing benevolutioneering involves proposing multiple strategies for conceptualizing and then developing prosociality-increasing therapeutic interventions. Means of conceptualizing and developing interventions are modeled to include identifying exemplars of profoundly benevolent prosociality then reverse engineering componentry, including structural and functional physiological correlates, of such prosociality.

Exemplars of Prosociality

Exemplars of various sociality-related traits and subtraits could include human and nonhuman individuals and types. Exemplars of profoundly benevolent prosociality could include individuals who, throughout their entire lives, have manifested unusually benevolent character and behavior compared with conspecifics.

Exemplars would not have to be omnibus exemplars. A person might be someone who invariably tells the truth but who tends to use violence and intimidation. That person could valuably serve as an exemplar of honesty. Another person might be particularly generous, but they are unusually dishonest. A third person might be very merciful and forgiving, but they are a free-rider. In each case both the desirable traits and the undesirable traits might serve as useful components of potential mosaics of prosociality worth reverse engineering. In fact, even the most profoundly prosocial, benevolent exemplars would have traits that would not be helpfully reverse engineered but that also should be enhanced in that person as a part of their own benevolutioneering interventions.

Exemplars of profoundly benevolent prosociality could also include individuals who experienced various types of transformation, either gradual or sudden, from earlier unremarkable sociality or even earlier antisociality to outlier conditions of unusually benevolent character and behavior. Such exemplars' character and behavioral transformation could include accidental, trauma-related, or spontaneous cases of profoundly increased prosociality as well as cases in which individuals have experienced transformation through peak experiences, religious conversion, some form of rehabilitation, crises, mental or spiritual disciplines, personal choice to change their own character followed successfully by sheer will power, altered values, altered motivations, altered executive functioning, and many other modalities of change.

There are, however, certain human beings who seem particularly prosocial, particularly benevolent. Some are currently living, others are historic. There are also archetypical figures whose characters have developed over the many generations of consideration within oral tradition. Each type offers valuable insight for benevolutioneering's endeavor to conceptualize the range of profoundly benevolent personhood. And, in every era, there are people in most communities who are just known for being the kindest, most loving, most decent, most generous, most honest, most life affirming, most benevolent people their acquaintances have ever met. It is worth asking what traits and combinations of traits characterize such people. How are they similar to one another? How do they differ from one another? It is worth identifying thousands of such exemplars of prosociality. Benevolutioneering is conceptualized as exploring their characteristics, behaviors, philosophies, beliefs, families, cultures, schemas, backgrounds, lifestyles, ideas, personalities, temperaments, affiliations, pathologies, phenomenology, relationships, societal impact, etc. Common elements are to be identified that might distinguish these people from antisocial individuals, asocial individuals, and from the general population.

The structural and functional neurocorrelates of their prosociality are to be catalogued. Their genomes should be fully mapped. All acquired data is to be compared and contrasted with that of general population controls, with antisocial exemplars, and with asocial exemplars. Such extensive explorations are beyond the scope of this dissertation.

One small group of people demonstrates unusual prosociality and would be valuably characterized as exemplars of unselfish generosity: anonymous organ donors (Bramstedt & Down, 2011) who donate an organ for a stranger, especially kidney donors. Living donor kidney transplantation is not without risk and great permanent personal sacrifice (Mazaris & Papalois, 2006). These people would be valuably studied as exemplars. It is important to explore and carefully characterize the motivations for their donations.

Exemplars of Antisociality

As with exemplars of prosociality, benevolutioneering would seek exemplars of antisociality. In seeking to characterize conceptual targets for enhancement of sociality, benevolutioneering would involve identifying characteristics for reduction and mitigation and then identifying the physical correlates of those characteristics. There are, of course, archetypes of antisociality, evil, cruelty, and selfishness. There are also sociopaths and psychopaths. Although there is certainly some overlap, this exemplary antisocial group could include serial killers, rapists, child molesters, murders, even notorious pension-fund raiders.

Benevolutioneering research involves investigating what traits and combinations of traits characterize such people. How are they similar to one another? How do they differ from one another? It is worth identifying thousands of such exemplars of antisociality. Benevolutioneering is conceptualized as exploring their characteristics, behaviors, philosophies, beliefs, families, cultures, schemas, backgrounds, lifestyles, ideas, personalities, temperaments, affiliations,

pathologies, phenomenology, relationships, societal impact, etc. Common elements are to be identified that might distinguish these people from profoundly prosocial individuals, asocial individuals, and from the general population. The structural and functional neurocorrelates of their sociality should be catalogued. Their genomes should be fully mapped. All acquired data is to be compared and contrasted with that of general population controls, with prosocial exemplars, and with asocial exemplars. These extensive explorations are also beyond the scope of this dissertation.

Exemplars of Asociality

When thinking about asociality, perhaps the autism spectrum comes to mind. Hermits and monastics might also be described as asocial. Asociality is defined by Kaiser et al. (2017) as "withdrawal from social contact that derives from indifference or lack of desire to have social contact" (p. 2). People who are introverts could be described as relatively asocial. Some asociality could involve lacking theory of mind, perspective-taking, or empathy. Some asociality might even be accompanied by excessive empathy. Benevolutioneering would not be modeled to transform introverts into extroverts, nor would monastics be transformed in ways that interfered with a cloistered lifestyle. Monastics are generally not harming society by their typically austere, communal, isolated lifestyles. Many monastics are dedicated to increasing compassion and charity, and some are in almost continual prayer or meditation for increasing peace and love throughout the world.

Asociality that would be considered for reduction or mitigation within a benevolutioneering program would be asociality that is distressing or that stems from a distressing condition such as avoidant personality disorder, trauma, depression, or schizophrenia.

Asociality associated with the autism spectrum is a complicated matter. Not everyone on the autism spectrum would necessarily benefit by reduced asociality. Some would, though, because they are distressed by aspects of their asociality. Some people who are on the autism spectrum find great satisfaction from isolation, produce volumes of valuably contributing work, and are generally distressing nobody. Our species would not be improved by reducing the richness of the variety of different personalities and temperaments.

For types of asociality that are distressing for the asocial person or for other people, there would be value in identifying and studying exemplars as with exemplars of prosociality and antisociality.

Progress Through Improved Nutrition

The moral and ethical dimensions of human experience have a long and complex relationship with nutritional concerns (Coveney, 2006). The biblical aphorism, "Give me neither poverty nor riches; Feed me with the food that is my portion, So that…I will not become impoverished and steal" (*New American Standard Bible*, 1960/2020, Proverbs 30:8–9), reflects the reality that adherence to certain of society's moral strictures can be influenced by hunger. Hunger sets the stage in Hugo's (1862/2013) *Les Misérables*. The novel opens with peasant Jean Valjean's release from prison after serving 5 years for stealing bread to keep his sister and her family from starving and 14 more years for multiple escape attempts.

Adequate nutrition is important for neurocognitive development (Cohen Kadosh et al., 2021). According to Gibbs (2003) a significant share of "antisocial behaviour stems in part from moral perception based on developmentally delayed morality" (p. 135), and individuals who violate the law commonly display developmentally delayed moral judgment, cognitive distortions and impaired social skill sets (Gibbs, 2003). Gibbs (2003) characterized illegal

behavior as impelled by "cognitive distortions…generated by the development of schema reflecting the individual's moral stage" (Langdon et al., 2011, p. 104). Palmer (2003) submitted that illegal behavior is supported by cognitive distortions stemming from underdeveloped moral reasoning. Hopefully, continuation of the world-wide trend of reducing malnutrition, especially during the early years of life, as improved nutrition continues its putative contribution to the Flynn (1987) effect (Lynn, 2009), will continue its contribution to improving human prosociality species-wide. Perhaps even greater refinements in human nutrition will further amplify the effect, contributing even more to the upward trend in human prosociality.

Certain appetitive interventions would be sociality enhancements. What if a benevolutioneered person no longer had a desire to eat foods, the production of which is environmentally unsustainable, cruel, or exploitative? One candidate for this kind of intervention is the appetite for eating various meats, which involves using, as food, the bodies of sentient creatures. How would our single, massive, living ecosystem, be affected by the elimination of the vast amount of routine suffering and premature termination of so many lives which now necessarily accompanies our consumption of other animal's bodies? I know many people with no appetite for meat. Some of those people never wanted to eat meat, even though they were raised in close, healthy families in which meat was enjoyed by everyone else and served at most meals and was the centerpiece around which special occasions were celebrated. Other people I know with no appetite for meat were raised in vegetarian homes. Still others I know with no appetite for meat used to have a strong appetite for several varieties of meat and subsequently lost their appetite for meat. In each case, physical correlates underlie their distaste for meat. Those correlates might be neurocorrelates, genetic correlates, epigenetic correlates, immune system correlates, gut biome characteristics, or some other kind of physical correlate. Such a physical

characteristic might be beneficially reverse engineered, and that is a component of benevolutioneering's conceptualization.

The agricultural and hydrological inefficiency of meat production has become ethically recharacterized by world population trends. Climate change and water supply challenges are amplifying that recharacterization. It is also possible that the extension of maximum healthy lifespan might require transitioning away from animal food sources.

Sociality-Impacting Psychoactive Pharmaceuticals

During the past few decades, pharmaceuticals have been widely prescribed which, arguably, have impacted human morality (Crockett, 2014b; Crockett et al., 2015), necessarily impacting human sociality. Crockett et al. (2015), investigating possible influences of pharmaceuticals on moral decision making by measuring the impact of the serotonin-uptake inhibitor citalopram and the dopamine precursor levodopa "on decisions to inflict pain on oneself and others for financial gain" (p. 1852), observed that "citalopram increased harm aversion for both self and others, while levodopa reduced hyperaltruism" (Crockett et al., 2015, p. 1852). Hyperaltruism, in their research model, was manifested by amplification of greater inherent willingness to harm oneself than to harm another person.

Levy et al. (2014) reported that the β-blocker propranolol reduces disgust and implicit prejudices against members of outgroups, likely by reduction of "transmission of a neural signal by blocking adrenergic receptors in the amygdala" (p. 114). According to Terbeck et al. (2012), propranolol, without affecting subjective mood, "abolished implicit racial bias, without affecting the measure of explicit racial prejudice" (p. 419). Terbeck et al. (2012) reported findings which they interpreted to indicate that "β-adrenoceptors play a role in the expression of implicit racial

attitudes suggesting that noradrenaline-related emotional mechanisms may mediate negative racial bias" (p. 419).

Levy et al. (2014) summarized possible morally significant prosocial and nonprosocial effects of numerous drugs. Levy et al.'s (2014) summary included such possible prosocial effects as atomoxetine's capacity to reduce impulsivity, the anti-anxiety effects of benzodiazepines, the capacity of both methylphenidate and modafinil to increase attention and working memory, pramipexole's ability to increase sexuality, citalopram's ability to: (1) increase motivation by reducing depression, (2) reduce anxiety, (3) increase cooperation, (4) reduce criticism of others, (5) increase concern and behaviors associated with fair distribution of resources, (6) increase aversion to harming others as mentioned above considering the observations reported by Crockett et al. (2015), cocaine's effect of increasing friendliness, disulfiram's ability to reduce excessive alcohol consumption, and lithium's ability to decrease paranoia.

Risk taking, particularly risk taking associated with affect laden risks, was shown by Keaveney et al. (2020) to be increased by acetaminophen. Keaveney et al. (2020) also reported that acetaminophen acts to blunt negative as well as positive affect. Acetaminophen has been found to reduce social pain, thereby lowering receptivity to hurt feelings (DeWall et al., 2010), and to reduce empathy (Mischkowski et al., 2016).

Although promising in terms of suggesting mechanisms and combinations of mechanisms for pharmacologically enhancing prosociality, the small sample mentioned so far of drugs with important potential to positively impact sociality might be overshadowed by the dramatic claims made for psychedelic substances (Bouso et al., 2015; Jungaberle et al., 2018; Preller & Vollenweider, 2016; Sessa, 2018), especially in connection with protracted sub-hallucinogenic microdosing (Anderson, Petranker, Christopher, et al., 2019; Anderson, Petranker, Rosenbaum,

et al., 2019; Cameron et al., 2019). Although beyond this dissertation's scope, it is important to note that there are hopeful indications that psilocybin might, at some point, play a valuable role in moral bioenhancement (Earp, 2018; Gabay et al., 2018; Griffiths et al., 2011; Griffiths et al., 2006; Haidt, 2013; Lange & Marie, 2021; Pokorny et al., 2017; Tennison, 2012). Lange and Marie (2021) conducted an in-depth exploratory analysis of psilocybin's effects on prosociality, conceptualizing prosociality as "a very broad term that depicts behaviour proximally caused by an attitude to benefit another individual or group—without implying anything on further morally relevant features of such attitudes and behavior" (p. 30). Lange and Marie (2021) reported cautious optimism that, with the right dosage, setting and mindset, psilocybin seems capable of increasing prosociality by increasing participants' general and social positivity. Lebedev et al. (2015) reported that many participants, under the influence of high-dose psilocybin, have reported what they consider mystical experiences involving sensing a loss of their ego or self, and, subsequently, ego-centric orientation is self-reported as having decreased. Although one of the important aspects of benevolutioneering's anticipated component explorations, in-depth consideration of this expanding research area is beyond this dissertation's scope.

Accidental Representatives of Improved Personality and Sociality

Chapter 1 referred to rare cases in which the residual effects of a stroke or other type of brain injury include what some have considered beneficial changes in an individual's personality and sociality. Because accidental damage to brain tissue sometimes results in desirable changes, welcome changes, it can be theorized that such changes could be made intentionally with careful specificity, extreme precision, perhaps, at some point in the future, utilizing ultra-precise strong artificial intelligence-based nanorobotic interventions to intentionally and extremely precisely bring about only desired changes exactly to desired extents. A case was referred to, in Chapter 1,

of a Brazilian man labeled pathologically generous, intractably compelled to share, after stroke recovery (Ferreira-Garcia et al., 2014; Kean, 2015). The 49-year-old suffered a "left lenticulocapsular…[hematoma] with hypoperfusion of several anatomically intact cortical areas…mostly in the ipsilateral striatum, dorsolateral, and orbitofrontal cortex" (Ferreira-Garcia et al., 2014, p. 496). As mentioned, after considering that case, we can imagine, in addition to developing a procedure to precisely enhance generosity to exactly a desirable extent, simultaneously developing thousands of additional procedures, each enhancing, to exactly a desired extent, an extremely precise aspect of a particular prosocial, even benevolent, characteristic.

There is evidence that another kind of generosity is increased in humans by damage to the basolateral amygdala (BLA). Research by van Honk et al. (2013) demonstrated that "selective BLA damage and a functional central-medial amygdala invest nearly 100% more money in unfamiliar others in a trust game than do healthy controls" (p. 2506). In a trust game, participants with developmental focal bilateral damage to the basolateral amygdala, but with full central-medial amygdalar functionality, invest twice as generously in strangers, compared with control participants with full amygdalar functionality. This was the case even though participants had no additional perception or expectation of trustworthiness of those they invested in, and no increased general impulsivity was detected (van Honk et al., 2013). "Compared with control subjects, humans with focal bilateral damage to the BLA invest generously in unfamiliar others in the trust game. These large economic investments were not due to general abnormalities in risk taking in BLA-damaged subjects" (van Honk et al., 2013, p. 2508). The researchers stated that they regarded the increased social-economic generosity to be "pathological altruism…in the

sense that inborn altruistic behaviors have not, due to BLA damage, been unlearned through negative social experience" (van Honk et al., 2013, p. 2509).

Increased generosity is, of course, not the only type of apparent personality and behavioral improvement associated with brain damage. King et al. (2020) "investigated neuroanatomical correlates of positive personality and behavioral changes following a discrete neurological event (e.g., stroke, benign tumor resection)" (p. 1). King et al. (2020) considered 97 patients who had been treated for a neurological event and identified 21 of those patients whose personalities neither improved nor worsened, 54 of those patients who displayed negative personality changes, and 22 of those patients who displayed positive personality changes. I would have preferred King et al. (2020) to have detailed the study's participant selection procedure. Although the article does say that "participants were 97 patients (53 men and 44 women) enrolled in the Iowa Neurological Patient Registry of the Division of Cognitive Neuroscience at the University of Iowa" (King et al., 2020, p. 2), there is no indication of randomized participant selection or any other statement of participant selection procedures that would preclude participant selection bias. There is nothing in the article to suggest the likelihood of biased sample selection, either. I would not have thought, though, that 23% of a random sample of brain injury patients would display personality and behavioral improvement. If it is actually typical for personality and behavioral improvement to be displayed in nearly a quarter of the patients who suffer brain damage from such random, indiscriminate neurological events as strokes, tumor removal surgeries or traumatic brain injuries, then the likelihood of devising adequately precise interventions to bring about enhancements seems greater than I would have estimated, and I sincerely hope it actually is the case. Nevertheless, even if such cases of

improvement are vanishingly rare, they serve as proofs of concept, and they demonstrate that such changes are absolutely possible.

King et al. (2020) detailed 3 cases of the 22 cases in which "dramatic improvements in personality and behavior followed a major neurological event" (King et al., 2020, p. 7). Those three cases displayed the most improvement in the most categories evaluated utilizing the "Iowa Scales of Personality Change (ISPC) [(Barrash, 2017)]…to assess changes in personality and behavior" (King et al., 2020, p. 2). The most dramatic of those three cases detailed was that of a woman whose husband described her personality before her tumor removal as stern:

> In particular, the patient's husband rated her as having sub-optimal functioning in social behavior (M = 3.50), irascibility (M = 5.25), hypo-emotionality (M = 3.67), distress (M = 4.25), and executive functioning (M = 5.43), in the years prior to discovery of the tumor. In the postmorbid epoch, the patient's husband indicated that she is "happier, more outgoing and more talkative than ever before." Patient records indicate that following surgery both the patient and her husband reported that she smiles more, laughs more, has good energy, and is more socially outgoing. (King et al., 2020, p. 7)

The Iowa Scales of Personality Change, "designed to assess personality disturbances that may develop in social behavior, executive control, mood, affect, and drive in patients with brain lesions in the prefrontal cortex or elsewhere, and neuropathological disorders" (Barrash, 2017, p. 1), is completed by a spouse or other family member who has, both before and after a patient's neurological problem, known the patient well.

> Two ratings are made for each trait: characteristic functioning over the adult years prior to the onset of the neuropathological condition ("Before") and characteristic functioning over the past half-year ("Now"). Ratings are made on an asymmetric 7-point scale, with 3 reflecting the usual amount of the characteristic for a typical adult of the same sex and age, as judged by the informant, and ratings above 3 reflecting increasing disturbance: 4, "mild disturbance"; 5, "moderate disturbance"; 6, "moderately severe disturbance"; 7, "severe disturbance." "Change" is calculated by subtracting premorbid level from current level. (Barrash, 2017, p. 1)

One of the other cases detailed by King et al. (2020) in which positive personality changes were displayed is the case of a 30-year-old man who suffered a "subarachnoid

hemorrhage and right frontal craniotomy for clipping of an anterior communicating artery (ACoA) aneurysm" (King et al., 2020, p. 7):

> His spouse, who knew him for 15 years, reported notable improvement in all domains of personality and behavior following his neurological event. According to his spouse, prior to his neurological event the patient had suboptimal functioning in social behavior (M = 4.25), irascibility (M = 5.75), hypo-emotionality (M = 5.00), distress (M = 3.25), and executive functioning (M = 4.14). Following his neurological event, the patient's spouse reported normal functioning in all domains of personality and behavior (mean ISPC domain score ≤ 3). Both 2410 and his spouse reported that premorbidly, 2410 would express anger and frustration on a frequent basis (e.g. complaining about job; short temper with daughter). Following his aneurysm and ACoA clipping, however, he is "more passive and easy going." In addition, prior to his aneurysm and ACoA clipping, 2410 and his spouse reported that he was generally "mopey." Now, he laughs and jokes and seems generally more content. Overall, 2410 and his spouse reported that the observed changes in personality and behavior have been quite positive. (King et al., 2020, p. 7)

Cases of neurological damage resulting in altered sociality can and should be catalogued and examined. Each case represents potential clues of which brain structures might ultimately be involved in intentional enhancements such as those anticipated within the benevolutioneering model. At this stage, these cases remind us that sociality can be changed through changes to the human nervous system. To facetiously oversimplify the staggering complexity of benevolutioneering, perhaps all that remains is merely discovering which changes should be made and then simply devising interventions to effect those thousands of changes.

Transformations Associated With Religion, Spirituality, Peak Experiences, Enlightenment, Conversion, and Self-Transcendence

Incorporating and expanding my earlier survey of religion, spirituality, peak experiences and prosocial neuroenhancement's plausibility (Kurtz, 2017a), this section asks whether there already are people for whom prosociality increases through particular kinds of experiences, processes, practices, or techniques and whether religion or spirituality might afford opportunities to explore such questions. Perhaps it depends on how spirituality and religion are conceptualized.

According to Krippner (2006), “the religions of the future…[must] work with science and not in opposition to the scientific method” (para. 16). It has been asserted that science asks how, but religion asks why (Krippner, 2006; McGrath, 2010; Solomon, 2008). That useful distinction notwithstanding, the current progress and possible trajectories of human enhancement technologies warrant notifying the scientific community of its urgent need for an axiological sidebar. It has been claimed that humanity is genetically hardwired for religious and spiritual experiences (Beauregard & O’Leary, 2007; Krippner, 2006; Newberg, 2010), and that religious and spiritual experiences generally foster a sense and perspective of unity over diversity (Krippner, 2006; Newberg, D’Aquili, & Rause, 2001). That could be viewed as satisfactorily recommending religion and spirituality as important resources for the exploration of the plausibility, importance, and desirability of benevolutioneering.

Religion and science, though, have not always enjoyed a friendly interface (Dawkins, 2006; Wallace, 2007). Religion and spirituality are awkward subjects for scientific consideration. According to Kohls et al. (2011), “problems associated with scientifically understanding and defining a complex construct such as spirituality contribute to the tendency in more recent research to operationalize spirituality as a solely psychological function, without further conceptual embellishment” (p. 1840). There might be good reasons to measure spirituality, but “most research is based on measures of religiosity rather than spirituality” (de Jager Meezenbroek et al., 2012, p. 336). Kohls et al. (2011) contributed a “broad definition of spirituality as an implicit or explicit habit of being oriented towards, searching for and expressing a reality transcending immediate and mediate personal needs, and/or a striving for experiencing a universal or transcendental dimension” (p. 1839). Nelson (2009) suggested that “the term religion was used to refer to all aspects of the human relationship to the Divine or

transcendent—that which is greater than us [sic]" (p. 3). Meissner (1987) described Divinity as "the source and goal of all human life and value" (p. 119). Nelson (2009) explained that the term spirituality originally contrasted church life with secular life. Nelson (2009) observed that, recently, the term spirituality has come to "denote the experiential and personal side of our relationship to the transcendent or sacred" (p. 8) contrasted with organized religion with its ecclesiastical, doctrinal, and social emphases. It can be quite consequential to distinguish the many well-tangled conceptual strands of religion and spirituality. Confusingly, though, no sanctioned taxonomy or lexicon exists. Many people conceptualize religion and spirituality as overlapping constructs or as a single alloyed construct. Such terms as religion, religious, or religiosity have come, for some people, to refer disparagingly to compartmentalized institutional experience lacking transcendence and prosociality. Other people use these terms to describe loving, warm experiences of transcendence and unifying sociality. Even greater ambiguity afflicts the term spirituality. Such ambiguity necessitates diligent case-by-case contextual discernment when deciphering religious and spiritual terminology.

Herein, aspects of transpersonal psychology are associated with spirituality. Although addressing the entire range of human functionality, transpersonal psychology is especially concerned with human processes associated with peak experiences, altered states of consciousness, and spirituality (Pfaffenberger, 2007). According to Tart (2004), "transpersonal psychology is about religion or, more accurately, the experiential and ontological foundations of religion, the primary spiritual, transpersonal experiences out of which socially organized religion evolves" (p. 73). Moore (1977) asserted that psychical research supplies a "reasonable solution to the problem of how to accommodate religious and scientific interests" (p. xii). Kloosterman

(2012) identified "situating parapsychology in between science and religion" (p. 9) as one of Moore's (1977) central themes.

Why explore benevolutioneering's plausibility within spirituality rather than sport, art, warfare, mathematics, manufacturing, or chemistry? Actually, those and many other aspects of human life probably would be valuable to explore in connection with benevolutioneering's conceptualization and plausibility. Consideration of religion and spirituality might more likely be particularly valuable for this exploration, though, because the broader category of religion, spirituality, and related constructs might be a, if not the, construct encompassing and most emblematic of aspirations, myths, transformative processes, and champions of extremely benevolent prosociality. This would certainly be the case if various cultures actually simply conceptualize or even define such constructs accordingly. In other words, it could, arguably, be the case that part of what some cultures conceptualize as religious or spiritual includes benevolent prosociality, by definition.

Spirituality, religion, and related constructs, however, are not homogenous. They are just as difficult to uniformly conceptualize and precisely define as love or prosociality. Still, Dovidio et al. (2006), claimed that "it is easy to identify common themes running through diverse religions…[and one of those common themes]…is the importance of concern for others" (p. 11). "Clearly, religions seek to encourage prosocial behavior" (Tsang et al., 2015, p. 609). Similarly, according to Neusner and Chilton (2005), "all world religions concur that altruism—unrewarded action for the sake of another person—is virtuous. All world religions encourage sacrifice of one's own interests for those of another—a stranger, an outsider" (p. vii). Tsang et al. (2015) observed that:

> All major religions have some form of a golden rule that encourages people to treat others as they wish to be treated, meaning people should treat each other

> compassionately. This compassion is to be extended to all others, not just to one's kin or to fellow believers. (p. 609)

That shared characteristic of major religions, that compassion must be extended even to strangers, identified by both Tsang et al. (2015) and Neusner and Chilton (2005), is crucial for our era of rapidly increasing hyper-connectivity. Batson (2016) opined that "religious beliefs are one of the most important sources of a coherent world-view and of propriety morality" (p. 127).

Farah (2012) identified a fundamental tension between much of our modern scientific community and most of the world's religions. Increasingly, today's scientific community, including most neuroscientists, might tend to believe human beings are essentially mechanistic, while "belief in an immaterial mind or soul is common to most of the world's religions" (Farah, 2012, p. 587). I share Farah's (2012) concern that, reminiscent of 3 centuries ago, when constructs from the natural sciences began dominating our species' worldviews, strict reductionist materialist constructs from our era's neuroscience community could remodel our concept of humanity. "Such a transformation could reduce us to machines in each other's eyes, mere clockwork devoid of moral agency and moral value" (Farah, 2012, pp. 587–588).

Could a mechanistic conceptualization of our species' essence further degenerate through consideration of mechanistically modifying human nervous systems to alter individuals' sociality-related behavior? Through this lens, could prosocial neuroenhancement seem oxymoronic? From this perspective, should prosocial neuroenhancement even be considered? Although our species has adapted to countless changes, our species is now facing (a) unprecedented, profound changes stemming from exponential technological progress, giving rise to various forms of human enhancement by technological means (Buchanan, 2011; Garreau, 2006; Kaku, 2014; Naam, 2005); (b) the very real possibility of near-future additional significant lifespan extension possibly approaching immortality (Aging Reversed, 2015; de Grey & Rae,

2008; Foresight Institute, 2019; Kurzweil & Grossman, 2005; Naam, 2005; Zhavoronkov, 2013); (c) profoundly increased hyper-connectivity of human minds with other human minds and with machines (Dielenberg, 2013; Kaku, 2014; Kotchetkov et al., 2010), even artificially ultra-intelligent machines (Kaku, 2014; Kurzweil, 1999, 2000, 2005, 2011, 2013); and (d) the possibility of ubiquity of energetic and material resources (Diamandis & Kotler, 2012; Kaku, 2011a, 2011b; Kurzweil, 2005, 2011; SingularitySummits, 2011b). Until very recently, our species has typically been able to adapt gradually, over multiple generations, to far less disruptive changes than today and tomorrow's abrupt transitions. Our species is faced with series after series of unprecedented changes that threaten even long-held definitions and conceptualizations of essential humanity. Arguably, it could be important to replace systems of gradual, non-intentional adaptation with strategic adaptation, including strategies involving and even technologically transforming sociality. Already, dramatically increased connectivity has fostered abrupt political upheaval, novel types of crime, new types and extents of addiction, and various disruptions of traditional relationship and sexual behavior patterns through various social media platforms.

> Fundamental sociality constructs, ancient and until now survivable, albeit imperfect, may be unsustainable. Ubiquity of those resources so far serving as currencies in our economic Monopoly (Darrow, 2006) game might no longer serve as tokens of value or as a basis of power and control. Atavistically, exploiters, lacking such tokens of value, might resort to direct means such as fear and physical violence. (Kurtz, 2017a, p. 7)

It is inarguable that neuroenhancement and other forms of human enhancement are inevitable, because they are already happening. Designer molecules have been affecting human behavior and mood and have allegedly changed people's personalities (Tang et al., 2009), even with some alleged lethal consequences (Harris, 1999; Tardiff et al., 2002).

Life extension technologies are being developed (Gowinglife, 2021a, 2021b). I was present in New York City on October 15, 2011, when Peter Thiel described his strategy to create,

if necessary, an actual nation on an artificial island, to facilitate continued life extension and other bioenhancement research, unencumbered by United States regulatory entities (SingularitySummits, 2011a). The same day at that conference, Thiel was attempting to recruit candidate citizens for his proposed nation (personal communication, October 15, 2011). Liz Parrish, CEO of BioViva, in 2015, became patient zero in testing BioViva's leukocyte telomere lengthening life-extension gene therapy technology (Regalado, 2015). According to Parrish (2018), third-party assays performed at intervals have been confirming hoped-for and anticipated results, including the equivalent of more than 20 years aging reversal of telomere lengthening in targeted immune cells (BBC News, 2018; Parrish, 2018).

In bold contrast with the fundamentally prosocial golden rule common among all major religions (Tsang et al., 2015), so crucial for our era (Neusner & Chilton, 2005), is humanity's drive to compete with and defeat one another. That becomes a more critical issue than ever before as values shape unprecedented enhancement efforts. From soccer moms (Brown, 2009) to military research and command (Kaku, 2014; Kotchetkov et al., 2010), competitiveness-enhancement technologies are progressing. Modest, gradual enhancements which take place in reasonably manageable increments could tend to foster educational, vocational, and military disparities. Abrupt onset of exponential rates of progress in human enhancement technologies, even yielding the equivalent of comic book super-hero abilities, "could transcend current rates of incremental quantitative change, resulting in essential changes within various human arenas. If competitors become too effective" (Kurtz, 2017a, p. 8), our societies' competitive games, literal and metaphoric, could be rendered unsustainable (Case, 2007). Although "competitive sociality has long been part of human biological structure" (Kurtz, 2017a, p. 9), altruism has also long characterized fundamental human biology and sociality (Pfaff, 2015; Ricard, 2015). Enhanced,

maybe those altruistic biological characteristics would amplify and extend prosociality innate to our species. Some people might object that amplifying and extending prosociality somehow violate essential human nature. I anticipate some people arguing that "competitive survival of the fittest is indispensable for the species because it is our evolutionary heritage, responsible for the development, survival, and thriving of our species" (Kurtz, 2017a, p. 10). Is that entirely unlike arguing to not eliminate rape because rape has proven itself strategically effective in terms of genetic success, as was demonstrated by Genghis Kahn (Clifford, 2008; Derenko et al., 2007). Kohn (1986, 1990) pointed out fundamental flaws in the argument that survival of the fittest and competition must define the systems of human interrelation. Kohn's (1986, 1990) rationale is beyond this subsection's focus. If it is true, though, that the categories of human society and psychology which "encourages people to treat others as they wish to be treated, [with]…compassion…extended to all others, not just to one's kin or to fellow believers" (Tsang et al., 2015, p. 609) are religion and spirituality, then it seems important to draw from religion and spirituality whatever can inform our conceptualization of benevolutioneering.

There are risks that transcend even those risks associated with directly reshaping human sociality through competitiveness-enhancing technologies. Characteristic human interaction constructs, already far from adequately prosocial, the regularly hurtful ways humans fundamentally model interaction, could become the template for interaction models of strong artificial ultra-intelligence (Dietrich, 2001), "especially if utilizing combinations of deep learning and expert system learning. If humans engineer self-learning beings in their image without modifying that image away from selfishness and competitiveness, then humanity could be creating Frankensteins, against which" (Kurtz, 2017a, p. 8), we would be relatively impotent. Arguably, surviving and beneficially coexisting with our own technological progeny could

require changing our sociality set-points to the profoundly benevolent prosociality templates according to which our species could afford to have our monsters patterned.

Technology has leveraged human effort so effectively that "unstable persons can gain control of essential structures such as warning systems, communications systems, medical services, and transportation. Modern hackers can potentially put these systems into chaos. Through modern hyper-connectivity, humanity might have placed itself in harm's way" (Kurtz, 2017a, p. 8). As society's modes of personal influence become more diffuse, more abstract and less individualized, it is possible for some antisocial people to experience what they consider unacceptable disempowerment. They can become so determined to exert personal influence, to impact the world, that they resort to vandalism. Traditional moral structures have been abandoned and replaced by "vacillating, heterogeneous, often contradictory value systems via mass media and social media" (Kurtz, 2017a, p. 9). The grassroots, bottom-up nature of modern social media platforms facilitates routine, instantaneous, widespread celebration and adoption of rather antisocial sentiments and behaviors.

What difference could it make to make sure neuroenhancement is prosocial? How unlikely would it be for a technological change to yield devastating "social problems if every human being's highest priority was the welfare of all other human beings. Presently, this is clearly not the case. Consider how evident this is in humanity's current food supply system" (Kurtz, 2017a, p. 9). Eight hundred eleven million people, more than 10% of our species' 7.9 billion people, are chronically hungry, while more than 2.2 billion people or 28% are overweight or obese (RSA, 2017; Chan, 2017; World Health Organization, 2021a). In 2020, 30% of the world's population, more than 2.3 billion people, "lacked year-round access to adequate food" (World Health Organization, 2021b, para. 7). Worldwide, an extremely large amount of uneaten

food is thrown away (Evans, 2012; Stuart, 2009). In fact, according to Salemdeeb et al. (2017), fully "one third of food produced across the globe is thrown away uneaten" (p. 442), several times the amount needed to feed every chronically hungry person in the world. To facilitate manipulation of prices, production and distribution of food and other commodities are selectively limited and controlled, and economic and political mechanisms are established to keep it that way (Burch & Lawrence, 2009; Stuart, 2009). Transnational corporations continually extract and remove resources from less powerful, poorer regions, transporting those resources to more powerful, wealthier nations (Dobers & Halme, 2009).

> As long as there are people without hope of reasonable subsistence within prevailing systems, there are hurting, resentful people with nothing to lose. This can foster ideological models in which harming better-provisioned human beings is seen as a virtue. Humanity might have reached a point where competitive social structures are no longer bringing enough benefit to offset the jeopardy that they generate. (Kurtz, 2017a, p. 9)

Could that suggest that important aspirations, for millennia, proclaimed and encouraged as religious and spiritual constructs but almost never really lived, are becoming so important that it is time to consider using our best science and technologies to instill such prosocial values and aspirations? Even if so, how and where could science and technology interface with religion and spirituality? That might be best explored within neurotheology.

Neurotheology

An intriguing and increasingly valuable interface of science and technology with religion and spirituality is neurotheology. As the field of neurotheology develops, it could be particularly useful in conceptualizing benevolutioneering and to exploring benevolutioneering's plausibility and possible approaches to operationalizing benevolutioneering. Approaching benevolutioneering neurotheologically can be modeled as

> overlaying neuropsychological investigation of religious/spiritual practices, experiences, and practitioners with neuropsychological investigation of various states and processes associated with prosociality. This approach can be modeled as involving three

> components: Investigating the neuropsychology of religious/spiritual practices, investigating the neuropsychology of various prosociality-associated states and processes, and investigating the convergence of the neuropsychology of religious/spiritual practices and the neuropsychology of various prosociality associated states and processes. (Kurtz, 2017a, p. 41)

This discussion is concerned most with the third component, "investigating the convergence of the neuropsychology of religious/spiritual practices and the neuropsychology of various prosociality associated states and processes" (Kurtz, 2017a, p. 41). Nevertheless, pursuing the third component requires first considering the first two components.

The advent, over the past few decades, of various brain scanners, including scanners allowing representations of brain function, has made it possible to explore brain structures and functions involved in religious and spiritual experiences and behaviors. Increasingly precise scanning technology has facilitated the development of the field of neurotheology. Neurotheology researchers produce images of the brains of people practicing various spiritual disciplines in seeking to identify structural and functional correlates of various spiritual practices, experiences, and development. Azari et al. (2001), Kapogiannis et al. (2009), Klimecki et al. (2014), Newberg (2010, 2014, 2018), Newberg and Waldman (2016), and Wallace (2007) have used relatively recently proposed, developed, and utilized scanning technologies and techniques to explore the structural and functional neurocorrelates of religious and spiritual practices such as certain forms of Christian prayer and Buddhist meditation.

Newberg and Waldman (2016) reported positive association of the experience of persistent spiritual enlightenment with reduction of the construct of the self and the disappearance or substantial diminution of the self construct. Dein (2020) used the well-used term transcendence to denote "an ego-dissolving encounter – a breakdown of self-boundaries – with something greater than the self. The self is subsumed into an all-encompassing reality" (p. 79), associating self-transcendence with "decreased self-salience and increased feelings of

connectedness with others or the cosmos as a whole" (Dein, 2020, p. 79). "The term transcendence is often used in the literature interchangeably with mystical and spiritual states, all of which are associated with breakdown of ego boundaries" (Dein, 2020, p. 80).

> Every known religion has rites or procedures which enable individuals to transcend their ordinary lives and to experience a larger reality. While such states can occur in meditation, they may also be brought on by sleep deprivation, drugs and, as we shall examine below, through ritual participation. Through song, dancing and rhythmical drumming which often revolve around shamans, practitioners attain a hypnotic state and can commune with departed ancestors, spirits and gods. …It appears that that spiritual transcendence is a valid scientific construct defined by common phenomenological characteristics with unique characteristics. (Dein, 2020, p. 80).

Self-transcendence has been empirically associated with prosocial emotions and behaviors. Those behaviors and emotions affected by self-transcendence are importantly related to the traits benevolutioneering, as conceptualized herein, seeks to enhance.

> Empirical evidence suggests that ST [self-transcendence] positive emotions can increase social connectedness and some, like gratitude, compassion and elevation, may enhance the desire to help others (Algoe & Haidt, 2009) and promote altruistic behaviour (Schnall et al., 2010). They may facilitate individual engagement in actions that may benefit others or society. For example, experimental induction of elevation (Schnall et al., 2010), gratitude (DeSteno et al., 2010) and awe (Rudd et al., 2012) results in increased volunteer time and helping behaviour even towards strangers. (Dein, 2020, p. 84).

The region of the parietal lobe of the cerebral cortex associated with the sense of self in juxtaposition with the sense of others (Ohata et al., 2020) has reportedly been shown to be significantly less active in brains of Tibetan Buddhist compassion meditators and dedicated practitioners of certain forms of Christian prayer (Newberg, 2010, 2014). McNamara (2014) modeled the neuroscience of religious experience according to the assumption that spiritual development essentially involves progression from self-centeredness to transcending one's self construct.

Azari et al. (2001) reported an investigation of neural correlates of religious experience. Their research involved 12 native-German-speaking adult participants, six self-identified as

nonreligious and six self-identified as religious. The six religious participants were members of Germany's Evangelical Fundamentalist Community and were teachers at their church's private high school. Participants recited a portion of Psalm 23 during PET scans. Religious participants' scans indicated activation of a frontal-parietal circuit involving regions of the dorsolateral prefrontal, dorsomedial frontal, and medial parietal cortex. Azari et al. (2001) identified those areas as having been previously implicated as highly significant in sustained reflexive evaluation of thought juxtaposed with areas associated with emotional function. Azari et al. (2001) interpreted their results as likely demonstrating that religious experience, while a cognitive process, seems to be an immediate phenomenon. Distinctions of this type can benefit explorations of prosociality such as those attempting to distinguish empathetic motivational phenomena from processes involving analytical moral decision making. It might have been even more useful if that study (Azari et al., 2001) had included another group of participants from a culture very different than German culture from a religious tradition very different than the Evangelical Fundamentalist Community in Germany, engaged in a spiritual activity far more ecstatic than repeating part of the twenty third Psalm.

The "tangled taxonomy of religion and spirituality could be another complicating factor" (Kurtz, 2017a, p. 43) in the attempt to most usefully interpret Azari et al. (2001). "Although there are important reasons to measure spirituality" (Kurtz, 2017a, p. 43), according to de Jager Meezenbroek et al. (2012), "most research is based on measures of religiosity rather than spirituality" (p. 336). Davidson et al. (2003) reported that novice meditators, after only 8 weeks practicing mindfulness meditation, evidenced increased left-prefrontal lobe activation at rest and during emotional challenge. Wallace (2009) reported positive association between increased

activation of the brain's left-prefrontal lobe and both emotional positivity and improved immune system function.

Newberg (2010, 2014, 2018) "sought, compared, and contrasted…neurostructural characteristics and…functional neurocorrelates of the spiritual experiences of multiple groups of long time Buddhist meditators and multiple groups of longtime practitioners of distinct forms of Christian prayer" (Kurtz, 2017a, p. 43). Newberg (2010, 2014, 2018) has reported evidence of consistently identifiable structural changes associated with spiritual experiences that correlate with the experience of reduction in the self construct. Newberg (2010, 2014, 2018) has also reported evidence of consistently identifiable functional neurocorrelates of spiritual experiences associated with the experience of reduction in the self construct. Newberg (2010, 2014, 2018) has also pointed out the association of reduction in the self construct with such prosocial phenomena as compassion and empathy. That is critical to exploring benevolutioneering's conceptualization, plausibility, and operationalizability. Matthieu Ricard is a Tibetan Buddhist monk and a very experienced meditator. Tania Singer, Scientific Head of the Social Neuroscience Laboratory at the Max Planck Institute, brought Matthieu Ricard into her lab. Singer functionally scanned Ricard's brain while Ricard meditated. Singer was even able to identify neurocorrelates of compassion meditation and to clearly distinguish compassion from empathy (Klimecki et al., 2014; Ricard, 2015).

Pinker (2011) hypothesized that enhanced reasoning power, "specifically, the ability to set aside immediate experience, detach oneself from a parochial vantage point, and frame one's ideas in abstract, universal terms" (p. 656), can be expected to foster "better moral commitments, including an avoidance of violence" (p. 656). Conversely, it was Matravers' (2014) position that it is more likely for empathy to lead to knowledge which could, in turn, enhance reasoning

ability. If, as in Pinker's (2011) view, enhanced reasoning ability does lead to less violence, then there might be a link to the 20th century's substantial decline in violence with the Flynn Effect, according to which average IQ increased three points per decade during the same period that violence decreased so dramatically (Persson & Savulescu, 2014; Pinker, 2011). It might follow from Pinker's (2011) view that intentionally enhanced cognitive ability could be accompanied by enhanced prosociality. That would be good news, because it seems likely that cognitive ability would be among the most sought-after human enhancements according to many value systems and motivations, prosocial or otherwise. For that reason, it would certainly serve benevolutioneering's ends if Pinker was correct. Additionally, if Pinker's (2011) hypothesis proves correct, then any cognitive improvements effected through spiritual practices might reasonably be expected to foster "better moral commitments, including an avoidance of violence" (Pinker, 2011, p. 656). There is evidence of spiritual practice improving cognitive ability. Saoji et al. (2017) reported evidence of medical students' increased cognitive ability after a single session of yogic meditation. Lazar et al. (2005) reported increased cortical thickness associated with meditation, and Wallace (2009) reported that enhanced cognitive functioning is associated with increased cortical thickness. Perhaps one of the ways spirituality is related to prosociality is through prosocial effects of cognitive improvement associated with certain spiritual practices. Upton's (2017) less circuitous approach demonstrated that mediation directly decreases nonvirtuous behavior and increases virtuous behavior.

Among other reasons neurotheology is important to the exploration of benevolutioneering's conceptualization, plausibility, and operationalizability is that neurocorrelates of spiritual practices and experiences have been identified and that the tools available to neurotheology are becoming more numerous, more precise, and more accessible for

research. In light of the considerations discussed in this section, especially indications that certain spiritual practices and experiences correlate positively with enhancements in prosociality, it seems that studying spirituality and religion is among the valuable approaches to exploring benevolutioneering's conceptualization, plausibility, and operationalizability. Also related, in many cases, to religion and spirituality, are certain types of peak experiences reportedly capable of even more immediate and profound increases in a person's prosociality than the kinds of spiritual practices and experiences considered so far in this section.

Spirituality-Related Practices and Peak Experiences

For millennia, human beings have recognized that certain technologies and substances, including psychedelic substances and substances considered entheogenic, are capable of fostering prosocial phenomenology and behavior and even of profoundly impacting one's values (Brown, 2013; Cole-Turner, 2015; Earp et al., 2017; Roberts, 2013). According to Haidt (2013), for centuries, in many traditional cultures, hallucinogens have played important roles in rite of passage ceremonies, facilitating the transition from childhood to adulthood's social and moral maturity. According to Earp et al. (2017), use of such consciousness-altering substances has long been neurotechnologically enhancing morality. Many researchers have proposed exploring psychedelic substances in the quest to conceptualize and develop moral neuroenhancement technologies (Cole-Turner, 2015; Frecska et al., 2016; Griffiths et al., 2006; Griffiths et al., 2008; Griffiths et al., 2011; Tennison, 2012). Although newer and lacking traditional spiritual contexts, LSD and several other newer drugs are among those substances suggested as worth researching for their potential prosocial effects (Dolder et al., 2016; Grof, 1976, 2012; Yensen & Dryer, 1996). MDMA, also called ecstasy (Nencini, 2002), although not actually a psychedelic, is a potential entheogen, according to Stanley Krippner (Brown, 2015).

According to Nour et al. (2016), a degree of dissolution of the ego is associated with psychedelic experiences. Shamanic ayahuasca ceremony participants report increased empathy, a sense of unity, and connectedness with and responsibility for other people (Prudon, 2011; Trichter et al., 2009). Trichter et al. (2009) utilized multiple testing instruments to measure peak experience and spirituality but could have provided additional useful data regarding the relationship between entheogens and prosociality if they had also used instruments measuring aspects of prosociality. A more recently study (van Mulukom et al., 2020) explored a hypothesis of a negative association between use of psychedelics and maladaptive narcissism.

> We expected that psychedelic-occasioned experiences of awe and ego dissolution would be related to lower narcissism, mediated by increased empathetic affective drive and feelings of connectedness. Our main finding is that feelings of awe, but not ego dissolution, during recent CSP [classical serotonergic psychedelic drug] experiences were associated with increased feelings of connectedness and empathy, which in turn were associated with decreased levels of maladaptive narcissism. These findings, though demonstrating associations rather than causality, provide support for the hypothesis that psychedelics can positively affect narcissistic personality traits, through their awe-inducing potential. Specifically, we found that affective empathy drive is…[a strong] predictor…of both overall narcissistic personality and exploitative-entitled narcissism. (van Mulukom et al., 2020, p. 2733)

Particularly intense spiritual experiences, involving reports of self-transcendence and some reports of subsequent increases in prosociality, have been reported in connection with Holotropic Breathwork. Holotropic Breathwork, a substance-free psychedelic technique developed at the Esalen Institute by Stanlislav and Christina Grof, combines specific patterns of breathing with carefully arranged multisensory experiences such as carefully chosen music and a particularly structured hyper-supportive social environment (Grof, 1992, 2000; Grof & Grof, 2010; Miller & Nielsen, 2015; Yensen & Dryer, 1996). My search for scholarly investigations exploring Holotropic Breathwork's relationships with enhancement of prosociality or of prosociality-related constructs such as compassion, empathy, kindness, altruism, etc., identified very little relevant material. Miller and Nielsen's (2015) very small "quasi-experiment" (p. 797)

involving only 20 participants did note a few self-reported positive temperament changes that could reasonably be assumed to increase prosociality following Holotropic Breathwork experiences, including reduction in self-reported hostility, increased cooperation, and reduction of vindictiveness and self-centeredness. I believe specific exploration of holotropic breath work associated prosociality changes, with a robust research design, controls, and an adequately large study group, is warranted. Such a focused study is, however, beyond the scope of this dissertation.

According to Greyson (2015) and K. Nelson (2011), near death experiences (NDEs) have been followed by reported claims of prosociality-enhancement and experiences of a sense of spiritual oneness. K. Nelson (2011) identified parallels between near death experiences and other types of peak experiences, including psychedelic experiences. Grof and Grof (2010) pointed to the connections between spirituality and the breath and to the relationship of breathing to one's life and death. They described how the rite of immersive baptism, symbolic, in the modern era religion, of death and resurrection, involved, historically, a death-like experience not entirely unlike but certainly very differently contextualized than the practice known as waterboarding (Correa, 2007; McCoy, 2006). Waterboarding, employed as a method of torture in rather inhumane and likely ineffective so-called enhanced interrogations, can actually result in near death experiences, sometimes transforming a person's perspective on life and reality. Greyson (2015) reported that near death experiences have been followed by "increased value of love and service and decreased concern with personal status and material possessions, greater compassion for others, heightened sense of spiritual purpose, and a greatly reduced fear of death" (p. 785).

Grof (1992, 2000), Grof and Grof (2010), Newberg and Waldman (2016), Nhất Hạnh (1997), Watts (1989), and White (1892/2008, 1898/2005) "describe a spiritual sea change in

which a person's perspective about life, death, self, others, and reality transform [sic]. Such transformations have been identified by such metaphors as enlightenment, awakening, and conversion. Such transformation results in radically prosocial" (Kurtz, 2017a, p. 47) transformation of values and in care for other persons. That further suggests that studying prosocial aspects of religion and spirituality is likely a good place to continue exploring the conceptualization and plausibility of benevolutioneering.

According to Hughes (2013), it is inaccurate to represent all religions as nothing more than roadblocks to the pursuit of prosocial neuroenhancement. Many religious systems have developed constructs, lists, and techniques that gather, concentrate, and codify representations of our species' best thoughts and practices of human virtue (e.g., Hughes, 2013; Wiseman, 2016).

> Several religions harbor well-reasoned constructs of the self, clever algorithms of moral decision making, and numerous spiritual practices, experiences, and entheogens that offer insights into mechanisms of moral improvement and even the potential to somehow effect value systems. Many of those spiritual practices and experiences can be evaluated in terms of their neurocorrelates, offering possible insights into neural mechanisms that might, after substantial refinement, become targets of direct interventions to increase desired attitudes and behaviors. (Kurtz, 2017a, pp. 48–49)

Although outside the scope of this dissertation, it might be worth exploring the possibility that some of the aspects of human experience generally associated with spirituality "might be capable of the most powerful prosocial impact, although least convenient for scientific investigation: (1) divinity and (2) nonlocal connectedness between human beings" (Kurtz, 2017b, p. 50). The former is theology's wide domain, and it is outside this dissertation's scope. "The later has been investigated using scientific tools and techniques (e.g., Giroldini et al., 2016), and it might hold bizarre, tantalizing promise for ultra-prosocial neuroenhancement far into humanity's future" (Kurtz, 2017b, p. 50).

Autism Spectrum Conditions and Williams-Beuren Syndrome

Autism spectrum disorders (ASD) and Williams-Beuren syndrome, also known as Williams syndrome (WS), have been described as mirror-image conditions (López-Tobón et al., 2020; Niego & Benítez-Burraco, 2020, 2021). Autism spectrum disorders typically involve hyposociality (Lai et al., 2020). Hyposociality describes restrictive social interests and reduction or lack of social engagement. Williams syndrome involves hypersocialty. According to quite recent observations:

> Individuals with higher *OXTR*-PRS_{ASDs} [oxytocin receptor gene polygenic risk score for autism spectrum disorders] had lower RD [reward dependence] and significantly smaller GMV [gray matter volume] in the right posterior insula and putamen. The GMV of this region showed a positive correlation with RD and a mediation effect on the association between *OXTR*-PRS_{ASDs} and RD. Moreover, the correlation map between *OXTR*-PRS_{ASDs} and GMV showed spatial correlation with *OXTR* gene expression. (Wang et al., 2021, p. 746)

Williams syndrome's hypersociality, or hypersociability, with increased social approach behavior (Hanson et al., 2020; Lai et al., 2020; López-Tobón et al., 2020), is a profoundly exaggerated openness to and engagement with other people, including strangers. It is as if, for those with Williams syndrome, everybody is included in one's nearest, dearest ingroup. It can almost seem that everybody is as loved and trusted as one's own mother or other very close family members. There is no outgroup, and engagement with and affection from every person can be craved. Unfortunately, for those with Williams syndrome, not everybody can be trusted, and not everybody is interested in or tolerant of their affection.

Williams syndrome is "a rare neurodevelopmental disorder caused by the hemideletion of approximately 25–28 genes" (Hanson et al., 2020, p. 1019) "on chromosome 7q11.23, including genes important for neuronal migration and maturation (*LIMK1* and *CLIP2*), [and] is typified by a remarkable hypersocial but anxious personality, …[offering] a unique opportunity to investigate this open issue" (Jabbi et al.., 2012, p. E860). Williams syndrome researchers have

observed extensive morphological variation of insular structures and noted that that extent of structural variation was positively associated with extent of observed sociality dysfunctions typical of Williams syndrome. They observed the following morphological anomalies:

> overall decrease in dorsal anterior insula (AI) gray-matter volume along with locally increased volume in the right ventral AI; compromised white-matter integrity of the uncinate fasciculus connecting the insula with the amygdala and orbitofrontal cortex; altered regional cerebral blood flow in a pattern reminiscent of the observed gray-matter alterations (i.e., widespread reductions in dorsal AI accompanied by locally increased regional cerebral blood flow in the right ventral AI); and disturbed neurofunctional interactions between the AI and limbic regions. Moreover, these genetically determined alterations of AI structure and function predicted the degree to which the atypical WS personality profile was expressed in participants with the syndrome. The AI's rich anatomical connectivity, its transmodal properties, and its involvement in the behaviors affected in WS make the observed genetically determined insular circuitry perturbations and their association with WS personality a striking demonstration of the means by which neural systems can serve as the interface between genetic variability and alterations in complex behavioral traits. (Jabbi et al., 2012, p. E860)

Although, for several decades, conceptualized as opposites, WS and ASD are importantly related. These two conditions share significantly increased social vulnerability (Ridley et al., 2020) and cognitive challenges (Lai et al., 2020). Genetic similarity, though, is most remarkable. "Duplications of 7q11.23, deleted in Williams-Beuren Syndrome, have been implicated in autism spectrum disorders" (Malenfant et al., 2012, p. 1459). In fact, Crespi and Procyshyn (2017) "describe how Williams syndrome can be considered, in part, as an…autism subtype" (p. 14). Recalling the *DSM-5*'s 2013 incorporation of Asperger's syndrome into autism spectrum disorder, it will be interesting to see if WS is eventually assigned a place on the autism spectrum. I believe it is important to recognize that conditions referred to as autism or autism spectrum disorders are not a single condition. I do not believe that everything currently labeled autism will be shown to have identical causes. Wang et al. (2021) referred to autism spectrum disorders as "a set of disorders characterized by a range of deficits in prosocial behaviors, which are closely related to the personality trait of reward dependence" (p. 746).

Autism is associated with reduced or lack of perspective taking ability and dysfunctional theory of mind.

> Cognitive requirements of the self–other distinction, as well as its consistent activation during other-mentalizing, raise the possibility that the MPFC [medial prefrontal cortex] is equipped with neural machinery capable of separating observed aspects of others from those of oneself. Such separation at the neural level helps to avoid self–other confusion, to see the world from others' perspectives (often by inhibiting prepotent self-perspectives), and to better predict others' future behavior. Lower levels of this ability to distinguish between the self and others, in both cognitive and neural terms, may be associated with the difficulties that children with ASD [autism spectrum disorders] have performing false-belief tasks compared to those without ASD. (Isoda, 2021, p. 298)

Substantial evidence suggests that autism spectrum disorders are importantly influenced by the oxytocin receptor (OXTR) gene (Wang et al., 2021, p. 746), the neuropeptide gene most studied in autism spectrum disorder research (LoParo & Waldman, 2015). "This gene contains many single-nucleotide polymorphisms (SNPs), and each association study of OXTR and ASD [autism spectrum disorder] has analyzed a different set of these variants, leading to considerable heterogeneity in the literature" (LoParo & Waldman, 2015, p. 640). This represents a rich and growing opportunity to increase our understanding of the neuropsychological underpinnings of multiple facets of sociality.

> There is an ever-growing accumulation of molecular associations to autism spectrum disorders (ASD), from causative genes to endophenotypes across multiple functional layers… . Genetic copy number variations (CNVs) allow [sic] to investigate the relationships between gene dosage and its corresponding phenotypes. In particular, CNVs of the 7q11.23 locus, which manifest diametrically opposite social behaviors, offer a privileged window to look into the molecular substrates underlying the developmental trajectories of the social brain. As by definition sociability is studied in humans postnatally, the developmental fluctuations causing social impairments have thus far remained a black box. [There is much potential value in reviewing]…evidence of molecular players involved at both ends of the sociability spectrum… (López-Tobón et al., 2020, p. 1)

Important clues about sociality's inner workings are likely to be gained through careful study of what are today considered various types of autism spectrum disorders and Williams syndrome. The more understanding human beings gain about the underlying mechanisms, no

matter how overwhelmingly complex, the closer humanity comes to the ability to precisely adjust such neural underpinnings, allowing humanity to dramatically enhance our species' prosociality. That certainly seems relevant to the question of benevolutioneering's plausibility.

The next 2 sections consider candidate mechanisms of sociality's genetic factors by exploring, in nonhuman species, examples of possible parallels of sociality-impacting genetic variations. First, I considers candidate mechanisms of sociality's genetic factors by exploring the possibility that Williams syndrome-like genetic variation might underlie significant differences in sociality between 2 species of canines. Then I consider candidate mechanisms of sociality's genetic factors by exploring the possibility that Williams syndrome-like genetic variation between 2 closely-related nonhuman primate species might underlie significantly contrasting interspecies sociality.

Wolves and Domestic Dogs

Could we deepen our understand of candidate mechanisms of sociality's genetic factors by exploring the possibility that Williams syndrome-like genetic variation might underlie the contrasting sociality of 2 canine species? According to vonHoldt et al. (2017) and vonHoldt et al. (2018), the domestic dog is differentiated from gray wolves by a canine hypersocial behavioral syndrome, associated with genetic transposon dynamics analogous to the hemideletion on chromosome 7q11.23 associated with Williams syndrome in humans. The familiarity of so many human beings with the sociality of domestic canines is only a small part of what makes this analogy useful in conceptualizing the possible nature of intentional prosociality enhancement such as the enhancements anticipated with benevolutioneering.

Interestingly, the region of the canine genome which differentiates the sociality of domestic canines from wild canines has been identified as significant to test for variations most

suitable for assistance dogs. According to Tandon et al. (2019), DNA testing of candidate animals before extensive training programs is expected to be capable of significantly reducing the current 60% average failure rate of admitted candidates.

Recognition, even in other species, of relatively reliable mechanisms of encoding sociality-related traits and tendencies serves to increase confidence in the plausibility of enhancing human prosociality by precise adjustments of certain areas of the human genome such as chromosome 7q11.23, in light of its association with Williams syndrome and autism spectrum disorders.

There are species with genomes much more similar to the human genome than canines. The genome most similar to the human genome is a tie between the chimpanzee genome and the bonobo genome. The contrasting socialities of those two species and the similarity of their genomes to the human genome represent intriguing possibilities to triangulate apparent correspondence of possible neurogenetic correlates of sociality particularly useful in conceptualizing and devising enhancements of prosociality such as those associated with benevolutioneering and herein conceptualized.

Chimpanzees and Bonobos

Chimpanzees (Pan troglodytes) and bonobos (Pan paniscus) have been identified as, equally, the species with which human beings share the most genetic similarity (Parish et al., 2006; Prüfer et al., 2012). That chimpanzees and bonobos are so similar to one another seems particularly useful when considered with the fact that some of the most significant differences between chimpanzees and bonobos are profound differences in possibly heritable sociality-related traits.

> Bonobos and chimpanzees are highly similar to each other in many respects. However, the behaviour of the two species differs in important ways. For example, male

> chimpanzees use aggression to compete for dominance rank and obtain sex, and they cooperate to defend their home range and attack other groups. By contrast, bonobo males are commonly subordinate to females and do not compete intensely for dominance rank. They do not form alliances with one another and there is no evidence of lethal aggression between group. Compared with chimpanzees, bonobos are playful throughout their lives and show intense sexual behavior. That serves non-conceptive functions and often involves same-sex partners. Thus, chimpanzees and bonobos each possess certain characteristics that are more similar to human traits than they are to one another's. (Prüfer et al., 2012, p. 527)

Although not detailed in this dissertation, comparisons of human, chimpanzee, and bonobo genomes are intriguing. "1.6% of the human genome is more closely related to the bonobo genome than to the chimpanzee genome, and…1.7% of the human genome is more closely related to the chimpanzee than to the bonobo genome" (Prüfer et al., 2012, p. 528).

According to Wrangham (2018), "humans have a high propensity for proactive aggression, a trait shared with chimpanzees but not bonobos. By contrast, humans have a low propensity for reactive aggression compared with chimpanzees, and in this respect humans are more bonobo-like" (p. 245). When de Almeida et al. (2015) reviewed the role of sex-related differences in aggressive behavior in humans, bonobos, and chimpanzees, it was clear that "gender plays a critical role in aggressive and competitive behaviours, which are determined by a cascade of physiological changes, including GABAergic and serotonergic systems, and sex neurosteroids" (p. 121). The researchers reasoned that "understanding of the neurobiological bases and behavioural determinants of different types of aggression is fundamental for minimising these negative impacts" (de Almeida et al., 2015, p. 121).

Whereas chimpanzee society is patriarchal, territorial, and consisting of smaller groups with pronounced out-group rivalry and intergroup violence, bonobo's matriarchal society involves larger, fluid groupings with almost no intergroup hostility (de Waal, 2006). Typical chimpanzee intragroup aggression and violently enforced selfish behavior of the highest status male involved in allocation of resources such as food is not apparent among bonobos. Instead, in

more egalitarian bonobo society, resources are shared with little or no status criteria, and any competitive or aggressive behaviors are typically overcome almost immediately by brief intimate touching and subsequent cooperative sharing. Frans de Waal (2006) described bonobos as highly intelligent and, in their play activities, more imaginative and seeming to display greater concentration than other apes and monkeys.

As more is discovered about the relationships between genetic sequences and phenotypical neuropsychology, comparative neurogenetics will likely offer extremely useful clues as to how certain genetic and, perhaps, epigenetic variations shape sociality-related behavioral tendencies and patterns. Gaining such understanding will be important for determining what kinds of genetic modifications might be helpful in prosocially enhancing human beings. Benevolutioneering can involve selectively increasing, in human beings, some of the more prosocial behavioral tendencies of bonobos, thereby easing ingroup-outgroup dichotomies, intergroup rivalry, and intragroup social stratification and abusive domination of lower-ranking individuals by those of higher-rank.

Pathologizing Non-Prosociality

As stated earlier, benevolutioneering involves classifying common, almost universal, nonprosocial, antisocial, and even less than profoundly benevolent prosocial human traits as treatable pathologies. It was also explained that benevolutioneering endeavors to develop a model in which every sociality-impacting pathology is considered to be afflicting everyone, according to a spectrum of extent, instead of each sociality-impacting pathology being considered as only afflicting specific individual outliers currently considered diagnosable with each sociality-impacting pathological condition. This facilitates identifying numerous avenues of potential improvement for each person, furthering the possibility of an individualized intervention tailored precisely to each recipient. This subsumes every person into the group of

people who can benefit from interventions instead of perpetuating the dichotomy between outliers with pathologies, in need of interventions, and everyone else, those considered normal, functional, and needing no intervention.

Over the past 2 or 3 centuries, emergence within Western medical science and behavioral science of dramatically improved therapeutic technologies has been accompanied by dramatic changes in widespread schemas regarding problematic neurological, mental, emotional, behavioral, and social states and conditions. Elaborate demonologies have given way to the dynamic philosophical, scientific, and clinical constructs of modern psychology and psychiatry. Although dramatic, such transitions are, of course, never complete. Unprecedented future progress in therapeutic technologies, dwarfing all previous progress, can reasonably be expected to be accompanied by additional dramatic changes in widespread schemas regarding problematic neurological, mental, emotional, behavioral, and social states and conditions.

> Our growing understanding of the brain and how it generates empathy, self-control, moral judgment and even spiritual transcendence suggests that we will increasingly be able to identify and treat not just psychopathology, but ordinary moral and spiritual weakness. Neuroscience will offer us all the possibility of becoming the better people that we want to be. (Hughes, 2012, para. 1)

In characterizing these anticipated paradigm shifts, it would be difficult to clearly distinguish hopeful prediction from prescription. Nevertheless, there will be significant change. Some of the ways things could change would be arguably more desirable than other ways, according to most every value system. Benevolutioneering involves regarding aspects of "ordinary moral…weakness" (Hughes, 2012, para. 1) as pathologies and seeking to develop effective treatments for such pathologies.

To facilitate benevolutioneering pathologizing sociality that today is, more or less, unquestionably considered normal and which appears to function normally, a supporting mental health model must be developed. Two of the many components of benevolutioneering's

proposed mental health model represent significant expansions, perhaps even dramatic revisions, of prevailing constructs. First, the current list of problematic mental health conditions is to be expanded to include characteristics not yet regarded as disorders, illnesses, or, in some cases, even slightly problematic. Second, most, if not every, problematic mental health condition regarded as pathological today is to be diagnosed for every human being according to a continuum of extent.

The first component of benevolutioneering's proposed supporting mental health model, expansion of the current list of problematic mental health conditions, follows from dramatically raising standards of sociality-related functioning. In a world in which our entire species is profoundly morally enhanced and in which people are not striving to succeed at others' expense, even certain behaviors that are today considered necessary for responsible participation in society would be considered as unacceptable and as requiring mitigation.

In consideration of the second component, diagnosing every person with most every currently recognized problematic mental health condition seems likely to cause most if not all stigma to evaporate. In the absence of stigma, most denial might disappear or could be uniformly disregarded. Debates about diagnoses would, in at least one sense, be circumvented. There would be no sense in arguing about whether or not I have a particular condition if it is a condition that is known to affect everyone. Diagnostic focus could be shifted to only needing to establish degree or extent to which a person is affected. Nobody would be slipping through the cracks for lack of detection or due to diagnostic debates. Elitism, vogue, and prevailing cultural biases could become much less significant factors in determination of what and who is to be diagnosed as needing therapeutic intervention. Everybody does. In 1984, John Whiteley interviewed Rollo May, focusing on evil as a problem affecting all of humanity. After May characterized the

world's relentless widespread aggression, Whiteley asked, "As a therapist who has spent his professional life thinking about problems of the human condition, how would you begin to go about trying to understand why that's been a recurrent phenomena [sic] of the twentieth century" (Quest for Peace, 2012, 2:34–2:57)? May replied, "Well, I understand it as…a psychosis of everybody" (Quest for Peace, 2012, 2:57–3:05).

The Banality of Evil and Humanity's Harmful Attachments

A reader might wonder why benevolutioneering considers enhancing every human being instead of a somehow otherwise sensible fraction of the species, perhaps the 10% most malevolent along with the most reprehensibly destructive psychopathic outliers. Bandura (2002) spoke to this question:

> Edmund Burke's aphorism that, "The only thing necessary for the triumph of evil is for good men to do nothing" needs a companion adage under our technologically specialised realities: "The triumph of evil requires a lot of good people, doing a bit of it, in a morally disengaged way, with indifference to the human suffering they collectively cause." (Bandura, 2002, p. 113)

As mentioned earlier in this chapter, it might seem, to many people, excessive and unnecessarily extreme to aim for loving fondness and profound benevolence rather than aiming for somewhat less excessive, less radically increased prosociality, such as acceptably improved respect for others' rights along with some adequate, measured increase in concern for the common good. For many people, those more modest proposals might raise fewer concerns and weaker objections and might even seem somewhat more appealing. That appeal would nicely illustrate the universal, barely detectable trace of actual antisociality underlying humanity's universally distributed solute of subtle selfishness. Our survival has depended on it. Nevertheless, it is a tepid, nonprosocial value system, individually imperceptible in its minute contributions to the massive calculus of our species' cumulative, collective condition of existential hazard, unnecessary suffering, and unrealized joy. Closely related to the likelihood of

many people finding much less objectionable the notion of aspiring to less radical prosociality than to profoundly prosocial benevolence, it is useful and axiologically informative to evaluate widespread contempt for utopian ideas.

The idea of establishing, by some means, an overwhelmingly prosocial world certainly is not a new idea. I suspected that surveying utopian literature and literature evaluating utopianism (Bell, 1997b; Mumford, 1922/2017; Plato, 1959; Sargent, 2010; Segal, 2012; Skinner, 1948/1976) might lead me to at least a few portrayals and considerations of anticipated successful and generally satisfying results stemming from elimination or at least significant reduction, through technology, of selfishness and competitiveness as pathological states. This survey has been thought-provoking but, so far, not very fruitful. Nevertheless, my survey and consideration of utopian literature will continue. It seems very much more common in literature and film to see utopian ambitions portrayed as proven misguided, implausible, freedom-reducing, and ultimately dystopian. This is the case with Lowry's (1993) *The Giver*, Theobald and Scott's (1972) *Teg's 1994: An Anticipation of the Near Future*, and, in my opinion, even Skinner's (1976/1948) *Walden Two*, because of its treatment of free will. If utopianism actually is more commonly portrayed negatively, maybe that could be because there would be less entertainment value in increased peace, joy, and fulfillment, and decreased suffering, conflict, and fear. Perhaps such preferences reflect real-world values rather than reflecting only literary or entertainment preferences. "The term 'utopia" typically conjures up naïve, impractical, unrealistic, superficial notions of an allegedly perfect society" (Segal, 2012, p. 1). "Utopia has long been another name for the unreal; and the impossible. We have set utopia over against the world" (Mumford, 1922/2017, p. 10). The term is often used pejoratively. Perhaps this is due, in part, to short-lived attempts to establish utopian communities, such as Brook Farm (Delano,

2004) in mid-19th century Massachusetts. It is worth considering, though, that this might reflect a general reluctance to consider certain changes in the way human life is lived. Maybe parts of the human psyche are so used to aspects of humanity's perennial suffering as to be reluctant to seriously consider significantly reducing certain aspects of suffering.

Maybe humanity so values hard-won adaptations to suffering as to be reluctant to seriously consider no longer needing such adaptations. From the 5th grade through the 11th grade, I attended a private school with classmates whose families were very much wealthier than mine. Several of my classmates' parents bought them very nice cars as 16th birthday presents. On my 16th birthday I was grateful when my mother gave me a nice pair of tennis shoes and a new briefcase. To meet my transportation needs, I bought, from an insurance salvage auction, two wrecked Datsun pick-up trucks, one crushed in the front and one crushed in the rear. I enrolled in our school's auto mechanics class, and, for my project, I assembled a functional vehicle from the two damaged vehicles. Just before Thanksgiving I was able to start driving my truck to and from school. For the rest of the school year, in shop class each day, I improved my truck little by little. By late spring, the truck, although far from perfect, was repaired to the best of my ability, the extensive body work had been amateurishly completed, and I took my truck for its new paint job. No words could adequately convey my feelings of accomplishment, pride, and attachment the day I first drove my newly painted project truck. If I had been offered, that day, my choice of brand-new vehicles in exchange for my 10-year-old, small, cobbled-together Datsun pick-up, I would not have even considered such a trade. Human beings developed and refined desperate, bloody competition for tragically limited resources into elaborate art forms with proud lineages, codes of honor, exotic philosophies, even mystical spiritual traditions. My wife and I could not help feeling intense pride when, after many years of intense study and

training, our son and our daughter were each awarded hard-earned black belts in jujitsu. Similarly, parents all over the world are intensely proud of daughters and sons who rise above the fierce competition in dog-eat-dog worlds of various business fields, leaving, in their wakes, their less successful opponents, daughters and sons of mothers and fathers not quite as proud. People enjoy winning. People do not enjoy losing, being defeated. People enjoy winning when other people lose, when other people are defeated. People enjoy watching people winning, defeating other people. Because so many people enjoy watching people defeating other people, massive sporting entertainment industries are able to sell opportunities to watch people being defeating by other people who are winning. I suggest that our species' affinity for and reluctance to part with our adaptive strategies, such as, but certainly not limited to, competition, is similar to my affinity for and reluctance to part with my cobbled-together Datsun pick-up.

> I have a confused array of feelings and thoughts about violence, aggression, and competition. Just like most humans. …our species has problems with violence. We have the means to create thousands of mushroom clouds; shower heads and subway ventilation systems have carried poison gas, letters have carried anthrax, passenger planes have become weapons; mass rapes can constitute a military strategy; bombs go off in markets, schoolchildren with guns massacre other children; there are neighborhoods where everyone from pizza delivery guys to firefighters fears for their safety. And there are the subtler versions of violence—say, a childhood of growing up abused, or the effects on a minority people when the symbols of the majority shout domination and menace. We are always shadowed by the threat of other humans harming us. If that were solely the way things are, violence would be an easy problem to approach intellectually. AIDS—unambiguously bad news—eradicate. Alzheimer's disease—same thing. Schizophrenia, cancer, malnutrition, flesh-eating bacteria, global warming, comets hitting earth—ditto. [But] violence doesn't go on that list. Sometimes we have no problem with it at all. …we don't hate violence. We hate and fear the wrong kind of violence, violence in the wrong context. Because violence in the right context is different. We pay good money to watch it in a stadium, we teach our kids to fight back, we feel proud when, in creaky middle age, we manage a dirty hip-check in a weekend basketball game. Our conversations are filled with military metaphors—we rally the troops after our ideas get shot down. Our sports teams' names celebrate violence—Warriors, Vikings, Lions, Tigers, and Bears. We even think this way about something as cerebral as chess—"Kasparov kept pressing for a murderous attack. Toward the end, Kasparov had to oppose threats of violence with more of the same." We build theologies around violence, elect leaders who excel at it,

> and in the case of so many women, preferentially mate with champions of human combat. When it's the "right" type of aggression, we love it. (Sapolsky, 2017, pp. 2–3)

Fortunately, the widely asserted notion that human beings have necessarily evolved to just be naturally non-altruistic has been challenged and, with reasonable evidence, portrayed as biased and inaccurate (Klein, 2014; Pfaff, 2015; Ricard, 2015; Sober & Wilson, 2003; Wilson, 2015). Benevolutioneering starts with the useful but likely unprovable or even unfalsifiable assumption that inherent human altruism has been obscured by non-prosociality and antisociality and that such non-prosociality and antisociality can be treated. Benevolutioneering, though, is premised on considering the entire human species, while essentially altruistic in many important ways, as having a shared nature of such normalized, celebrated, appreciated, enjoyed, even intellectualized and spiritualized non-prosociality that even the people widely considered good people, regular people, normal upright citizens, reasonable moral models, are actually fundamentally self-centered, prone to spite, schadenfreude, dishonesty, non-prosocial and even outright antisocial competitiveness, and, for most people, even capable, under the right conditions, of morally shocking atrocities. Benevolutioneering is also premised on the recognition that some of what, today, is considered merely non-prosocial will, in the not-too-distant future, be fully regarded as essentially antisocial.

When Hannah Arendt (1965) attended the trial of infamous Nazi war criminal Adolf Eichman, she was confronted with the fact that Eichman was shown to be extremely normal. He was indistinguishable from regular people. He was examined, while in custody, by six psychologists who each found Eichman to be free of mental illness, free of any pathology, even free from personality disorders. Eichman freely admitted performing atrocities and thoughtfully explained his actions as following orders issued by people in proper authority, as completely harmonious with Kantian morality and as a matter of doing his civic duty, following both the

letter and the legislative spirit of his country's laws. At his trial, Eichamn was described by one doctor as unusual only in how unusually normal he was. Eichman was so troublingly normal that Arendt (1965) become troubled by normalcy, and she introduced, in her book's subtitle, the disturbing phrase, the banality of evil.

> The trouble with Eichmann was precisely that so many were like him, and that the many were neither perverted nor sadistic, that they were, and still are, terribly and terrifyingly normal. From the viewpoint of our legal institutions and of our moral standards of judgment, this normality was much more terrifying than all the atrocities put together, for it implied—as had been said at Nuremberg over and over again by the defendants and their counsels—that this new type of criminal, who is in actual fact hostis generis humani, commits his crimes under circumstances that make it well-nigh impossible for him to know or to feel that he is doing wrong. (Arendt, 1965, p. 276)

Milgram's (1963) famous experiment studied destructive obedience in a laboratory setting and demonstrated the shocking commonness of human beings' capacity and willingness to commit atrocities.

> [The experiment consisted of] ordering a naive S [subject] to administer increasingly more severe punishment to a victim in the context of a learning experiment. Punishment is administered by means of a shock generator with 30 graded switches ranging from Slight Shock to Danger: Severe Shock. The victim is a confederate of the E [experimenter]. The primary dependent variable is the maximum shock the S is willing to administer before he refuses to continue further. 26 Ss obeyed the experimental commands fully, and administered the highest shock on the generator. 14 Ss broke off the experiment at some point after the victim protested and refused to provide further answers. The procedure created extreme levels of nervous tension in some Ss. Profuse sweating, trembling, and stuttering were typical expressions of this emotional disturbance. One unexpected sign of tension—yet to be explained—was the regular occurrence of nervous laughter, which in some Ss developed into uncontrollable seizures. (Milgram, 1963, p. 371)

In 1979, when Morley Safer interviewed Milgram for *60 Minutes*, Milgram said:

> On the basis of having observed a thousand people in the experiment and having my own intuition shaped and informed by these experiments, that if a system of death camps were set up in the United States of the sort we had seen in Nazi Germany, one would be able to find sufficient personnel for those camps in any medium-sized American town. (as cited in M. Harris, 2016, p. 44)

After revisiting Milgram's experiment and reviewing 35 years of accumulated research and writings on the obedience paradigm, Blass (1999), said that "rates of obedience show no systematic change over time" (p. 972).

Arendt's (1965) and Milgram's (1963) recognitions of the normalcy of humanity's capacity for antisociality was underscored by Zimbardo's (2008) famous, albeit subsequently questioned and vigorously criticized (Blum, 2018; Le Texier, 2019) 1971 Stanford Prison Experiment (SPE). The SPE was intended to be a 2-week simulation of a prison environment designed to study how participants' behaviors in a custodial setting would be affected by certain situational variables. Participants quickly assumed their respective roles as guards and prisoners too well. Guards were cruel, and prisoners were overly compliant and overly tolerant of abusive treatment. According to Zimbardo (2008), the experiment was discontinued on its sixth day because the structure of the situation was affecting everyone, including Zimbardo. Participants' behavior was too extreme to allow the experiment to safely and responsibly continue without likely further harming participants. Zimbardo interpreted what was observed during the SPE as evidence of situational attribution similar to that observed in Milgram's (1963) famous experiment. In 2004, when the world became aware of the reports of abuse of prisoners at Abu Ghraib and Guantanamo Bay, Zimbardo's SPE was brought back into the media spotlight. Zimbardo's (2008) subsequent book was an extensive consideration of man's inhumanity to man, of the capacity, within normal human beings, for antisocial behavior, of the banality of evil.

> Within certain powerful social settings, human nature can be transformed in ways as dramatic as the chemical transformation in…Stevenson's…Dr. Jekyll and Mr. Hyde. The enduring interest in the SPE…comes…from the…startling revelation of "transformation of character"—of good people suddenly becoming perpetrators of evil…or pathologically passive victims…in response to situational forces… . Good people can be induced, seduced, and initiated into behaving in evil ways. They can also be led to act in irrational, stupid, self-destructive, antisocial, and mindless ways when…immersed in "total situations" that impact human nature in ways that challenge our sense of the stability and

> consistency of individual personality, of character, and of morality. We want to believe in the essential, unchanging goodness of people, in their power to resist external pressures, in their rational appraisal and then rejection of situational temptations. We invest human nature with God-like qualities, with moral and rational faculties that make us both just and wise. We simplify the complexity of human experience by erecting a seemingly impermeable boundary between Good and Evil. On one side are Us, Our Kin, and Our Kind; on the other side of that line we cast Them, Their Different Kin, and Other Kind. Paradoxically, by creating this myth of our invulnerability to situational forces, we set ourselves up for a fall by not being sufficiently vigilant to situational forces. The SPE, along with much other social science research…, reveals a message we do not want to accept: that most of us can undergo significant character transformations when…caught up in…social forces. What we imagine we would do…may bear little resemblance to who we become and…are capable of doing… . The SPE is a clarion call to abandon simplistic notions of the Good Self dominating Bad Situations. (Zimbardo, 2008, pp. 210–211)

Pathologize Selfishness and Its Derivatives

Within the context of the longstanding debates concerning the puzzle of altruism, behaviors that have been classified as selfishness are "those that increase the fitness of the actor but decrease that of the recipient" (Bahçekapili et al., 2019, p. 1). Regarding a model that pathologizesselfishness, two important concepts are worth considering. First, selfishness-related pathologies might be regarded as commendable adaptations. These coping strategies might have developed in response to species-wide, systematically abusive social structures and social atmospheres—from universal mistreatment. As with other pathological coping strategies, individuals' very personhoods and the fabric of their most fundamental and cherished values, value systems, and schemas are inextricably woven from the thread of self-centeredness and ingroup bias paradigms. Most people are quite unlikely to eagerly embrace therapeutic interventions for pathologies of selfishness much as is now the common resistance to treatments of unipolar mania, which, perhaps relevantly, the *DSM-5* intriguingly somewhat de-reified, tucking it into bipolar I.

Perhaps one of the clearest considerations regarding pathologizing selfishness involves noticing that humanity has arguably reached a point at which selfishness compromises even

one's own self-interests as well as the interests of those with whom one is in society. Individually and collectively selfishness driven structures and processes are taking to the edge of a cliff. Paradoxically, our species has reached a point at which, in order to continue strategically and effectively prioritizing one's own interests, one must become radically altruistic, even benevolent, and one must be part of a profoundly benevolent worldwide society. Individually, our species has reached a threshold of necessary intervention. Intervention thresholds of any psychopathologies are a function of degree of personal dysfunction and cost to society. The critical, urgent nature of humanity's narrowing social, economic, and ecological margins is rapidly dictating dramatic reclassification, even re-taxonomization, of universal characteristics long regarded benign if not actually even regarded as virtuous. Could even formerly desirable human traits shift beyond now being regarded as merely uncouth to the point of being regarded as extinction-level public health emergencies?

What Might a Benevolutioneered Person Be Like?

Among the simplest ways to characterize a benevolutioneered person would be to characterize one of the many persons who are or have been exemplars of prosociality. Most people could probably name the most loving, caring, generous, least selfish person they have ever known or known of. And very many of those people thus identified really would serve as excellent exemplars of prosociality and as good illustrations of how a benevolutioneered person would be characterized. Such exemplars are scattered throughout human history. Some extremely prosocial people might even be more similar to how a benevolutioneered person would be because some extremely prosocial persons have undergone profound transformations; they have become exemplars of prosociality after having previously been either significantly antisocial or after having previously been relatively typical in their sociality. Some such transformations have sometimes involved events such as near-death experiences, crises such as

personally traumatic experiences, psychedelic experiences, religious conversions, epiphanies, theophanies, becoming a parent, getting into serious trouble, seeing their own actions seriously harm another person, or entering an important new relationship. Other such transformations seem to have taken place spontaneously. Some transformations have been instantaneous, others seem to have been gradual, possibly developmental, perhaps appearing to be a matter of growing up. Nevertheless, there is generally a sense of continuity of identity, and adaptations generally work out one way or another. Some prosocial transformations precipitate significant transitions in terms of relational, professional, economic, physical, health-related, and spiritual dimensions of a person's life. It should be no more difficult to imagine the transformations associated with benevolutioneering than it is to imagine transformations that already take place such as those transformations listed in this paragraph.

As with remarkable persons who are exemplars of prosociality, benevolutioneered persons would neither be less free to do as they please nor less variable from one individual to the next individual. Freer persons could be even more fully differentiated, less generic, less constrained by uniformity than less free, non-benevolutioneered persons.

As with current and past exemplars of prosociality, famous or obscure, one might expect a benevolutioneered person to be more honest, more humble, more generous, more helpful, more open to others' perspectives, more appreciative and valuing of multiple perspectives, better able to take other persons' perspectives, less selfish, more courageous, more respectful, more thoughtful, less easily offended, more fair, less bigoted, less likely to harm or annoy others, more tolerant, more willing to forgive others, and more inclined to value others for inherent worth than for their utility, more willing to appreciate input and assessment from others, less inclined to criticize others, less inclined to hoard any form of resources, less likely to contribute to others'

variously unpleasant feelings, more likely to contribute to others' variously pleasant feelings, more inclined to actively care for the environment, not inclined to compete with others or to enjoy competition vicariously, less likely to experience schadenfreude, hatred, spite, or envy, less likely to experience indifference or apathy toward another's suffering, more likely to behave heroically in multiple senses of heroism, more trustworthy, more flexible, more interested in what others find interesting, more curious, more careful to avoid inadvertently causing harm, more pleasant, more enjoyable to be with. Because these traits already actually characterize certain persons who exist or who have existed, these are not mere fantasy characteristics.

Exploring Plausibility of Implementing Benevolutioneering

Is there any realistic likelihood of actual wide-spread implementation of any form of moral bioengineering? Is there any way to know whether or not there could ever be actual wide-spread implementation of moral bioengineering technologies? There is. Moral bioengineering technologies are already widely implemented. This has been the case for many years. Ritalin, selective serotonin reuptake inhibitors, frontal lobotomies, surgical and chemical castration, hormone replacement therapies, sleeps aids and surgeries, thyroid medications, and medications for helping to regulate blood sugar are just a few of many interventions intended to influence or which seem to have actually influenced aspects of human behavior and emotions arguably involved with sociality and moral functioning. Some moral bioengineering technologies have seemed to help bring about certain modifications of human behavior and emotions. Some moral bioengineering technologies, intended effects notwithstanding, have not.

Typically, as technologies have emerged that appear capable of affecting moral function, such technologies have been almost immediately implemented. The question is not whether moral bioengineering technologies will be developed. They already have been, and there is little reason to believe moral bioengineering technologies will not continue to be developed.

Some very important considerations involve how moral bioengineering technologies will be developed in terms of discerning which modifications of human behavior and emotion are moral improvements rather than moral diminishments. Such axiological questions might be less challenging within certain isolated monocultures. Our planet-wide society is neither homogenous nor segregated.

Societies with moral systems that value and manifest mutual respect, personal freedom, and non-tyrannical social order lack the luxury of dismissing the schemas and values of all but society's most powerful classes. Paradoxically, it might be argued that respecting and valuing everyone's schemas and values includes respecting and valuing the schemas and values of those people who value absence of mutual respect, absence of personal freedom, and tyrannical social orders. Many people value defeating or even eliminating those whose schemas and values differ in certain ways from their own. Preferring competition and combat over cooperation and compassion is a prevalent schema and value system. Preferring success at other people's expense over win-win outcomes is extremely common, in that such preferences exist on a continuum, and, for many, are accompanied by ambivalence and can alternate with more prosocial moods and behaviors. How, then, can we establish any shared basis for determining which modifications of behavior and emotion represent moral progress rather than moral diminishment? How can it be established that moral concern itself is even a necessary consideration, when there are many people whose schemas and values preclude this notion? These questions are neither trivial nor impractical. They are hypothetical. Impasses created by the seeming intractability of such questions are not likely to slow the development of moral bioengineering technologies. Development could simply continue proceeding or even dramatically accelerating with little regard for such considerations, and little regard for potential

consequences neglecting long-view intentionality. Should we, instead, be intentional about humanity's moral trajectory as exponential technological progress accelerates development of moral bioengineering technologies, thereby accelerating rates at which we are reshaping essential humanity? Analogously, is steering increasingly important albeit increasingly challenging as one further depresses a vehicle's accelerator pedal? Benevolutioneering is conceptualized as intentionally steering the increasingly accelerating development of moral bioengineering technologies in ways that benefit everyone rather than benefiting some people more than most people.

People likely to benefit more than others from non-egalitarian bioengineering technology programs would likely be less eager to see developed and implemented a more egalitarian universal human enhancement approach such as benevolutioneering. It is not difficult to anticipate seeing certain oligarchs attempting to manipulate popular opinion by means similar to current misinformation efforts to manipulate public opinion about various forms of renewable energy, somehow misleading millions of impressionable people to support sustained and expanded reliance on fossils fuels.

During the current COVID-19 pandemic, it is likely that untold damage and suffering have stemmed from politicization of such inherently apolitical public health measures as vaccines, facemasks, and social distancing. Such widespread misinformation dynamics are certainly anticipated in considering the challenges associated with universally implementing benevolutioneering.

Given the climate of distrust of science and public leadership and popular affinity for many aspects of human experience that would be substantially altered by benevolutioneering, how could there be any reasonable likelihood that benevolutioneering would ever be universally

implemented? Such a challenge will require focused, comprehensive strategic approaches, but I am confident there are routes to full implementation as certainly as numerous other paradigm-shifting technologies have been universally accepted during the past century. What follows are a few considerations relevant to developing approaches to benevolution's successful implementation.

We are not actually looking forward to some time in the future when we will be faced with sociality-impacting bioengineering technologies as an entirely new category of progress. We are in the middle of a longitudinal trend of development and implementation of such innovations, and there is already widespread, even eager, acceptance. Although typically frightened in anticipation when confronted by people-changing technologies in science fiction, people implement people-changing technologies as fast as they are developed.

Benevolutioneering, as conceptualized and characterized herein, would profoundly increase every recipient's actual freedom in countless ways and would not, in any way, even slightly, reduce any recipient's freedom. Benevolutioneering would also, for every recipient, profoundly increase joy and profoundly reduce suffering. It is promotionally favorable that these effects would be conspicuous in early adopters.

Benevolutioneering would not be a one-size-fits-all. Rather, benevolutioneering implementation would be tiered on a continuum from universally required aspects to rarely granted exceptions that would facilitate sociality more akin to that found historically among certain rare mystics. It would be conspicuous that benevolutioneering would actually increase individuality, confidence, and recipients' social appeal. It would be extremely pleasant and rewarding to be with recipients of benevolutionary enhancements.

Benevolutioneering would, as earlier stated, be founded upon, entirely consistent with, and shaped at every level by subsumic philosophy. In order for any person, as a member of any culture, to consider benevolutioneering, benevolutioneering would have to somehow be compatible with that person's cultural schema of plausibility. Somehow, then, a philosophical system encompassing a universally acceptable ontology that validates, accommodates, and includes constructs such as various cultures' accounts of origins, epistemologies, and axiologies must conceptually underlie benevolutioneering. Most of humanity either accepts a model of biological evolution, believes that God created humanity as described in the biblical book of Genesis, believes in some other form of one of the ancient accounts of literal divine creation, or is open to some combination of such explanations of our origins. That has necessitated development of subsumism, without which, axiological consensus adequate for benevolutioneering's universal implementation would be implausible. Compared with moral enhancement models married to one or another parochial worldview and schema of plausibility, benevolutioneering, because it is philosophically subsumic, might face very much less of the most important kinds of popular resistance.

One category of incentives for becoming a recipient of benevolutioneering enhancements could be that any and all criminal histories, criminal records, currently being served prison terms, pending capital punishment judgments, parole status, probation status, sex-offender registrant requirements, dishonorable discharges, ethics violations, academic or professional dishonesty, problematic credit history, records of restraining orders, existing restraining orders, driving records, no-fly list status, no-trespass orders, revoked licenses of any kind, every kind of public or private ban, school expulsions, every kind of rights forfeiture, and any other compromised public or private trust statuses would be completely reset. It might even be a reasonable incentive

for former officials who have reached life-time term limits for holding office to have their time-in-office statuses reset.

It is conceivable that certain human enhancement technologies could be permitted only to recipients who are recipients of benevolutioneering enhancements. With great power comes great responsibility. Existing moral capacities are barely able to facilitate functional societies of human beings with normal personal capabilities. Having enhancements which would today be thought of as superpowers and which would, in effect, endow recipients with superpowers, seems hazardous with non-enhanced moral capacity. Some examples of enhancements for which benevolutioneering might be prerequisite are enhanced cognitive abilities, increased muscle strength, enhanced sensory abilities including entirely new senses, and, as is considered in the next section, major life extension.

Marrying Major Life Extension Technology to Benevolutioneering

It might not be very hard to imagine significant human life-span extension sometime in the distant future. It is probably more common to dismiss the notion of significant human life-span extension as science fiction or as merely more wishful fantasy stemming from naïve humanity's relentless search for the fountain of youth. Among the most important reasons to seriously consider species-wide benevolutioneering, though, are human enhancement efforts already well underway.

According to Riley (2005) and Roser et al. (2019), 200 years ago, worldwide human life expectancy at birth was 29 years; 100 years ago, it had risen to nearly 35 years; 50 years ago, it had risen to 57.4 years; 25 years ago, it had risen to 65.3 years; 10 years ago, it had risen to 70.3 years; 5 years ago, it had risen to 71.9 years; 2 years ago, the last year before the COVID-19 pandemic, worldwide human life expectancy had risen to 72.6 years. According to latest United Nations Population Division estimates, at the end of 2020, average human life expectancy at

birth for both genders combined was 73.2 years (Worldometer, 2021). During the last century, our species has more than doubled its life expectancy. It is unrealistic and irresponsible to pretend that profound lifespan extension is mere wishful fantasy or that it is sometime way off in the distant future. It has been underway since before we were born. There is no basis for discounting the possibility of our species increasing life expectancy at birth at an even greater rate than during the century that has just passed. The means of increasing the human lifespan might be very different going forward. As mentioned in Chapter 3, it is quite plausible that technology could surprisingly soon make it possible to cure aging as a genetic disease, effectively extending human beings' expected lifespans by centuries.

There are good reasons to be concerned about so dramatically extending human lives if human beings' current values and sociality remain as they are today. It is difficult to imagine our planet supporting such relentless accumulation of competitive, antisocial, wasteful, increasingly intelligent organisms. It is also concerning to think of some of the most powerful, selfish people and how they relentlessly accumulate power and resources and how it would affect our species if such people lived with youthful vitality for 900 years instead of living for 90 years with their last 15 years spent in far less competitive form. There are a few people here and there, though, regarding whom most people would consider it better for our species if those people did live for many centuries or even millennia. Such people live in ways that make life better for others and help others live in ways that improve society and our ecosystem. Nevertheless, I consider it extremely likely that human beings will continue attempting to develop technologies which dramatically increase lifespan, that those efforts will not all be entirely unsuccessful, and that human beings will continue ever more successfully developing therapies and cures for aging as a genetic disease.

It will be very challenging to convince everyone to voluntarily participate in benevolutionary enhancement of prosociality. Most people, though, prefer not immediately dying. I have been with many people while they are dying. Most certainly prefer to be healed. I anticipate that, given the choice to either die or have their life extended with their youthful prime restored along with benevolutionary enhancement of prosociality, a significant percentage of our species would readily participate in such dual enhancement.

How, though, could therapy to cure aging be denied to anyone? Is there precedent or even the societal stomach for attaching conditions to a life-extending intervention? There absolutely is. It is routine today for people seeking life-saving medical procedures to be denied treatment unless and until they demonstrate that they have successfully made and sustained certain concrete, profound lifestyle modifications. "The standard requirement for liver transplant—abstinence from alcohol for 6 months before transplantation—has been applied widely" (Mathurin & Lucey, 2020, p. 507).

> In the U.S., a widespread clinical practice requires patients with alcoholic liver disease to complete a period of sobriety before they can get on the waiting list for a liver. This informal policy, often called "the 6-month rule," can be traced to the 1980s. The thinking then — and among proponents of the practice today — was that six months of abstinence gave a patient's liver time to heal and, thus, avoid a transplant. If that didn't work, the patient would at least have proven they can stay sober and would not return to drinking after a transplant. (Pattani, 2021, para. 6)

"About 40% of lung transplants…are performed for end-stage emphysema in former smokers. Patients are principally only enrolled on the waiting list after having quit smoking for at least 6 months" (Vos et al., 2010, p. 1411). "Substance users or former substance users often do not get accepted in the recipient lists. …The International Society of Heart and Lung Transplantation recommends…patients with active alcohol and illicit substance use [be considered] unsuitable for heart transplantation" (Majumder & Sarkar, 2020, p. 2). The super morbidly obese are typically denied desperately needed lifesaving bariatric procedures unless

they first lose a certain amount of weight and demonstrate that they can, in fact, control their eating well enough to indicate a certain capacity to adhere to a very strict dietary regimen such as will be required for successful postsurgical outcome (Eyal, 2011, 2013).

I propose biological immortality technologies only be available combined with benevolutioneering interventions. In other words, benevolutioneering would be a prerequisite or an inseparable accompaniment for any and all significant life-span extension technologies. There are numerous plausible, reasonably hopeful avenues for marrying major life extension technology to benevolutioneering's entirely voluntary, freedom-increasing prosocial neuroenhancement. One possibility would involve scientists successfully achieving aging cures, inseparably bundling major life extension therapies to prosocial neuroenhancement and then remaining unwilling to ever release such technology apart from prosocial neuroenhancement technology. Another possibility would involve legislation and regulation prohibiting aging cures apart from prosociality enhancements. If any of those arrangements for marrying major life extension technology to prosociality enhancements are instituted, then cheating seems inevitable. What would likely end up happening to those who cheat and somehow manage to avail themselves of major life extension technology and other enhancement without prosociality enhancements? I believe that problem could prove self-limiting.

Maybe the question will be: If, or, more likely, when, in a post-scarcity world, some among society's powerful, rich, unscrupulous elite manage to obtain their aging cure apart from prosociality enhancements, how long would it take to recognize and pursue prosociality enhancements' hedonic effects to escape having to face what, for an egoist, would be gnawingly vacuous universal ubiquity?

Consider the trajectories of many of today's massive superstars of success. What seems to most often happen to superstars, especially relatively young superstars, after they actually manage to get the carrot, the Super Bowl ring, the platinum albums, their Oscar award? What do we commonly hear about those paparazzi-plagued few who manage by way of their Superbowl ring, platinum album, best seller, or Superlotto jackpot, to run right off the end of modern culture's treadmill and grab the dangling carrot which, for the rest of us, by some stick and string, always outpaces decades of our best efforts? Is it uncommon to hear of our beautiful, victorious icons' journeys from red carpet to alcohol arrest to rehab to cocaine to suicidal overdose? How could the ennui accompanying early 21st century near-umeric lives not be trivialized by actual anacumarity? Modern near-umeric lives are extremely rare, and that exclusivity at least offers a hyper-competitive person some selfish satisfaction from being such a rarity of success and good fortune. What, though, if such a superstar could not even "wonder what the poor people are doing" because less fortunate people did not exist? Non-benevolutioneered anacumers will be left staring directly into the ennui abyss, lacking even schadenfreude's depraved consolation. If non-benevolutioneered anacumers could ever even be a possibility, which, as is discussed in the next section, they might not, would such abysmal ennui drive them to seek hedonic relief possible only through benevolutioneering or else drive them to suicide or overdose as with so many of today's unicorn superstars?

This section has merely introduced the consideration of the marriage of major life extension technology to benevolutioneering. The next section continues consideration of that marriage, but it takes that consideration to another level. What if the two issues are already inherently inseparable?

Moonshot: Might Methuselarity Require Benevolutioneering?

What if we cannot keep people from deteriorating and dying as they age unless we remedy much of what has been variously conceptualized as such constructs as evil, sociopathy, psychopathy, selfishness, apathy, competitiveness, worry, anxiety, carelessness, harmful addictions, unkindness, meanness, bullying, and other characteristics benevolutioneering is conceptualized as seeking to mitigate? What if aging, conceptualized as a treatable disease, can only be fully cured by means which necessarily include prosociality enhancement, that without prosociality enhancement it is impossible to eliminate the deterioration process associated so far with aging? What if biological immortality or even significant additional life span extension was impossible without benevolutioneering? If that was the case, certain possible dystopian trajectories would be very much less likely. Significantly extending human lifespan with transhumanist technologies is a currently well-funded (Adams, 2021; Barrett, 2018; Corbyn, 2015; Jimenez, 2021; Miller, 2020), seriously anticipated pursuit. If such biological near-immortality could not be achieved apart from benevolutioneering's profoundly benevolent prosociality enhancements, then achieving species-wide implementation of benevolutioneering would be much less challenging. Most people would probably prefer experiencing enhanced prosociality rather than getting old, getting sick, and dying. Maybe this seems like nothing more than wishful thinking. I propose, however, that this wishful relationship between dramatic lifespan extension and enhanced prosociality might not be as wildly improbable as it might seem. Establishing such a link between feasibility of enhanced longevity and profoundly enhanced benevolent prosociality would be the moonshot for my exploration of benevolutioneering.

If it does happen to be the case that biological immortality or even significant additional life span extension is not possible to achieve without benevolutioneering or something like benevolutioneering, we can at least know, today, that we do not know whether this is the case. It

is best to clearly acknowledge our ignorance in this matter. We absolutely do not know it to be a fact that dramatic life span extension is impossible to achieve without benevolutioneering. If, however, it was a fact that dramatic life span extension is impossible without benevolutioneering, what indications of that fact, if any, might we reasonably expect would be available to us today? Would there be any hints? Conversely, if dramatic life span extension is possible without benevolutioneering, what indications of that fact, if any, might we reasonably expect would be available to us today? Would there be any hints of that fact if it was indeed the case?

Apophenia has been defined as "the spontaneous perception of connections and meaningfulness of unrelated phenomena" (Carol, n.d., para. 1). I like the more conspicuously descriptive word Shermer (2008) coined: *patternicity*, "the tendency to find meaningful patterns in meaningless noise" (para. 1). The human tendency to experience patterns sometimes serves well and other times just fosters nonsensical ideas. Explaining survival advantages of such apophenic tendencies as consistently "believing that the rustle in the grass is a dangerous predator when it is only the wind" (Shermer, 2008, para. 4), a type I error in cognition, or false positive, Shermer (2008) called humans "the ancestors of those most successful at finding patterns" (para. 2). Believing that the rustle in the grass is only the wind when it is actually a dangerous predator is a type II error in cognition, or false negative. Shermer (2008) coined the term *apatternicity* to describe "not believing something is real when it is, not recognizing a real pattern" (para. 2). It seems that patternicity might be a beneficial strategy in various matters in which survival is at issue. Would it be fair to suggest that when experiencing apparent plausible survival-related patterns within available noisy information, responding to apparent patterns as if they are or might be actual patterns conveys survival advantage?

In this section, the risk of type I error in cognition is very high. That is recognized and acknowledged. A few possible connections and relationships will be proposed. Those connections and relationships could very well be nothing more than manifestations of the kinds of coincidences that characterize truly random data. My apophenic mind might be so perceptually vigilant that patternicity could get the best of me. Without losing sight of that very real possibility, would it be fair to suggest that this dissertation's subject matter concerns potential species-level survival issues? If we experience apparent plausible survival-related patterns within available noisy information, is it possible that responding to those apparent patterns as if they are or might be actual patterns might convey a species-wide survival advantage?

The following three subsections each consider an aspect of the possibility that significant additional life span extension is not possible to achieve without benevolutioneering or something like benevolutioneering. These ideas are presented in what seems to me to be descending order of probability and ascending order of intrigue.

Benevolutioneering and Self-Care

How would personal wellness and longevity be affected today if it was possible to immediately bestow the ability to flawlessly carry out one's wellness-related New Year's resolutions? Among important components of prosociality which benevolutioneering is conceptualized to enhance are will-power, won't-power, and all other capacities related to self-control and self-regulation. Benevolutioneering's enhancement of individuality is conceptualized to involve significantly reduced vulnerability to harmful peer pressure and vogue trends that induce behavior neither in one's own best interest nor in others' best interest. Imagine reduction

in mortality accompanying increased ability to form and adhere to the healthiest behaviors and lifestyles.

Prosociality's Relationships With Wellness and Longevity

The positive association of prosociality and longevity can be explored several ways. There is evidence that prosocial behavior and disposition promote health and longevity. There is also evidence that prosocial individuals tend to live longer than antisocial, nonprosocial, or less prosocial individuals. There are some indications suggesting that collective prosociality positively correlates with increased average life expectancy. Various causal and even reciprocal mechanisms for such associations can be and have been speculated or even hypothesized.

Holt-Lunstad et al. (2010) demonstrated a significant relationship between qualitative and quantitative aspects of individuals' social relationships with both morbidity and mortality:

> Data across 308,849 individuals, followed for an average of 7.5 years, indicate that individuals with adequate social relationships have a 50% greater likelihood of survival compared to those with poor or insufficient social relationships. The magnitude of this effect is comparable with quitting smoking and it exceeds many well-known risk factors for mortality (e.g., obesity, physical inactivity). These findings also reveal significant variability in the predictive utility of social relationship variables, with multidimensional assessments of social integration being optimal when assessing an individual's risk for mortality and evidence that social isolation has a similar influence on mortality to other measures of social relationships. (Holt-Lunstad et al., 2010, p. 14)

Colonnello et al. (2017) presented evidence for social support's neuroprotective role from gestation to life's later years. "Positive social interactions play a key role in neuroprotection throughout life by promoting healthy neurodevelopment and counteracting brain aging in adulthood, protecting brains in elderly people, and facilitating recovery after brain insult" (Colonnello et al., 2017, p. 552). Positive prenatal social environment influences regulation of maternal stress-induced hypothalamic-pituitary-adrenal activation and helps protect the fetus from high maternal glucocorticoid levels (Duthie & Reynolds, 2013). There is evidence that suggests that experiencing compassion endows long-term health and wellbeing benefits (Kok et

al., 2013; Steffen & Masters, 2005). Organisms, including human beings, respond to survival threats with activation of their neurophysiological stress response. As modeled by Sandi and Haller (2015), stress is "the activation of the neurophysiological stress response" (p. 290), and stress plays key roles in adapting to disruptions to homeostasis and in helping organisms, including human beings, to cope with such disruptions. Early life stressors impose a progressively dysfunctional social behavior pattern, developing from asociality from prenatal stressors to hostility from postnatal stressors to antisociality from childhood stressors (Sandi & Haller, 2015). Significantly, for purposes of exploring associations of prosociality and longevity, the life stressors considered by Sandi and Haller (2015) stem from the effects of nonprosociality upon an individual's life experience. It is apparent that there are, therefore, self-reinforcing cycles of nonprosociality begetting and amplifying nonprosociality, and it is reasonable to assert that nonprosociality impacts individuals' health, well-being, and longevity. That harmonizes with University of North Carolina's Kenan Distinguished Professor of Psychology, Barbara Fredrickson's observation that "the picture that's emerging from the science…is that…our bodies are designed for love, in that, the more we love, the healthier we become, the more flourishing at a physical level" (Emory University, 2010b, 1:25–1:36). According to Susan Pinker (2014), our social experiences are as important to our physical health and wellness as nutrition and exercise. Based on their investigation of and longitudinal associations between compassion and the health behavior outcomes, Gluschkoff et al. (2019) asserted that a compassionate disposition might even serve to protect an individual's health from the effects of otherwise established health-robbing behaviors such as excessive consumption of alcohol.

Nelson-Coffey et al. (2017) asserted that it is already established that "prosocial behavior is linked to longevity" (p. 8), and that, because of their pioneering approach involving

manipulation of prosocial behaviors, their research might help "explain previously observed health advantages associated with prosocial behavior" (p. 8), in that their findings "suggest that prosocial behavior can causally impact leukocyte gene expression profiles in ways that might potentially help explain the previously observed health advantages associated with social ties" (p. 8). Greater reduction in mortality is derived from providing social support than from receiving social support (Brown et al., 2003). Caregiving decreases mortality risk (Brown et al., 2009). Brown and Brown (2015) presented a reasonable case for their hypothetical model in which they posited that "a mammalian neurohormonal system…evolved to regulate maternal care, but over time may have been recruited to support a wide variety of helping behaviors in humans and other social animals" (p. 1). According to their model "perception of need or distress in others activates caregiving motivation, which in turn, can facilitate helping behavior. Motivational regulation is governed by the medial preoptic area of the hypothalamus, interacting with certain other brain regions, hormones, and neuromodulators" (p. 1), namely progesterone and oxytocin. Brown and Brown (2015) suggested that, in their "consideration of neurohormonal circuitry and related evidence" (p. 1), caregiving-related hormones, already known to convey stress-buffering and restorative benefits, "are responsible, at least in part, for health and longevity benefits associated with helping others" (p. 1). Inagaki (2018) also explored neural mechanisms that might link health to providing social support.

> Giving support…leads to increases in feelings of social connection and greater feelings of social connection are associated with greater VS [ventral striatum] and SA [septal area] activity to giving support. These results suggest that giving support may have additional benefits by reinforcing feelings of social connection, feelings that are critical to the perceived quality of one's relationships and long-term health. (Inagaki, 2018, p. 44)

One category of behavior which is probably usually associated with prosociality more than other types of behavior is volunteering behavior of various kinds. Burr et al. (2016)

explored, for middle-aged adults and older adults, the relationship of volunteering behavior and five established risk factors for cardiovascular disease and metabolic syndrome. They found that:

> Among middle-aged adults, results showed that volunteers were less likely to have high central adiposity, lipid dysregulation, elevated blood glucose levels, and MetS [metabolic syndrome] compared with non-volunteers. For older adults, results showed volunteers were less likely to be hypertensive and more likely to have lipid dysregulation than their non-volunteer counterparts. (Burr et al., 2016, p. 937)

In some studies of volunteering behavior, the motives for volunteering are not considered. Konrath et al. (2012) explored the motives for volunteering and investigated the association of motives for volunteering with 4-year mortality risk. Their investigation replicated earlier research's finding that volunteering per se does, in fact, reduce mortality risk, but their investigation also found that there is little or no significant difference in reduced mortality risk associated with motivation for volunteering. The act of volunteering apparently provided similarly reduced mortality risk when volunteering was clearly altruistically motivated as when volunteering stemmed from admittedly self-serving motivations. If this holds true, this could be good news for people wanting to benefit from volunteering but unable to make themselves have altruistic motives. It would be valuable to research the subsequent development of altruistic motivation for prosocial behaviors such as volunteering when such prosocial behaviors were initiated from largely nonaltrustic motivations. I have known of people who have reported that their altruistically motivated volunteering behaviors began with court ordered community service activity that they initially resented but subsequently became very fond of after developing altruistic motivations. It is somewhat like priming an altruistically motivated prosocial behavior pump. Wiwad and Aknin (2017) "compared the emotional outcomes of recalling a past instance of prosocial behavior motivated by self-focused and other-focused concerns. Using both between and within subjects designs" (p. 730), they found that remembering "other-focused helping leads to higher positive affect than recalling an instance of self-focused helping. This finding was

mediated by feelings of morality" (p. 730). Wiwad and Aknin (2017) seemed to suggest that "not all acts of kindness offer equivalent well-being benefits and that selfish motives may undermine the emotional rewards that typically follow other-focused prosocial behavior" (p. 730). Also, the findings reported by Konrath et al. (2012) notwithstanding, there are important benefits that accompany experiencing compassion and acting with compassionate intentions. James Doty, clinical professor in the Department of Neurosurgery at Stanford University and Director of Stanford University's Centre for Compassion and Altruism Research and Education, said that when a person's behavior is motivated by "compassionate intentions, this has a…huge positive effect on their physiology. It takes them out of threat mode and puts them into the rest and digest mode. What happens when that occurs is it changes how they respond to events" (Bell, 2020, para. 8). According to Doty, the parasympathetic nervous system is activated by kindness and compassion, and, conversely, kindness and compassion protect the body by helping to alleviate the all-too-common chronic over-activation of the sympathetic nervous system (Bell, 2020). Contemporary lifestyles correspond with chronic over-activation of the sympathetic nervous system, promoting chronic over-release of inflammatory proteins and prematurely shortened telomeres. Conversely, compassion research has demonstrated that compassion meditation associates positively with "greater resistance against aging, as evidenced by an increase in telomerase and telomere length" (Stenzel, 2020). Hoge et al. (2013) reported longer telomeres than gender-matched controls in women who had practiced loving-kindness meditation for several years.

According to Wang et al. (2020), physical pain can be alleviated by altruistic behaviors. Riera et al. (2014) demonstrated a positive association between the sensation of pain and increased mortality. Riera et al. (2014) suggested that systematically relieving pain could

increase a pain-sufferer's life span. It seems possible that a lifestyle overwhelmingly characterized by altruistic behavior could reduce the overall experience of pain throughout one's life and that such significant reduction of painful sensations could be a means of increasing one's lifespan. Perhaps maximizing one's lifespan might involve minimizing one's experiences of pain, and minimizing the pain in one's life might often involve maximizing altruistic behavior. There is evidence that happier people tend to live longer (Diener & Chan, 2011; Lawrence et al., 2015). Although questioned (Kubzansky et al., 2016), some research indicates that happiness and longevity likely stem from one or more common causal factors rather than happiness directly causing longevity (Diener & Chan, 2011; Liu et al., 2016). Konow and Earley (2008) presented "evidence indicating that happiness and intrinsic generosity are favorably related and that psychological well-being is the causal factor" (p. 29). It is not hard to imagine psychological well-being as a causal factor for longevity and prosociality as a causal factor underlying psychological well-being. Psychophysiological mechanisms underlying prosociality's relationships to wellbeing, health and longevity might reasonably be expected to similarly affect nonhuman species most psychophysiologically similar to humans. Does evidence support prosociality's relationships to wellbeing, health, and longevity of the two species most closely genomically and psychophysiologically resembling human beings?

Given the genomic and morphological similarity of chimpanzees and bonobos and what is known about bonobos being considerably more prosocial than chimpanzees, I wondered how the life expectancy of the two species would compare. Although there are likely many additional factors that could explain any contrast in life expectancy, I thought that if bonobos' life expectancy was significantly higher than chimpanazees', it might tend to add very modest support to the notion of prosociality as positively associated with longevity, and if bonobos' life

expectancy was lower than chimpanazees', it might tend to somewhat reduce confidence in the notion of prosociality as positively associated with longevity. Lowenstine et al. (2016) reported longer lifespans for bonobos than chimpanzees:

> Chimpanzees in the wild have a reported life expectancy at birth of between 13 and 25 y, depending on the study. Rare individuals, all females, have been reported to live into their early 50s. In captivity, the average life span (from birth) for males is 25 y and for females, 34 y, with estimated maximum life spans of 57 and 75 y, respectively. … Bonobos are relatively rare in the wild and in zoos, and life expectancy and maximum life span are not well established. Maximum life expectancy in the wild is thought to be about 40 y, while the oldest known-aged captive bonobo was 60 y. (Lowenstine et al., 2016, para. 8)

Harwell and Knott (2020), however, more recently reported that, in captivity, bonobos average 23.5 ± 9.8 years and chimpanzees average 25.2 ± 10.6 years. Harwell and Knott (2020) reported the oldest maximum life span in captivity of 52.15 years for a female bonobo and the oldest maximum life span in captivity of 57.40 years for a female chimpanzee. Harwell and Knott (2020) were considering only captive-born animals housed in the United States, whereas Lowenstine et al. (2016) considered international data.

Based on data from longitudinal research investigating possible associations between longevity and personality traits among 538 captive chimpanzees, Altschul et al. (2018) reported that "chimpanzees even display the same five major personality traits that we do – extraversion, neuroticism, conscientiousness, openness, and agreeableness – as well as a distinct trait, for dominance" (Altschul et al., 2018, p. 2). On that basis, Altschul et al. (2018) presented evidence that longevity in male chimpanzees was associated with higher agreeableness and evidence that longevity in female chimpanzees was associated with higher openness:

> Male chimpanzees with higher levels of agreeableness – the personality trait characterized by low aggression and positive social interactions such as cooperation – generally lived for longer. Female chimpanzees who were more open to new experiences also appeared to live for longer, but this apparent association may be influenced by age. Like humans, chimpanzees become less open to experiences as they become older. No other personality traits appear to be linked to lifespan in chimpanzees. However, evidence

> suggests that conscientiousness and neuroticism can influence lifespan in humans. These two traits may therefore drive uniquely human behaviours that affect health. (Altschul et al., 2018, p. 2)

Altschul et al. (2018) pointed to implications of their research with chimpanzees for human sociality, health, and longevity:

> In addition to its focus on the Big Five traits, the life history variables most often examined in the human literature have been health outcomes, especially longevity. Meta-analyses of this extensive literature showed that people who enjoy better health and live longer tend to be higher in agreeableness, extraversion and conscientiousness, and lower in neuroticism (Roberts et al., 2007; Strickhouser et al., 2015). (Altschul et al., 2018, p. 3)

Roberts et al. (2007) found that "Neuroticism was associated with a diminished life span" (p. 322) as was pessimism. "It should be noted, however, that two studies reported a protective effect of high Neuroticism (Korten et al., 1999; Weiss & Costa, 2005)" (Roberts et al., 2007, p. 322). Roberts et al. (2007) identified conscientiousness, positive emotionality or extraversion, and optimism as positively associated with longevity. Roberts et al. (2007) also found that "with respect to the domain of Openness to Experience, two studies [Osler et al., 2002; Wilson et al., 2004] showed that Openness or facets of Openness, such as creativity, had little or no relation to mortality" (p. 322). Somewhat surprisingly, "The domain of Agreeableness showed a less clear association to mortality, with some studies showing a protective effect of high Agreeableness… and others showing that high Agreeableness contributed to mortality (Friedman et al., 1993)" (Roberts et al., 2007, p. 322). Wilson et al. (2004), on the other hand, showed, for high Agreeableness, a protective effect against mortality. Roberts et al. (2007) further reported that:

> Nineteen studies reported relations between Hostility/Disagreeableness and all-cause mortality, with notable heterogeneity in the effects across studies. The risk ratio population estimate showed an effect equivalent to, if not larger than, the remaining personality domains (risk ratio = 1.14; CIs = 1.06 and 1.23). With the correlation metric, this effect translated into a small but statistically significant effect of .04 (CIs = .02 and .06), indicating that hostility was positively associated with mortality. (p. 322)

It appears that individuals' personality traits are likely associated with lifespan. Ultimately, though, it is most likely that such effects are largely statistical, really only clearly discernable across larger groups. Maybe, because of the logic of individuals' immersion in culture and the interconnectedness of most all human cultures, the apparent effects of prosociality would be different in a homogeneously prosocial human species due to the fact that heterogeneity of prosociality leads to individuals being victimized by antisocial individuals and to extremely prosocial groups ending up under-resourced within competitive systems that include large numbers of antisocial persons who expend great effort acquiring vastly more than their share of resources to the point of contributing to under-resourcing less competitive, less aggressive, less selfish, more prosocial people. Perhaps, though, incremental species-wide steps in the direction of generally increased prosociality might result in measurable, incremental increases in species-wide average life expectancy. If wildly anomalous, even unprecedented, clearly significant incremental species-wide steps in the direction of generally increased prosociality occurred during exactly the same time period as wildly anomalous, even unprecedented, clearly significant incremental species-wide increases in average life expectancy, would it be inarguably wisest to dismiss such as mere co-occurrence of unrelated trends that human patternicity is overly eager to connect? Would it, instead, be wiser to at least explore such a co-occurrence for possible causal relationships and potential insights?

Is it possible that some of the last century's increased average human life expectancy might be connected to the social progress Steven Pinker (2011) has pointed out? Pinker (2011) has pointed out important aspects of human wellbeing improving over time, most dramatically during the past century: Increased literacy (van Zanden et al., 2014), improved education (van Zanden et al., 2014), sanitation (Bartram et al., 2014), vaccinations (Chard et al., 2000),

decreased violent crime (Lurigio & Staton, 2020) and war-related mortality (Gat, 2013) per capita, and the decreasing number and percentage of human beings living in extreme poverty (Ravallion, 2016). Humanity has reduced various forms of slavery and human trafficking. Society has been working to address mistreatment of long-abused segments of humanity, including women, groups mistreated because of their skin color or ethnicity, people mistreated because of sexual preferences and gender identities, religious minorities, and others. It seems quite possible that humanity has been making some progress in curtailing hate crime and hate speech, in reducing bullying, and, during the recent "me too" movement, people have been addressing widespread sexual harassment and abuse by individuals in society's various powerful roles. In many parts of the world people have even begun to address mistreatment of nonhuman animals. Could any century of human history be identified which even nearly rivals the past century in terms of progress in these areas? The past century, as earlier mentioned, has seen human life expectancy more than double. Do any other centuries in human history rival the past century in terms of species-wide increased human life expectancy? Could it be that the past century's social progress represents possible indications of increased prosociality and that such increased prosociality, directly and indirectly, has positively affected average human life expectancy species-wide?

Male/Female Sociality and Male/Female Longevity: Possible Causal Connection?

Is it possible that some of the last century's gains, in terms of increased life expectancy, might even be connected, in part, to the degree to which, during the same time period, patriarchal domination has been declining in human society? Recalling matriarchal bonobo society and far more aggressive patriarchal chimpanzee society, have humans not, in this regard, become somewhat less chimpanzee-like and somewhat more bonobo-like over the past century? How

well do the years of increased average human life expectancy correspond with the time period of increased influence of women in steering the direction of society? In fact, in the United States, women were granted the right to vote through the Nineteenth Amendment of the United States Constitution on August 18, 1920. So women have been voting in the United States during only the last century. During the last century, during the years women have been voting, our species has more than doubled its life expectancy. Are there any other centuries in recorded history during which it is likely that our species has doubled its life expectancy? Would it be inarguably wisest to dismiss such as mere co-occurrence of unrelated trends that human patternicity is overly eager to connect? Would it, instead, be wiser to at least explore such a co-occurrence for possible causal relationships and potential insights?

It is possible to imagine every person's degree of prosociality being assigned a percentage as measured against a hypothetically entirely prosocial human being, some sort of superlative prosocial exemplar. The exemplar would, of course, be 100% prosocial in every way, 100% benevolent. Every other human being, and, for that matter, every other social creature, could be scored in terms of their percentage of prosocial values, behavior, phenomenology, drives, habits, etc. If every person was scored thusly, it would be possible to calculate, for each gender, the average prosociality percentage.

It would misrepresent this thought experiment to assume that only cisgender individuals would be included. It seems reasonable to allow for the possibility that there might be 5% or even more of the individuals in our species who would, if safe to do so, identify as non-cisgendered (Goodman et al., 2019; Richards et al., 2016). It would be most interesting, in this thought experiment, to imagine calculating an average prosociality percentage for every identifiable gender represented by a large enough number of people to facilitate statistical

validity. Also, I am aware of some of the challenges necessarily associated with binary gender model considerations, even such characterizations as involved with Jung's model of the animus and the anima, and I want to be sensitive to the feelings such generalizations certainly must occasion. I believe very strongly that males characterized to any degree by behavior and phenomenology more traditionally associated with females and females characterized to any degree by behavior and phenomenology more traditionally associated with males must never in any way be differently valued, included, respected, privileged, or empowered. Whether stereotypes, valid psychometric continua, or both, in terms of binary gender grouping of cisgender individuals, certain average differences, between cisgender females and cisgender males, have been recognized.

Considered as groups, on average, males tend to be more aggressive and less prosocial than females. That means that the average prosociality percentage for human females would be significantly higher than the average prosociality percentage for human males. If the average prosociality percentage for human females was, perhaps 75%, what would seem a reasonable estimate of the average prosociality percentage for human males? What if the average prosociality percentage for human males was about 70%? That would mean human women were, on average, a little more than 7% more prosocial than human men. Could that possibly be in the ballpark? If it might seem that the difference should be somewhat greater, keep in mind that on the scale of 1 to 100 must be placed, in order, the most antisocial creatures imaginable and some that are unimaginable. We would have to assign the thousands of appropriate places on the scale for hungry alligators, male polar bears during mating season, rabid dogs, Pol Pot, Hitler, various active shooters, sadistic torturers, terrorist bombers, child abusers, and all the representatives of every flavor and degree of cruelty and depravity.

According to latest United Nations Population Division estimates, at the end of 2020, average life expectancy for human females was 75.6 years and for human males 70.8 years (Worldometer, 2021), which means human females live 4.8 years or 6.78% longer, on average, than human males.

Is it possible that the percentage of additional human female human life expectancy as compared to human male human life expectancy could correspond in any meaningful way with the percentage female humans, on average, are more prosocial than human males?

According to psychologist Susan Pinker (2017), women in the developed world live an average of 6 to 8 years longer than men. According to latest United Nations Population Division estimates, at the end of 2020, average human life expectancy at birth for both genders combined was 73.2 years, for human females 75.6 years and for human males 70.8 years (Worldometer, 2021). Pinker (2014, 2015, 2017) reported that the inhabitants of the Italian island of Sardinia are the only people group on earth where average male lifespan is as long as average female lifespan. According to Pinker (2017), within that culture, without regard to gender, average lifespans are significantly longer than nearly all other human cultures. Pinker (2017) reported that the most significant factors responsible for these unusual longevity patterns involve sociality rather than genetics, clean air, nutrition, exercise, or quality of medical care. Could this possibly suggest that prosociality is an important, possibly even indispensable component of interventions that could dramatically increase human life expectancy?

In nearly every country on earth, on average, women, are, according to Zweig (2015), significantly happier than or at least as happy as men in spite of worse health, lower incomes, less rights, higher rates of divorce and widowhood, inequalities that, according to happiness research, should result in lower levels of happiness. Is it possible that women's happiness gap, as

compared to men, could be due, at least in part, to the fact that women are, on average, more prosocial than men?

It is certainly arguable that the gap between aggression and antisociality between male and female chimpanzees is greater than that gap in humans. There is also a greater difference in life span between male and female chimpanzees than between male and female humans.

> Chimpanzees in the wild have a reported life expectancy at birth of between 13 and 25 y, depending on the study. Rare individuals, all females, have been reported to live into their early 50s. In captivity, the average life span (from birth) for males is 25 y and for females, 34 y, with estimated maximum life spans of 57 and 75 y, respectively. … Bonobos are relatively rare in the wild and in zoos, and life expectancy and maximum life span are not well established. Maximum life expectancy in the wild is thought to be about 40 y, while the oldest known-aged captive bonobo was 60 y. (Lowenstine et al., 2016, para. 8)

"As in most mammals, female…chimpanzees have longer life expectancy than [chimpanzee] males" (Behringer et al., 2018, p. 1). For chimpanzees, "in captivity, the average life span (from birth) for males is 25 y[ears] and for females, 34 y[ears]" (Lowenstine et al., 2016, para. 8), which means female chimpanzees live 9 years or 36% longer, on average, than male chimpanzees. As stated, according to latest United Nations Population Division estimates, at the end of 2020, average life expectancy for human females was 75.6 years and for human males 70.8 years (Worldometer, 2021), which means human females live 4.8 years or 6.78% longer, on average, than human males. Could the greater difference in average life expectancy between male and female chimpanzees than between male and female humans stem, at least in part, from the greater difference in aggression and antisociality between male and female chimpanzees than the difference in aggression and antisociality between male and female humans?

Even remaining relentlessly suspicious of patternicity, might there be enough hints or co-occurrences to suggest at least cautiously considering the possibility of a causal association

between prosociality and longevity? One statement concerning evil and longevity is most intriguing:

> God commanded the man, saying, "From any tree of the garden you may freely eat; but from the tree of the knowledge of good and evil you shall not eat, for on the day that you eat from it you will certainly die." (*New American Standard Bible*, 1960/2020, Genesis 2:16–17)

Maybe it is reasonable to posit that, however evil is conceptualized, profoundly benevolent love seems like a very plausible candidate for its opposite, and malevolence, schadenfreude, spite, hatred, meanness, cruelty, and selfishness seem likely opposites of benevolent love, likely relatives of evil, and, arguably, components of non-prosociality. Whatever the knowledge of good and evil might symbolize, and whatever evil is taken to be, it seems clear that it is associated in this passage with mortality. That, I suspect, is significant.

Anticipated Concerns About and Objections to Benevolutioneering

1. Belief That Benevolutioneering Is Not Ethically Considerable

Any type of proposed human enhancement will prompt endless ethical concerns. This is very fortunate, and I hope this never changes. Many proposed human enhancements should be dismissed as ethically untenable, and people should do everything possible to prevent ethically untenable human modification. Benevolutioneering, as conceptualized in this dissertation, is proposed as one of the most effective approaches for preventing ethically untenable human modification. Benevolutioneering, or, likely, some further refined concept of benevolutioneering, is proposed as a way, possibly even the best way, to mitigate or even prevent the harm accompanying ethically untenable forms of human modification, possibly otherwise inevitable:

- Enhanced super-soldiers, weaponized cyborgs.
- Enhanced physical capabilities only for dominant malevolent persons.
- Enhanced mental abilities only for dominant malevolent persons.

- Enhanced sensory abilities, including additional senses, only for dominant malevolent persons.
- Enhanced competitiveness only for dominant malevolent persons.
- Artificially reduced empathy to enhance dominant malevolent persons' competitiveness.
- Increasingly destructive technological means of harming and controlling others (bioterrorism, cyber-terrorism, increased availability of ever more destructive devices, the unprecedented power of quantum computing, absolute surveillance, effects of quantum computing on digital security under the control of only the most dominant malevolent persons.
- Biological immortality only for the most dominant malevolent persons.

That list of horrific trajectories is, of course, far from complete. Also, the greatest concerns prompting the proposal and conceptualization of benevolutioneering involve the already discussed unprecedented jeopardy of profoundly dystopic futures or even human extinction.

It is important, when considering ethical concerns related to benevolutioneering, to keep in mind common human willingness to allow greater harm through inaction in contrast with strong aversion to actively causing a relatively less harmful outcome in prevention of much greater harm inevitable with inaction (Foot, 1967; Kamm, 1989; Thomson, 1976, 1985).

Subsumic ethics dictates that benevolutioneering would need to be ethically reviewed as acceptable and beneficial for each recipient according to both consequentialist and deontological ethical frameworks. Benevolutioneering is conceptualized herein to harmonize with what has come to be understood as accepted moral principles of bioethics and accepted standards of health care ethics. According to Beauchamp and Childress (2013), commonly accepted principles of health care ethics, excerpted from Beauchamp and Childress (2008), include respect for autonomy, nonmaleficence, beneficence and justice. Vaughn's (2017) list of moral principles in bioethics includes those four principles and adds the principle of utility:

1. Principle of respect for autonomy.
2. Principle of nonmaleficence.
3. Principle of beneficence.
4. Principle of justice.
5. Principle of utility.

Subsumic ethics and benevolutioneering are designed starting with and, therefore, clearly epitomize, each of those five principles.

2. Unintended Consequences of Benevolutioneering

Concerns about unintended consequences must never be dismissed. This is among the most valid and important concerns, and it should be taken very seriously. Nevertheless, this concern accompanies all progress. In the case of benevolutioneering, such risks must be balanced by the risks associated with allowing antisociality enhancements to proceed in the absence of prosociality enhancements.

Every treatment plan carries iatrogenic potential, in spite of any amount of waiting, researching, theorizing, and modeling. Interventions disrupting time-honored mechanisms upon which biological and societal structures have relied since antiquity could not reasonably be expected to lack unexpected consequences. Bateson (2002) declared that "divergent sequences are unpredictable" (p. 37). Bateson (2002) explained that

> according to the popular image of science, everything is, in principle, predictable and controllable; and if some event or process is not predictable and controllable in the present state of our knowledge, a little more knowledge and, especially, a little more know-how will enable us to predict and control the wild variables. That view is wrong, not merely in detail, but in principle. (p. 37)

I consider the approach and the tools of systems theory among the most useful resources in reducing the probability of catastrophic iatrogenesis in designing and implementing schemes to improve the future by intentionally, disruptively impacting evolutionary trajectories. Stroh (2015) contrasts conventional thinking's commitment to the notion that optimizing the parts optimizes the whole with systems thinking's understanding that "in order to optimize the whole,

we must improve relationships among the parts" (p. 15). Bateson's (2002) discussion of the fact that "a mind is an aggregate of interacting parts" (p. 86) underscores, from a systems thinking perspective, the inevitability of benevolutioneering's production of unintended consequences. "Typical keys to overcoming the tendency toward Fixes that Backfire include: questioning the wisdom of the quick fix, identifying an alternative response, or mitigating the negative consequences of the fix if no alternative can be found" (Stroh, 2015, p. 55). According to Stroh (2015):

> In many cases the best way to reduce the likelihood of Fixes That Backfire is to solve the underlying problem that produces the symptoms. People often recognize that a more fundamental solution is desirable, but then wonder why it is so difficult to implement. One of the key reasons is that addressing the root cause of the problem takes longer, is more expensive, and can entail more risk and uncertainty. This pull between implementing a quick fix and aiming for a more fundamental solution lies at the heart of the so-called philanthropic challenge: Do we fix the problem now or help people over time? In systems terms, depending on the quick fix is known as Shifting the Burden, which produces a similar pattern of behavior as Fixes That Backfire: Intermittent reductions of the problem symptom mask a gradual worsening of the problem. (Stroh, 2015, p. 55)

Stroh (2015) pointed out important consequences of and differences between fixes that backfire and shifting the burden, paraphrased below:

- Implementation of temporary fixes typically involves knowledge of fundamental solutions but a lack of motivation and lack of or unwillingness to allocate necessary resources. Often, fixes that backfire stem from ignorance of fundamental solution to problem symptoms resulting in quick fixes appearing as the only available responses.

- Shifting the burden through short-term quick fixes that are temporarily adequate can temporarily reduce motivation for identifying and implementing fundamental solutions. Fixes that backfire can, until they backfire, eliminate all such motivation, then, after backfiring, can foster discouragement regarding the possibility of ever identifying and implementing effective, permanent solutions.

- Long-run unintended consequences of quick fixes can undermine, often by gradual, incremental resource depletion, capacity for fundamental solution without regard to motivation. Larger scale fixes that backfire can decimate resources and even create enormous long-term obligations still due in spite of the fact that the financed fix failed. Such consequences are, of course, unintended.

- Consequently, shifting the burden through short-term quick fixes can foster quick fix dependency and, eventually, quick fix addiction. Fixes that backfire can lead to resource insolvency and hopelessness.

Benevolutioneering is conceptualized as neither short term nor a quick fix. Some human enhancement approaches could be regarded as relatively short-term quick fixes. Unintended consequences, though, must be considered inevitable, and unintended consequences must by anticipated and minimized through extensive modeling exploiting emerging strong artificial intelligence. It is reasonable to expect that ultra-strong artificial intelligence should help profoundly reduce the risks of unintended consequences through modeling that is vastly superior to today's best modeling. This parallels today's recognition that surgeries are becoming safer due to fewer errors when performed by a surgical robot than when performed directly by a human surgeon.

3. Benevolutioneering Would End Up Benefiting Only the Rich and Powerful

Would only the rich and powerful benefit from benevolutioneering such as seems to be the case in 2021 with the private sector's billionaire space-travelers? It might very well be true that only the rich and powerful would benefit from many human enhancement programs as they are already being conceptualized. Enhancement disparity should be expected to amplify man's inhumanity to man and make the best competitors even better competitors and exploiters even better at exploitation. Benevolutioneering, however, modeled herein as a remedy for enhancement disparity, is an intervention for every human being.

It is reasonable to anticipate popular concern that transhumanist technologies such as a combined aging cure and prosocial neuroenhancement technology will only be available to the rich, especially initially. First, it seems likely that many wealthy, powerful people would try to arrange to have such interventions first administered to the poor and disempowered as a means of determining safety and effectiveness before subjecting themselves to early risk. Second, even

if rich, powerful people got their combined aging cure and prosocial neuroenhancement ahead of the poor, those powerful folk would then become profoundly prosocial. Might that not even be ideal? Somebody has to be first. Is this similar to first donning one's own oxygen mask before assisting less capable airline passengers seated nearby? This seems likely to result in the most rapid universal provision of such prosocial transhumanist technology.

Although the same concern has been expressed for several decades regarding emerging technologies, such predictions have usually been proven unfounded. From vaccines to stem cell transplants to MRIs to iPhones, GPS technologies, airbags, high speed internet access, and two-day Amazon delivery, increasingly rapid popular availability has been the case.

4. Status Quo Bias

Arguably, humanity has reached a point at which maintaining the status quo is not an option. It is no longer possible and would not be beneficial. Radical change and ever-accelerating rates of change is our conspicuous reality. That is one of the reasons benevolutioneering as herein conceptualized is so important and urgent. It is important to keep inevitable change from bringing about the worst of the things most feared by people fearing change. Some of the worst potential change is in areas in which change is profoundly destructive, such as ongoing damage to our planet’s ecosystem.

5. Like Death and Taxes, Human Nature Can Never Really Be Changed

It seems improbable that many people would argue that humanity has not been developing throughout humanity’s history. The construct of development is, essentially, the accumulation of changes which persist. Throughout humanity’s existence, humanity has been developing into the present state of humanity, into humanity’s present condition, into the present

nature of humanity. Human nature has always been changing, and, unless humanity becomes extinct, there is no justification believing it is likely to stop changing.

Also, as discussed throughout this dissertation, even the days of death and taxes might very well be numbered. Humanity's future is not very likely to be determined by clichés. Clichés and aphorisms are not robustly predictive.

6. As Codified and Modernized by Adam Smith's Invisible Hand Metaphor, Selfishness and Competitiveness Have Been So Evolutionarily Important to Humanity That They are Indispensable for Authenticity of Human Life and are Necessary for Human Progress and Flourishing

Adam Smith predicted that certain of earth's natural resources would run out and that, when those natural resources were exhausted, his economic model would have run its course.

> Smith himself predicted that economic progress would eventually come to an end when the wealth of nations had been pushed to the natural limits of soil and climate, but he thought this point was so far in the future that it was irrelevant to his theories. (Capra & Luisi, 2014, p. 51)

It is reasonable to assert that we have reached the point at which "the wealth of nations had been pushed to the natural limits of soil and climate" (Capra & Luisi, 2014, p. 51).

If we accept the idea that selfishness and competitiveness havebeen indispensable for human development, progress and flourishing, it does not follow that after unprecedented fundamental changes to humanity's circumstances the approaches that have been benefiting humanity will continue to benefit humanity. In fact, it must be considered whether or not many of the same aspects of human nature and of the functions of human sociality that have, for millennia, seemed to result in humanity surviving and thriving could be so mismatched with new conditions that the older approaches could be entirely ineffective and could yield catastrophic, even extinction-level, outcomes. If using the most powerful weaponry available to establish

dominance has been a very effective mode until our era, it must be recognized that, today, using the most powerful weaponry available could destroy our entire planetary environment. Such an outcome was never before possible.

7. Widespread, Powerful Aversion to Anything Associated With Eugenics

Eugenics, at its worst and in its most commonly pictured and feared form has typically been geared to favor traits associated with preferential racial bias and has sometimes been prominently associated with genocide. In fact, eugenics programs have typically sought to model certain ethnic people groups as the equivalent of some kind of impurity that needs to be removed from the human gene pool. Benevolutioneering as conceptualized herein would never consider modeling any people group as an impurity, nor would it single out any ethnic people group as either the desirability standard or as somehow inferior and needing to be eliminated. Rather, benevolutioneering is modeled to regard everyone as needing to be enhanced according to profoundly benevolent models of prosociality to be drawn from a meticulously constructed consensus of the virtues and moral aspirations of every known human culture.

CHAPTER 6: NEUROPSYCHOLOGY AND BIOENGINEERING: BENEVOLUTIONEERING EXPLORED FOR TECHNICAL ACHIEVABILITY AND FEASIBILITY

Even if the previous chapter had managed to exhaustively conceptualize a precisely detailed, complete model of profoundly benevolent sociality, satisfying every reasonable concern beyond question or objection, which is, of course, definitely not the case, benevolutioneering would not yet be anywhere near ready for implementation. It would still be necessary to determine the human organism's specific physiological structures, substructures and functions correlated with each of the thousands or, quite possibly, even millions of relevant aspects and components of such sociality and how to bring about, in those physiological correlates of sociality, changes resulting in intended sociality-related enhancements. It would still be necessary to devise and develop actual interventions, the actual technologies associated with each aspect of every component of benevolutioneering's enhancements of sociality. In other words, if we had already managed to fully conceptualize and coherently model every important aspect of profoundly benevolent sociality, then we would need to next determine every structural and functional physiological correlate of each aspect of profoundly benevolent sociality, and then, in order to actually bring about benevolutioneering, we would still need to devise and develop procedures, tools, vectors and techniques for each modification. In reality, the complexity of benevolutioneering's conceptualization, development and implementation far exceeds the capacities of any unaided human mind. Unfortunately, at least for some people, human beings have already been implementing technologies that appear capable of morally enhancing human beings at the earliest availability of those technologies. This has included even extremely invasive technologies. Such reactionary, piece-meal dabbling, although dissimilar to

benevolutioneering as conceptualized herein, has resulted in a few proofs of concept here and there. Benevolutioneering, though, is imagined as a profoundly more cautious, thoroughly modeled, proactive, multi-system approach which will require further development of strong artificial intelligence, likely based, at least in part, on quantum computing technology still in development. Do such expectations concerning artificial intelligence stepping up to save the day represent merely waving a magic wand of a science fictional deus ex machina at mountains of intractable, hopelessly complex problems? Or is it justifiable, even realistic, to expect that artificial intelligence will actually prove itself practical, eventually even up to the task of actually managing some of the real-world heavy lifting of conceptualizing aspects of targetable sociality componentry? It already has. Zhou et al. (2019) illustrated the indispensable role of artificial intelligence in discovering that a new class of non-coding mutations is associated with autism spectrum disorder.

> In their new finding, the research team offers a method to make sense of this vast array of genomic data. The system uses an artificial intelligence technique called deep learning in which an algorithm performs successive layers of analysis to learn about patterns that would otherwise be impossible to discern. In this case, the algorithm teaches itself how to identify biologically relevant sections of DNA and predicts whether those snippets play a role in any of more than 2,000 protein interactions that are known to affect the regulation of genes. The system also predicts whether disrupting a single pair of DNA units would have a substantial effect on those protein interactions. (Princeton University, 2019, para. 10).

Zhou et al.'s (2019) "predictive genomics framework illuminates the role of noncoding mutations in ASD [autism spectrum disorder] and prioritizes mutations with high impact for further study, and is broadly applicable to complex human diseases" (p. 973). This is not a fluke. This is not an isolated utilization of artificial intelligence for discovery of important relationships in systems vastly too complex for human cognition. Already, relationships in systems far too complex to ever allow discovery by unaided human minds are being identified in many areas of neuroscience, genetics, neurogenetics, and many other fields important to benevolutioneering's

development. It is absolutely realistic to expect artificial intelligence to substantially manage real-world heavy lifting of conceptualizing aspects of targetable sociality componentry, because this has already been taking place even though artificial intelligence is in its infancy.

It is anticipated that benevolutioneering's actual bioengineering will likely be vectored, at least in part, by as yet undeveloped nanoscale robotics and very much more developed genetic engineering tools than the already powerful tools currently available. It would, therefore, be absurd to expect this chapter or any current literature to somehow exhaustively detail every potentially important structural and functional physiological correlate of prosociality and every aspect of the anticipated bioengineering of all of benevolutioneering's eventual implementation vectors.

A way to model just one of the many aspects of that quest is the idea of reverse engineering profoundly benevolent prosociality (Kurtz, 2017b). What might be involved in that reverse engineering approach? How would it be best to think about the different types of correlates of sociality to facilitate such reverse engineering? Perhaps one way to model the challenge is to pattern the process after a case of one company attempting to reverse engineer and then improve a certain model of personal computer system manufactured by a rival company in another country. First, is reverse engineering profoundly benevolent prosociality "a software problem or a hardware problem" (Kurtz, 2017b, p. 1)? Trefil (1997) observed that it is difficult for modern thinkers to appreciate how different human brains are from computers (Noë, 2009; Trefil, 1997). In the brain, hardware and software are not distinct in the same ways they are in modern personal computers. In spite of the computer metaphor's limitations, drawing further on that metaphor, traditional approaches to moral improvement such as moral education, religious education, and psychotherapy can be thought of as being somewhat more like software

interventions. For the most part, the interventions considered in this chapter concern mostly interventions that are somewhat more like hardware interventions. A thought experiment can make it easier to create a picture of what this chapter intends to demonstrate.

> Late 21st-century scientists recruit the world's ten thousand kindest, most altruistic, most prosocial human beings. Each participant is equipped with Planck-scale scanning, monitoring, and recording technology that, for ten years, records every aspect of every body system of each participant's entire organism. Data gathered includes all genetic and epigenetic information, every aspect of nervous system structure and function, dynamic identification and characterization of gut flora, endocrine functions, all acquired sense data, even all cognitive and emotional content. Each participant's resulting immense database contains every candidate physiological correlate of every prosociality-related behavior, thought, and emotion. The ten thousand prosocial participants are identified as Group 1. Throughout the same decade, data is similarly gathered from two other participant groups, Group 2 and Group 3. Group 2 participants are the world's ten thousand least prosocial human beings. Group 3 is a control group, randomly selected worldwide from the general population. The…[brontobytes] of data thus gathered, analyzed and interpreted, facilitates identification of the staggeringly complex…[matrix] of underlying prosociality, as uniquely combined to function in each person, then serves as the basis for generating prosocial neuroenhancement algorithms suitable for safely and effectively fabricating and coordinating the ideal swarm of prosocial neuroenhancement nanobots for each human being. (Kurtz, 2017b, p. 2)

Contemplating what might be, so far, the most important scientific achievement of our era, I remember the excitement of June 26, 2000. Completion of the first draft of the sequenced human genome was announced to the world (Abramowicz, 2003; Gibbs, 2020). It had been estimated that the project would take 15 years, but it was actually declared complete in 13 years. The project's estimated cost was $3 billion in 1991 dollars, but it ended up costing only $2.7 billion in 1991 dollars. Although, according to Davies et al. (2017), costing $1 billion or more qualifies a project as a megaproject, I was disappointed to find that the Human Genome Project was not included in the *Oxford Handbook of Megaproject Management* (Flyvbjerg, 2017). I remember, also, tracking the project's progress from its start in 1990. Early in the project, sequencing was painfully slow, so slow that, at the project's initial sequencing rate, completion could not have been expected during team members' lifetimes. Nevertheless, project proponents

early and often, even years before the project launched, confidently described visions of exponential progress rates that would come about as sequencing was to be first operationalized, next fully mechanized, then automated, and finally hyper-automated, as still-to-be-developed sequencing approaches and technologies would be created and implemented to dramatically reduce sequencing times. Project proponents seemed entirely confident in the ability of the science and engineering communities to devise and operationalize dramatically improved, incredibly more rapid sequencing approaches. Proponents also seemed confident in human processes and organizational abilities indispensable for their mission. This project was unlike designing and constructing the largest building or dam ever built. Nothing like mapping the genome had ever been accomplished. What they started with was the double-helix model of DNA structure, theory, and a handful of genes sequenced, more or less, by brute force and that served as proofs of concept, and a vision of fully sequencing humanity's genetic code.

Based on what science has so far discovered about the physiological correlates of functions associated with human sociality, what are some of the physiological correlates that could reasonably be expected to be identified among the brontobytes of data that would be discovered in the above described late 21st-century thought experiment? How close is current research to being able to carry out anything like the research described in that thought experiment? Are there any current research trajectories along any of those lines? In 1848, the tragic structural alteration of Phineas Gage's brain initiated what has become a fascinating endeavor to discover and catalog physiological correlates of phenomena and behavior. An accidental explosion which shot a tamping rod through the frontal lobe of Gage's brain, as the story has usually been told, transformed Gage from a decent, moral, polite, well-respected man into a comparatively coarse, poorly self-controlled man prone to less socially acceptable

behavior (Narváez, 2014; R. J. Nelson, 2011). “Before the accident, Gage was kind and hard-working, but after the accident, he was reported to have become cruel and impulsive. So much so that ‘he was no longer Gage’. This story is probably inaccurate in some ways (Macmillan, 2000), but it has long been treated as a paradigmatic case” (Skorburg & Sinnott-Armstrong, 2020, p. 125) not only of the existence of neurocorrelates of sociality, but even of modified personal identity (Damasio, 1994). “Although informative, the Gage research was…crude, destructive, and…[ill-suited] for repeatability” (Kurtz, 2017b, p. 3). Has science since identified additional anatomical hints or physiological proofs of concept more precisely than observing personality changes associated with sudden frontal lobe destruction? Have finer proofs of concept or hints been discovered that suggest that reverse engineering prosociality could be plausible? In fact, such research has been progressing, albeit on much smaller scales than imagined in our 21st-century thought experiment. Incorporating and expanding my earlier survey of sociality-related neuroanatomy, neurophysiology and neuropsychology important for exploring the plausibility of reverse engineering prosociality (Kurtz, 2017b), this chapter provides only a very modest sample of such hints of evidence of that plausibility. What follows are only a relatively few examples of the thousands of hints and potential proofs of concept already discovered, potentially modifiable structural and functional physiological correlates of prosociality and modest proofs-of-concept of a few of the possible approaches to the anticipated bioengineering of benevolutioneering’s eventual implementation vectors.

Neuroanatomy of Sociality

Among this exploration’s modest sample of such hints is a short, representative list of specific brain regions and structures for which research most clearly indicates likelihood of significant involvement in prosociality-related phenomenological and behavioral functioning. The list of specific brain regions and structures considered herein, by no means exhaustive, was

selected by initially adopting Chakroff and Young's (2014) list of "brain regions implicated in social cognition" (Chakroff & Young, 2014, p. 96) and then adding just a few of the additional brain regions and structures encountered during my secondary research that seem most often mentioned in connection with prosociality. Those additional regions and structures are only a few of dozens of regions and structures so far apparently involved in prosociality, but they were selected because they seemed particularly relevant and significant. This list is intended only to demonstrate, through rather cursory consideration, the kind of eventual prosociality-lensed, ultra-detailed, region-by-region, structure-by-structure, substructure-by-substructure, ultimately exhaustive submicroscopic exploration anticipated as progress in neuroscience, cognitive neuropsychology and benevolutioneering's development continue. We consider first the group of regions offering some of the earliest, crudest clues suggesting involvement of particular structures in prosociality-related functions, those parts of Phineas Gage's brain in the tamping rod's path of destruction.

Cerebral Cortex

Prefrontal Cortex

Medial prefrontal cortex. When the iron tamping rod was tragically propelled through railroad worker Phineas Gage's head (Narváez, 2014; R. J. Nelson, 2011), the prefrontal cortex and immediately surrounding areas were damaged (Chakroff & Young, 2014). The medial prefrontal cortex is "an essential part of the social brain for control of sociability. The maturation of …[medial prefrontal cortex] development is delayed until young [adulthood]" (Gao & Mack, 2021, p. 1). In Pfaff's (2015) Altruistic Brain Theory, discussed in a later section of this chapter, Pfaff (2015) associated the medial prefrontal cortex with his model's fourth step, forecasting

personal impact of the outcome of potential behavior being considered, a process Pfaff called the ethical switch.

The medial prefrontal cortex made up Baird and Roellke's (2015) entire behavioral regulation associated group of regions, in which they included the ventromedial and dorsomedial prefrontal areas, the ventral anterior cingulate cortex, and the hippocampus. Generally, according to Baird and Roellke (2015), "the medial prefrontal cortex enables individuals to integrate their emotions with decision-making processes" (p. 162). Passingham and Wise (2014) modeled the medial prefrontal cortex's general function as selecting behaviors according to remembered consequences of similar behaviors in one's past. They identified three brain regions prominently functionally networked with the medial prefrontal cortex: "Hippocampal connections supply information about navigation and other events that involve actions, the amygdala provides updated valuations of predicted outcomes based on current biological needs, and connections with the medial premotor areas provide a route to action" (Passingham & Wise, 2014, p. 65). According to R. J. Nelson (2011), the mPFC is involved in prioritizing competing rewards and balancing behaviors modeled as more primitive, such as those actions associated with the fight, flight or freeze reflex, with rational consideration of environment and situation. Employing a standard attitude priming task "in which Caucasian participants had to categorize the valence of a series of adjectives primed by either an in-group or an out-group face" (p. 932) in conjunction with transcranial magnetic stimulation, Gamond et al. (2017) observed that the dorsomedial prefrontal cortex, with its functional network with the cerebellum, has "a causal role in mediating implicit social attitudes" (p. 932).

> In two behavioral experiments, we found an in-group bias (i.e. faster categorization of positive adjectives when preceded by in-group faces) but no evidence of an out-group bias. Interestingly, TMS [transcranial magnetic stimulation] over both the dmPFC [dorsomedial prefrontal cortex] and over the (right) cerebellum significantly interfered

> with the modulation exerted by group membership on adjective valence classification, abolishing the in-group bias observed at baseline. (Gamond et al., 2017, p. 932).

Of concern to exploring benevolutioneering, Gamond et al. (2017) contributed to understanding "the role of the cerebellum and of the dorsomedial prefrontal cortex (dmPFC)…in mediating implicit valenced attitudes toward in-group and out-group individuals" (p. 932). Baird and Roellke (2015) observed that the dorsomedial prefrontal cortex has been "consistently linked with cognitions about the 'self,' making distinctions between 'self' and 'other', and contributing to the manipulations of information related to the 'self'" (p. 162). The self-other dichotomy is a phenomenon of special concern in exploring the plausibility of reverse engineering prosociality.

Ventral Medial Prefrontal Cortex. Chakroff and Young's (2014) surprisingly brief, seemingly comparatively surface-level characterization of the ventral medial prefrontal cortex, relative to the extent and depth of their treatment of other brain regions, identified the ventral medial prefrontal cortex as one of the areas associated with reward. According to Roy et al. (2012):

> The ventromedial prefrontal cortex (vmPFC) comprises a set of interconnected regions that integrate information from affective sensory and social cues, long-term memory, and representations of the 'self'. Although [sic] the vmPFC is implicated in a variety of seemingly disparate processes, these processes are organized around a common theme…. The vmPFC thus functions as a hub that links concepts with brainstem systems capable of coordinating organism-wide emotional behavior, a process we describe in terms of the generation of affective meaning, and which could explain the common role played by the vmPFC in a range of experimental paradigms. (Roy et al., 2012, p. 147)

Ventromedial prefrontal cortical damage has been associated with reduction of sensitivity to social norms and increased impulsivity, "suggesting a link between ventral mPFC lesions and 'acquired psychopathy'" (Chakroff & Young, 2014, p. 98). Damage to the ventromedial prefrontal cortex has also been associated with decreased generosity, reduction of trusting behaviors, and muting of the guilt feelings accompanying selfish behavior (Zahn, Moll et al., 2009). In studying patients with frontotemporal lobar degeneration, atrophy of the right

ventromedial prefrontal cortex has been associated with lack of empathetic concern and perspective taking (Rankin et al., 2006; Zahn, de Oliveira-Souza et al., 2009). Increased empathetic concern has been associated with increased activation of the ventromedial prefrontal cortex when guilt was involved in moral evaluation, but increased activation of the ventromedial prefrontal cortex was not observed when, instead of guilt, compassion was involved in moral evaluation (Decety & Cowell, 2014; Zahn, de Oliveira-Souza et al., 2009). Such observations demonstrate the importance of establishing precise taxonomies of sociality-related phenomena. An extremely precise taxonomy of such phenomena is particularly important in distinguishing closely related phenomena, including phenomena so conceptually close that they could appear to overlap and that might even seem to just be two ways of conceptually describing the same physical process. Such observations also demonstrate how important it is to be able to clarify such conceptual distinctions of sociality-related phenomena with empirical evidence of distinct physical processes. Functional scans are an important source of empirical evidence of distinct physical processes in the nervous system. As cognitive neuroscience and neuropsychology continue developing and becoming increasingly precise, it seems probable that, eventually, a point will be reached at which neuroanatomical and neurofunctional discovery will be routinely facilitating clarification and dramatic expansion of taxonomies of phenomena, including sociality-related phenomena. That seems likely to overwhelmingly increase the complexity of various theories of neuropsychological mechanisms and then very rapidly developing and revising models, necessitating increasing reliance on artificial intelligence to augment humanity's capacities for comprehending and reasoning about such complex systems.

Sobhani and Bechara (2011) reported that ventromedial prefrontal cortical lesions, ventromedial prefrontal cortical dysfunction, and dysfunction of the amygdalar-ventromedial

prefrontal cortical interconnections have been observed to be followed by generally inappropriate behavior, behavior that is considered immoral, muted guilt feelings and diminished empathetic concern. Intriguingly, "neuroimaging studies suggest a functional uncoupling of normal prefrontal-amygdala inhibition in individuals with Williams syndrome, which might underlie…extreme amygdala activity and non-social fears…[and] might be caused by structural deficits in underlying white matter pathways" (Avery et al., 2012, p. 887).

Neither simply witnessing others in pain nor witnessing accidental harm is accompanied by increased ventromedial prefrontal cortical activation (Decety & Cowell, 2015). It follows, then, that proper functionality of the ventromedial prefrontal cortex is not required for affective response per se (Decety & Cowell, 2015). Nevertheless, proper functioning and involvement of the ventromedial prefrontal cortex is required for shaping affective responses involving conceptual information concerning particular likely consequences of considered behaviors (Roy et al., 2012). Intriguingly, although "individual differences in empathetic concern have been shown to predict the magnitude of responses in vmPFC in some moral contexts but not in others" (Decety & Cowell, 2015, p. 287), the moral contextual criteria and differentiation mechanisms are not fully understood. There is obviously very much more to discover about this brain region, its connections and its involvement with sociality-related phenomena and behavior.

Orbitofrontal Cortex. The orbitofrontal cortex, a prefrontal cortex region situated at the very front of the brain just above the eye sockets, has not been well understood in terms of its functions. According to Milad and Rauch (2007), because of the orbitofrontal cortex's prominent connections with the amygdala, hippocampus, periaqueductal grey and ventral striatum, it has been suggested that the orbitofrontal cortex might play some role in mediation of behaviors associated with fear and reward functions. Zhou et al. (2021) said that, although a currently

leading hypothesis regarding the orbitofrontal cortex's function is that it signals to other brain regions information about subjective values associated with potential outcomes relevant for decision-making and learning tasks, "an alternative, emerging view suggests that [the] OFC [orbitofrontal cortex] plays a more general role in representing structural information about the task or environment, derived from prior experience, and relevant to predicting behavioral outcomes, such as value" (Zhou et al., 2021, p. 1).

Obsessive compulsive disorder has been associated with hyperactivity in the orbitofrontal segment of the neural circuit connecting the orbitofrontal cortex, the caudate nucleus, and the thalamus (Nakao et al., 2014). It appears that orbitofrontal cortex dysfunction likely underlies some of the major characteristics associated with borderline personality disorder, particularly impulsivity (Berlin et al., 2005). Jia et al. (2021) presented evidence linking the network connecting the medial orbitofrontal cortex, the dorsal periaqueductal gray, the central nucleus of the amygdala and the nucleus accumbens to the compulsive alcohol drinking associated with alcohol abuse.

Yang et al. (2021) experimentally identified "a positive correlation between the frequency of reappraisal in everyday life and an objective measure of control over negative memories" (p. 321). They observed more effective memory control in participants relying more on reappraisal as an emotional regulation strategy. Emotional regulation very importantly impacts one's sociality in many ways. Ability to control negative memories is indispensable for tolerance and for forgiveness. Establishing and maintaining positive relationships often requires ability to move into the future with largely positive feelings about another person even though that person has become associated with previous unpleasant exchanges and other hurtful experiences. This ability is important in coexisting peacefully with other residents in one's

neighborhood, workplace colleagues, even members of one's own family. Yang et al. (2021) interpreted their findings as indicating significant strength of the ventrolateral prefrontal cortex's functional connectivity with the right insula.

Buades-Rotger et al. (2017) observed orbitofrontal cortex and somatomotor area activation with retaliation behaviors, in contrast with avoidance behaviors, in reacting to interpersonal provocation. That certainly seems to involve important sociality-related behavior.

Insula

Although it certainly seems reasonable that "adopting the perspective of another person is an important aspect of social cognition" (Heydrich et al., 2021, para. 1), it is somewhat surprising that "social cognition has been shown to depend on multisensory signals from one's own body" (Heydrich et al., 2021, para. 1) and that "recent work suggests that interoceptive signals not only contribute to own-body perception and self-consciousness, but also to empathy" (Heydrich et al., 2021, para. 1). In addition to the anterior cingulate cortex, anterior insula function is important for interoception. As will be again mentioned in considering the anterior cingulate cortex, interoception is the sense, sensations and feeling, conscious and unconscious, of what is going on inside one's own body. Interoception somehow relates empathy "to the primary cortical representation of the body's internal state, [and the anterior insula (AI)] is consistently referred to as the critical hub (along with the anterior cingulate) for interoceptive (emotional) experience" (Baird & Roellke, 2015, p. 159). The "integration of interoception and the interpretation of environmental information yields the subjective feeling of emotion and…the insular cortex is one of the critical regions housing this mechanism" (Terasawa et al., 2015, para. 4).

Activation of the anterior insula is also associated with attribution of actions to oneself (Decety et al., 2004). The anterior insula is involved in the assembly of a vast quantity of sensory data into coherent emotional states and assessing the salience of those states in support of executive control functions (Baird & Roellke, 2015; Craig, 1996, 2004; Critchley et al., 2004). Activation of the anterior insula is associated with interoception, facilitation of emotional awareness and disposition of social anxiety (Terasawa et al., 2011; Terasawa et al., 2015). As discussed above in considering anterior cingulate cortex functioning, the anterior insula is activated in perceiving pain being experienced by another person. Such experiences of other people's pain manifest incorporation of certain contextual knowledge about the vicarious pain, in that the vicarious pain is experienced as more intense if a victim is seen in pain than if a perpetrator is seen in pain (Gray & Wegner, 2009), and that "differential sensitivity is reflected in increased activity in AI [the anterior insula] and ACC [the anterior cingulate cortex]" (Chakroff & Young, 2014, p. 95). Additional evidence for pain modulation mediated by contextual knowledge has been reported for observations of vicarious pain experienced with greater intensity when an ingroup affiliate is seen experiencing pain then when an outgroup individual is seen experiencing pain, and, again, anterior cingulate cortex and anterior insula activation varies with the perceived intensity of the witnessed pain (Xu et al., 2009). Furthermore, those effects are apparently amplified in intergroup competition and intergroup conflict situations (Chakroff & Young, 2014; Cikara, Botvinick, & Fiske, 2011; Cikara, Bruneau, & Saxe, 2011; Singer et al., 2006), "resulting even in the recruitment of reward regions in response to the physical or emotional suffering of out-group members" (Chakroff & Young, 2014, p. 95). That ought to be considered "in any attempt to honestly and accurately characterize the nature of competition, its neurocorrelates, its relationship to prosociality, and its role in a

sustainable future human society" (Kurtz, 2017b, p. 25). Important for benevolutioneering's vision of reverse engineering prosociality, here is evidence that "human beings have overlaid prosocial emotions onto the primary sensory function of these regions, co-opting their function for the underpinnings of moral behavior" (Baird & Roellke, 2015, p. 160), but, even at this level of the neuropsychological underpinnings of empathy, there is also evidence here of the non-prosocial constructs of ingroup-outgroup dichotomy and further amplification of reduced empathy for less valued persons when involved with intergroup competition and intergroup conflict situations. It is not difficult to see how these and similar mechanisms might even contribute to dehumanization, especially if situational intensity was significantly increased. In fact, that might be a valuable extension of those research trajectories.

As earlier mentioned in discussing autism spectrum disorders, important potential clues about sociality's inner workings might be gained through careful study of autism spectrum disorders. In this section, it is most important to note the morphological variation of the right posterior insula and any implications for potential mechanisms of dysfunction with any likely potential to compromise components of prosocial experience and behavior. As already mentioned, substantial evidence suggests that autism spectrum disorders are importantly influenced by the oxytocin receptor (OXTR) gene (Wang et al., 2021, p. 746). Please consider again, in this context, these recent observations:

> Individuals with higher *OXTR*-PRS_{ASDs} [oxytocin receptor gene polygenic risk score for autism spectrum disorders] had lower RD [reward dependence] and significantly smaller GMV [gray matter volume] in the right posterior insula and putamen. The GMV of this region showed a positive correlation with RD and a mediation effect on the association between *OXTR*-PRS_{ASDs} and RD. Moreover, the correlation map between *OXTR*-PRS_{ASDs} and GMV showed spatial correlation with *OXTR* gene expression. (Wang et al., 2021, p. 746)

Moving now to another example of variation in insular morphology with likely impact on prosociality-related functioning, we next consider an earlier observation related to a rare,

seemingly opposite disorder, Williams syndrome (WS), which is "caused by a hemizygous deletion on chromosome 7q11.23, including genes important for neuronal migration and maturation (*LIMK1* and *CLIP2*), [and] is typified by a remarkable hypersocial but anxious personality, …[offering] a unique opportunity to investigate this open issue" (Jabbi et al., 2012, p. E860). Please consider again, the following findings, already considered in the earlier discussion of Williams syndrome, this time noticing particularly the rather extensive morphological variation of insular structures and note the researchers' observation that extent of structural variation was positively associated with extent of observed sociality dysfunctions typical of Williams syndrome. They observed the following morphological anomalies:

> overall decrease in dorsal anterior insula (AI) gray-matter volume along with locally increased volume in the right ventral AI; compromised white-matter integrity of the uncinate fasciculus [a white matter association tract] connecting the insula with the amygdala and orbitofrontal cortex; altered regional cerebral blood flow in a pattern reminiscent of the observed gray-matter alterations (i.e., widespread reductions in dorsal AI accompanied by locally increased regional cerebral blood flow in the right ventral AI); and disturbed neurofunctional interactions between the AI and limbic regions. Moreover, these genetically determined alterations of AI structure and function predicted the degree to which the atypical WS personality profile was expressed in participants with the syndrome. The AI's rich anatomical connectivity, its transmodal properties, and its involvement in the behaviors affected in WS make the observed genetically determined insular circuitry perturbations and their association with WS personality a striking demonstration of the means by which neural systems can serve as the interface between genetic variability and alterations in complex behavioral traits. (Jabbi et al., 2012, p. E860)

Temporoparietal Junction

"Together, the supramarginal and angular gyri are often referred to as the inferior parietal cortex, the parietal operculum, or the temporoparietal junction" (Baird & Roellke, 2015, p. 161). Tsakiris et al. (2008) used transcranial magnetic stimulation to demonstrate a role of the right temporoparietal junction in discerning the distinction between one's body and objects that are not part of one's body. Baird and Roellke (2015) included the temporoparietal junction (TPJ) in the "mentalizing grouping of moral reasoning associated neural regions" (Kurtz, 2017b, p. 18).

The temporoparietal junction is involved in "reasoning about the contents of another person's mind" (Saxe & Kanwisher, 2003, p. 1835), the function associated with what is termed theory of mind. Moral reasoning relies on this function, and this is one of the functions typically compromised in autism spectrum disorders (Luo et al., 2017). It was proposed by Saxe and Kanwisher (2003) that the region within the temporoparietal junction "involved specifically in reasoning about the contents of another person's mind" (p. 1835) be labeled the TPJ-M. Although, according to Saxe and Kanwisher (2003), other researches, such as Gallagher and Frith (2003) "suggest that the TPJ [temporoparietal junction] is involved only in the preliminary stages of social cognition that 'aid' ToM [theory of mind], not in ToM reasoning itself" (Saxe & Kanwisher, 2003, p. 1836), Saxe and Kanwisher (2003) disputed that idea, and argued instead that the TPJ-M is "selectively involved in representation [sic] other peoples' [sic] mental states" (p. 1836).

Theory of mind, according to Saxe and Kanwisher (2003), transcends mere awareness of the presence of another person and functions in a particular region of the temporoparietal junction. "Because of its role in facilitating consideration of the thoughts another person is having, the TPJ [temporoparietal junction] importantly facilitates judgments about whether another person's behavior is morally right or wrong, good or bad" (Kurtz, 2017b, p. 18). Activity in the right temporoparietal junction underlies experiencing the distinction between self and other, and compromised sense of self has been associated with dysfunction in the right temporoparietal junction (Eddy, 2016). Luo et al. (2017), using bilateral temporoparietal junction transcranial direct current stimulation enhancing "activity of the right TPJ and restraining the activity of the left TPJ decreased the role of actor's beliefs in moral judgments and led to an increase in the dependence of the participants' moral judgments on the action's consequences"

(p. 228). Luo et al.'s (2017) application of bilateral temporoparietal junction transcranial direct current stimulation also showed that "enhancing the excitability of the left TPJ as well as inhibiting the right TPJ using tDCS could strengthen the role of beliefs and intentions in moral judgment, extending the function of the left TPJ in moral judgment" (Luo et al., 2017, p. 228). According to Decety and Meltzoff (2014), the temporoparietal junction is importantly involved in the function of distinguishing between self-produced actions and the actions of others. "Problems with self-other distinctions may reflect or pose a vulnerability to the symptoms associated with Tourette syndrome, Schizophrenia, Autistic Spectrum Disorder and Obsessive Compulsive Disorder" (Eddy, 2016, p. 465).

Obeso et al. (2018) reported that, in spite of the widely understood proposal that the right temporoparietal junction is importantly involved in cognitive functions guiding altruistic behavior, the right temporoparietal junction's precise roles in altruistic functions have not been established. Obeso et al. (2018) explored three of the right temporoparietal junction's possible functional roles underlying altruistic behavior: "Implementing the motivation to help, signaling conflicts between moral and material values, …[and] representing social reputation concerns" (Obeso et al., 2018, p. 1). Twenty participants were divided into a test group and a matched control group. Participants evaluated variations in situations concerning donations to one of two organizations, one a charity providing food to needy persons, and the other a group existing to increase possession and use of weaponry among members of the public. Participants were asked to make decisions about donation to the morally virtuous group and to the morally objectionable group, and their donation decisions were linked to varied personal expense or personal compensation. Continuous theta burst transcranial magnetic stimulation was applied to the right temporoparietal junction of each test group participant to reduce right temporoparietal junction

activity. For participants in the control group, continuous theta burst transcranial magnetic stimulation was applied to the cranial vertex, to avoid affecting functioning of the right temporoparietal junction while allowing for inadvertent nonspecific affects of the continuous theta burst transcranial magnetic stimulation. This study indicated that both general motivation to help others and reputation-based behavior was unaffected by the transcranial magnetic stimulation, suggesting little if any role of the right temporoparietal junction in moral reasoning associated with reputation concerns. In terms of decision-making involving conflicts between moral and material values, disrupting right temporoparietal junction functioning "led participants to reduce monetary self-interest and to give away significantly more than the control group" (Obeso et al., 2018, p. 6). Findings like this could provide important clues regarding candidate precisely localized functional modifications for increasing prosociality. There is no reason to believe that thousands of similar clues will not be identified as cognitive neuroscience research further matures.

Although there is a significant body of literature suggesting that the right temporoparietal junction is associated with social cognition (Baird & Roellke, 2015; Gallagher & Frith, 2003; Miller et al., 2020; Obeso et al., 2018; Saxe & Kanwisher, 2003), Miller et al. (2020) presented findings linking "right TPJ [temporoparietal junction] functioning to physiological and subjective components of emotion in an empathy-induction task" (p. 7). Miller et al. (2020) interpreting the findings of their transcranial magnetic stimulation study as "preliminary evidence that the right TPJ contributes to physiological and experiential aspects of responding to others' suffering" (p. 7) by way of right temporoparietal junction influence upon the autonomic nervous system in response to perception of others' suffering.

Precuneus

The precuneus is part of the parietal lobe, located in front of the cuneus on the medial surface of the cerebral hemisphere (Cavanna & Trimble, 2006). Baird and Roellke (2015) included the precuneus in their mentalizing grouping of neural regions involved in moral reasoning. According to Baird and Roellke (2015), the precuneus plays a role in processes underlying reflective self-awareness. The precuneus also plays a role in autobiographical memory recall (Baird & Roellke, 2015). According to Chakroff and Young (2014), the precuneus is importantly involved in making inferences about mental states. Baird and Roellke (2015) said that the precuneus, functioning with the retrosplenial cortex, helps to facilitate moral reasoning by "recognizing socially significant visual cues, aiding in the theory of mind process, and reflecting on complex conceptions of 'humanness'" (Baird & Roellke, 2015, p. 161). According to Utevsky et al. (2014), their functional magnetic resonance imaging study involving 188 participants revealed that "task performance led to increased connectivity (compared to rest) between the precuneus and the left frontoparietal network (lFPN), whereas rest increased connectivity between the precuneus and the default-mode network (DMN)" (p. 932). Utevsky et al. (2014) also found that "the precuneus exhibits heightened connectivity with both DMN and a task-positive network according to task state, and additionally exhibits connectivity patterns that reliably discriminate task state" (p. 933). That provided evidence that the precuneus "plays a core role not only in DMN, but also cognition more broadly through its engagement under a variety of processing states" (p. 933).

Limbic System

Amygdala

The amygdala has been associated with the fight, flight or freeze mechanism. Chakroff and Young's (2014) list of "brain regions implicated in social cognition" (p. 96) did not include the amygdala. Possibly, the association of the amygdala with the fight, flight or freeze response and the amygdala's connection with anxiety and fear functions seem to implicate the amygdala more with non-prosocial reactions than with cognition of any kind, especially social cognition. Perhaps, if, as it has been speculated, amygdalar function underlies fear and anxiety, then a step toward enhancing prosociality might simply involve reducing amygdala activity. It is, however, not quite as simple as that. Amygdalar function is not associated only with anxiety, fear and the fight, flight or freeze reflex (Paré & Quirk, 2017; Passingham & Wise, 2014; Pitcher et al., 2017). Also, the amygdala was included among the three structures Passingham and Wise (2014) identified within which the medial prefrontal cortex is most importantly networked in connection with the functions of the medial prefrontal cortex: "Hippocampal connections supply information about navigation and other events that involve actions, the amygdala provides updated valuations of predicted outcomes based on current biological needs, and connections with the medial premotor areas provide a route to action" (Passingham & Wise, 2014, p. 65). Paré and Quirk (2017) called out the tunnel vision associated with amygdalar function:

> recent developments lead us to propose a new conceptualization of amygdala function whereby the amygdala inhibits behavioral engagement. Moreover, we propose that the goal of understanding the amygdala will be best served by shifting away from fear conditioning toward naturalistic approach and avoidance paradigms that involve decision-making and a larger repertoire of spontaneous and learned behaviors. (Paré & Quirk, 2017, p. 1)

Buades-Rotger et al. (2017) reported that, in response to interpersonal provocation, they observed right amygdala upregulation accompanying decreased activation of mentalizing and

mirroring regions including the medial prefrontal cortex, temporoparietal junction, inferior frontal gyrus and supramarginal gyrus. It is fair to speculate that approach-avoidance mechanisms involving the amygdala could serve prosocial functions. I propose that the bifurcated functions of the approach-avoidance system should, in fact, be considered potentially useful to the development of operationalizable benevolutioneering. Certainly, there are times when avoiding another person who is functioning as the source of interpersonal provocation might be the most prosocial behavior available. If a person's amygdala failed to adequately perform this kind of function, then diagnosing and correcting that dysfunction could certainly be expected to prosocially enhance that person.

Cingulate Cortex

Within the cerebral hemisphere's medial surface, the cingulate cortex, considered part of the limbic system, comprises a gyrus and a sulcus. Functions of the cingulate cortex include aspects of both emotional processing and regulation of behavior, as well as important roles in autonomic motor function regulation.

Anterior Cingulate Cortex. Although Baird and Roellke (2015) considered the anterior cingulate cortex part of the medial prefrontal cortex, I have chosen to treat the anterior cingulate cortex as part of the cingulate cortex, primarily because of its morphological continuity with the rest of the cingulate cortex, but also because some of the apparent emotion processing functions of the anterior cingulate cortex seem somewhat more akin to functions associated with other regions of the cingulate cortex. Because they deemed the anterior cingulate cortex important for social cognition, Chakroff and Young (2014) included the anterior cingulate cortex in their list of brain regions important for social functioning. The anterior cingulate cortex appears separately in Chakroff and Young's (2014) list.

According to Baird and Roellke (2015), in connection with the anterior insula, the anterior cingulate cortex is associated with interoception, contextualizing pain and experiencing another person's pain. Interoception, the sense, sensations and feeling, conscious and unconscious, of what is going on inside one's own body, was considered earlier in this chapter in connection with discussion of the anterior insula's role in interoception. Experiencing loving feelings appears to involve anterior cingulate cortex activation. R. J. Nelson (2011) reported that participants in one fMRI (functional magnetic resonance imaging) study were shown, alternately, images of their romantic partner, with whom they reported being very much in love, and then images of a Platonic friend. New mothers, in a second study, viewed images of their babies and then images of other babies. Even though imaging did not reveal activation of exactly the same combinations of brain regions from the first study to the second study, it was clear that one of only a few areas activated similarly for maternal and romantic love was the anterior cingulate cortex (Bartels & Zeki, 2004). Functional magnetic resonance imaging showed:

> [that] both empathy and self-reported helping behavior were associated with greater activity in the mPFC [medial prefrontal cortex] and ACC [anterior cingulate cortex]. Reported helping of friends was associated with activity in a much more robust network, including the mPFC, the ACC and the PC [precuneus], whereas reported helping of strangers was associated with only a relatively small section of the mPFC. (Chakroff & Young, 2014, p. 14)

Perceiving others' experience of unpleasant states appears to be associated with anterior cingulate cortex activation (Chakroff & Young, 2014). The implications of these observations for at least one aspect of prosociality seem conspicuous. Without information about discomfort a person causes another person, the immediate social system would lack an important prosocial feedback loop. This region, potentially important for prosociality, will be further considered in the following section that considers the anterior insula.

Social presence is “the feeling of being there with a ‘real’ person” (Oh et al., 2018, para. 1). To investigate the effects of social presence on neural activity of affective processing, using electroencephalography, Soiné et al. (2021) measured cortical activity while showing both male and female participants unpleasant, neutral and then pleasant images. Participants’ cortical activation corresponding with viewing each of the three types of images was measured with and then without the physical presence of the participants’ significant other. Soiné et al. (2021) observed that the anterior cingulate cortex showed “increased activity levels depending on social presence in the neutral emotion condition” (p. 15), which means while viewing neutral images. They reported that “social presence strongly affects neural activity of affective processing in case of the neutral emotion condition” (p. 15), but “no such effects were found for the pleasant and also not the unpleasant emotion condition” (Soiné et al., 2021, p. 15). In other words, when a participant’s significant other was present, neutral experiences were reported to be less pleasant than when that participant’s significant other was not present, and the cortical activity associated with generating more unpleasant assessments in the presence of a significant other corresponded with increased activity in the anterior cingulate cortex. One might speculate that these results could extend beyond laboratory settings such that, in close relationships, the social presence of one’s significant other somehow influences emotional assessments of otherwise neutral experiences resulting in experiencing otherwise emotionally neutral stimuli to be somewhat unpleasant. It is valuable and somewhat surprising that such a subtle effect was even noticed and reported. Perhaps tens of thousands, maybe millions, of such subtle, although certainly socially important, characteristics are worth cataloguing and considering as potential candidate enhancement components of benevolutioneering.

Hippocampus

The hippocampus is a seahorse-shaped structure deep in the medial region of each hemisphere's temporal lobe. "The hippocampus proper consists of the Cornu Ammonis (CA) region…and the dentate gyrus (DG), …anatomically arranged in a curled structure" (Dudek et al., 2016, para. 2). Two specific areas, the top portion or *regio superior of Cajal* and the lower portion or *regio inferior of Cajal*, of the rodent Cornu Ammonis were identified by early neuroanatomists.

> In 1934, Rafael Lorente de Nó noted that a small area of the regio inferior was sufficiently distinct in its cytoarchitecture and connectivity to warrant a separate nomenclature[, so he] designated the three CA areas containing pyramidal neurons as CA1, CA2 and CA3; and the end portion within the blades of the DG [dentate gyrus], containing polymorphic cells, as CA4. (Dudek et al., 2016, para. 3)

Animal and human research has established significant involvement of the hippocampus in processing episodic memory (Burgess et al., 2002; Daumas et al., 2005; Deng et al., 2019), which is remembered phenomena regarding the "when, where, who, and what" (Deng et al., 2019, p. 1) aspects of remembered episodes. Social memory, which refers to information regarding who was involved in a remembered episode, has been shown to be included in those episodic memory functions of the hippocampus (Deng et al., 2019; Hitti & Siegelbaum, 2014; Kogan et al., 2000; Montagrin et al., 2018; Okuyama et al., 2016; Smith et al., 2016; Stevenson & Caldwell, 2014). "Social memory deficits, common symptoms in such conditions as Alzheimer's disease, schizophrenia, and autism, are associated with hippocampus dysfunction [(Becker & Grecksch, 2000; Deacon et al., 2009; Higashida et al., 2012; Piskorowski et al., 2016)]" (Deng et al., 2019, p. 1).

Although the hippocampus has been identified as a neural substrate of such functions as memory, learning, and cognitive mapping of spatial information, recent evidence suggests hippocampal involvement, also, in formation of social maps (Chevaleyre & Piskorowski, 2016;

Montagrin et al., 2018; Schafer & Schiller, 2018). Montagrin et al. (2018) presented evidence for hippocampal involvement in "(1) supporting social memory, (2) representing different dimensions of social space, (3) tracking dynamic social behavior, (4) maintaining a flexible map allowing adaptation to new social contexts, and (5) maladaptive social behavior across psychiatric disorders" (p. 672). According to Schafer and Schiller (2018), "social deficits, such as poor social skills…and social withdrawal, are prevalent across psychiatric disorders and often co-occur with hippocampal structural and functional abnormalities" (p. 105). Schafer and Schiller (2018) suggested that "hippocampal dysfunction might disrupt social map representation and contribute to commonly seen social behavioral symptoms" (p. 105). They argued that the "co-occurrence of hippocampal and social impairment may be related via hippocampal social cognitive mapping" (Schafer & Schiller, 2018, p. 105).

Walsh et al. (2021) pointed out that "social motivation is influenced by social cognition and social memory, the ability to recognize and remember conspecifics, respectively" (p. 10). Studies utilizing transgenic mice have recently implicated specific hippocampal subregions in the "storing and processing of memories associated with social interactions" (Walsh et al., 2021, p. 10). Whereas selectively inactivating the dorsal CA2 region, of the hippocampus yielded reduction of social function without affecting "sociability per se nor other hippocampal-dependent forms of memory" (Walsh et al., 2021, p. 10), CA2 excitotoxic lesion eliminated social memory without affecting olfactory memory (Walsh et al., 2021). "Excitotoxins are analogues of glutamate that bind to glutamate receptors and cause unregulated influx of calcium into neurons, killing them" (Binder et al., 2009, para. 1).

"Recent studies have identified the hippocampal projection neurons and related pathways that encode and keep social information" (Deng et al., 2019, p. 1). Although

> the roles of hippocampal subfields and principal cells (PCs) in hippocampus formation relevant to social memory have recently attracted considerable attention [(Hitti & Siegelbaum, 2014; Montagrin et al., 2018; Okuyama et al., 2016)], little is known about how hippocampal interneurons and local microcircuits are involved in this cognitive process. (Deng et al., 2019, p. 1)

Deng et al. (2019) explored "the involvement of nonprincipal neurons in the hippocampus during specific processing stages in social memory functions, thus attempting to elucidate how hippocampal interneurons and local microcircuits participate in this cognitive process" (p. 8). They explored hippocampal CA1 parvalbumin interneurons (PVIs) functionality in memory related to social recognition. They were aware that earlier research had demonstrated that, in mice, social isolation "could impair long-term social recognition memory and down-regulate PV expression in the cortex [Kogan et al., 2000; Shahar-Gold et al., 2013]" (pp. 1–2). They were also aware that "changes of PV [parvalbumin interneuron] expression in the hippocampus, however, were inconsistent in the few previously existing studies [Ueno et al., 2017; Kaalund et al., 2013; Filipović et al., 2013]" (Deng et al., 2019, p. 2). Deng et al. (2019) therefore undertook to "examine the relationship between social memory ability and the number of PVIs in the hippocampus" (p. 2), ultimately demonstrating that, at least in mice, "PVIs [parvalbumin interneurons] in the vCA1 [CA1 subregion of the ventral hippocampus] are specifically engaged in subjects' social information retrieval but not its encoding" (Deng et al., 2019, p. 8). Their research also "revealed that the activation of vCA1-PVIs [parvalbumin interneurons in the CA1 subregion of the ventral hippocampus] was important in helping mice discriminate between novel and familiar conspecifics" (Deng et al., 2019, p. 8).

Demonstrating the role of the hippocampus in prosocial functioning, important prosociality-related functions are significantly compromised in persons with hippocampal amnesia:

> Relative to matched comparison participants, patients with hippocampal amnesia reported lower cognitive and emotional trait empathy on questionnaires, and reported no increase in empathy ratings or prosocial behavior in response to empathy inductions. For example, on one of the measures of cognitive trait empathy, perspective-taking, the ratings of the patients with hippocampal amnesia were three standard deviations, or more, below that of matched comparison participants. (Rubin et al., 2014, p. 7)

Routine life in society requires interaction with a person's surroundings and with other people. Executive functions must work seamlessly to facilitate successfully navigating ever-evolving circumstances. Social interaction demands by watching other people in comparable circumstances and "recognizing the shifting or changing status of friends and enemies, using language to communicate and redescribe events from multiple points of view, and imagining things that might happen to us in the future" (Rubin et al., 2014, p. 2). Such relational memory functions rely heavily on the hippocampal-dependent memory system (Rubin et al., 2014).

From what has, in this subsection, been sampled of the discoveries of the roles played by the hippocampus in facilitating prosocial phenomenology and behavior, it is possible to suggest a few potential approaches to developing prosocial enhancement interventions. First, for most if not every sociality-related dysfunction even partly linked to malformation or dysfunction of any part of the hippocampus, it could be proposed that corrective therapies involving the hippocampus could improve the sociality-related behavior and experience of a person suffering from such hippocampal malformations or dysfunctions. Furthermore, for some of those differences in which persons vary from one another such that some persons' hippocampi are regarded as malformed or dysfunctional, there could be differences between normally formed or normally functioning hippocampi and hippocampi of people whose hippocampus-associated sociality-associated experiences and behaviors are more prosocial than most other people's. That might allow raising the bar in some cases so that most people could be treated as needing enhancement interventions to bring their hippocampus-associated functionality and

phenomenology to the level of prosociality of certain particularly benevolent outliers. Additionally, even those particularly benevolent outliers might be enhanced to even greater benevolence, even more prosocial phenomenology and behavior. These considerations might apply to some of the physiological correlates, structural and functional, of such hippocampal functions as mentioned by Montagrin et al. (2018): social memory, representation of various dimensions of social space, tracking social behavior dynamics, maintaining a flexible social map to allow adaptation to new social contexts, and various social behaviors often maladapted in association with certain psychiatric disorders. It might also apply to sociality-related functions associated with "hippocampal projection neurons and related pathways that encode and keep social information" (Deng et al., 2019, p. 1). More usefully, in terms of hoping for developing extremely precise enhancements, these considerations might apply to sociality-related functions associated with "nonprincipal neurons in the hippocampus" (Deng et al., 2019, p. 8), to sociality-related functions associated with "hippocampal interneurons and local microcircuits" (Deng et al., 2019, p. 1). Perhaps some aspects of prosociality enhancement interventions might involve increasing or otherwise adjusting the number or distribution of parvalbumin interneurons in certain hippocampal subregions such as the CA1 subregion of the ventral hippocampus. It is not unreasonable to expect further research to reveal thousands or even millions of yet undiscovered qualitative aspects of parvalbumin interneurons far more instructive than recent mere comparisons of the number of parvalbumin interneurons in different regions and subregions. Certainly this dissertation's consideration of only a few substructures and functions of the hippocampus is only a glimpse of a vanishingly small fraction of what could be millions of parts, subparts, functions, and parameters of the hippocampus which influence human sociality.

As sampled in this subsection, the expanding understanding of increasingly specific hippocampal substructure roles and of the correlation of specific hippocampal subregions with sociality-related functions is advancing relatively modestly. Furthermore, it has been demonstrated that there are definite structural-functional relationships that offer realistic hope of developing structural modifications which will result in changes in sociality-related experiences and behaviors. Nevertheless, the current understanding of the sociality-related roles of the substructures of the hippocampus is clearly inadequate to facilitate development of adequately precise interventions for the kind of prosocial enhancement associated with benevolutioneering. That is not unique to the hippocampus. It is, rather, the case for every part of the nervous system and all other body systems which play roles in shaping sociality. Little-by-little, though, knowledge of the vast number of neurocorrelates of prosociality is accumulating, and the rate of that accumulation is increasing. A similar mix of enormous challenge and hopeful progress is apparent in the next subsection's consideration of another major limbic structure, the thalamus.

Thalamus

Just above the brainstem, in each brain hemisphere, is the egg-shaped, approximately 2¼ inch long thalamus. The thalamus might be the most connected part of the brain, a sort of Grand Central Station of the central nervous system. "Historically, the thalamus has been viewed as little more than a relay, simply transferring information to key players of the cast, the cortex and hippocampus, without providing any unique functional contribution" (Wolff & Vann, 2019, p. 1). Because, within the thalamus, there is an "absence of local excitatory connections…, the notion of thalamic relay seemed like a reasonable description over the past several decades" (Dehghani & Wimmer, 2019, p. 1380). Recent theoretical and experimental progress resulting in "evidence from multiple laboratories researching different thalamic nuclei" (Wolff & Vann,

2019, p. 1) has broadened understanding of the widely varying roles the thalamus plays in cognition and established that "only a subset of thalamic circuit motifs fits the relay description" (Dehghani & Wimmer, 2019, p. 1380).

First, in consideration of the roles of the thalamus in prosocial experience and behavior, the thalamus is indispensably involved in so many aspects of perception and cognition that it might be easier to list the few areas with which the thalamus appears to have no involvement. For example, it appears that the thalamus might not be involved in olfaction in the way the thalamus is involved with all other sensory functions. It is no exaggeration to say that it appears that there might be very few cognitive, emotional, or sensory functions for which the thalamus plays no role. If most any sociality-related experiential or behavioral function would be listed, there is very little chance that the thalamus would play no role in that function.

One example of this near-universal thalamic involvement can be observed in van der Cruijsen et al. (2017). Investigating whether evaluation of self-traits and maternal-traits in physical, academic and prosocial domains involves activity in similar or distinct brain regions, van der Cruijsen et al. (2017) found that, although the three domains tended to activate specific regions expected for each domain, for example, activation in the temporoparietal junction only while considering prosociality, bilateral thalamic activation along with activation in the right dorsolateral prefrontal cortex, left middle temporal cortex, and right insula was observed in evaluating traits across all domains. The thalamus was shown to be involved in every consideration.

The fact that damage to the dorsomedial thalamus has been associated with patients exhibiting apathetic behaviors (Stuss et al., 2000; van Reekum et al., 2016) could be interpreted as suggesting that the thalamus plays a role in even caring about anything. Because caring

involves valuing, that could mean that the thalamus might actually play a role in the mechanisms involved in every kind of valuing. This further highlights the possibility of near-universal thalamic involvement, and it suggests the possible indispensable role of the thalamus in every kind of prosociality-related experience or behavior.

There are also indications of specific thalamic involvement in certain sociality-related functions. For example, relatively recently, a causal relationship has been established between social dominance behavior and MD-PFC (mediodorsal thalamic nucleus-prefrontal cortex) network activation (Wolff & Vann, 2019; Zhou et al., 2017). According to Rhoads et al. (2021), making altruistic decisions was shown to be associated with increased activation of the thalamus, and increased activation of the left thalamus was shown to be associated with both making cooperative decisions and making equitable decisions.

The thalamus is importantly associated with the seemingly mirror-image sociality-impacting conditions, autism spectrum disorders and Williams syndrome (Niego & Benítez-Burraco, 2021). Woodward et al. (2017) reported indications of atypical connectivity between the thalamus and the temporal and motor cortical areas in the brains of people with autism spectrum disorders. A study that investigated the thalamic differences in those with autism discovered that autistic males had lower and weaker increases in functional thalamic connectivity (Tomasi & Volkow, 2019). Chapter 5 discussed the importance of autism spectrum disorders and Williams syndrome to the exploration of the conceptual development of benevolutioneering.

In rodents, impairment of emotional contagion resulted from medial thalamus deactivation (Jeon et al., 2010; Kim et al., 2012; Paradiso et al., 2021). Zheng et al. (2020) demonstrated that “in rats, the ACC [anterior cingulate cortex] modulates vicarious freezing behavior via a projection to the MDL [mediodorsal thalamus]” (p. 1673), providing “clues to

understanding the mechanisms underlying empathic behavior in humans" (p. 1673). Such clues to understanding mechanisms of human empathy are, of course, important to benevolutioneering's conceptual development and to the exploration of benevolutioneering's plausibility. As touched on earlier, it is possible that the thalamus and its incredibly complex connectivity might be involved to some degree in every aspect of sociality. This underscores the overwhelming complexity of conceptualizing and developing any precise prosociality enhancement interventions such as those anticipated with benevolutioneering.

Hypothalamus

Another component of the limbic system, the hypothalamus, is, as indicated by its name, located directly under the thalamus, on the brain's undersurface, just above the pituitary gland, to which the hypothalamus is connected by a stalk. Oxytocin, discussed later in this chapter in the section titled Sociality-Related Neurochemistry, Neurotransmission, Endocrinology and Neurogenetics, is "produced in the hypothalamus and stored in the posterior pituitary. It [oxytocin] acts both through direct projections to other brain regions and through release into the bloodstream" (Fineberg & Ross, 2017, p. 1). Comprised of a "gray matter conglomeration of neurons that organize in nuclei and also by white-matter substance formed by myelinated nervous fibers" (Gabriela Pop et al., 2018, p. 7), the hypothalamus has been modeled as "a link structure between the nervous and the endocrine system, its main function being to maintain the homeostasis of the body" (Gabriela Pop et al., 2018, p. 4). At times thought of as, more or less, a kind of thermostat for the body, "rather than being viewed as a hardwired, innate behavioral response region, …[the hypothalamus] should be seen as an integrator of present and past sensory and contextual information that adapts survival behaviors to a changing environment" (Krzywkowski et al., 2020, p. 12).

As already mentioned in Chapter 5, when discussing prosociality's relationships with wellness and longevity, Brown and Brown (2015) presented a reasonable case for their hypothetical model in which they posit that "a mammalian neurohormonal system…evolved to regulate maternal care, but over time may have been recruited to support a wide variety of helping behaviors in humans and other social animals" (p. 1). According to their model "perception of need or distress in others activates caregiving motivation, which in turn, can facilitate helping behavior. Motivational regulation is governed by the medial preoptic area of

the hypothalamus, interacting with certain other brain regions, hormones, and neuromodulators" (Brown & Brown, 2015, p. 1), namely progesterone and oxytocin. It is important to identify and understand structural and functional physiological correlates of such prosocial phenomena and behavior to develop models of and approaches to facilitate selectively reverse engineering prosociality.

It is also important to understand structural and functional physiological correlates of nonprosocial and antisocial phenomena and behavior to develop models of and approaches to enhancing prosociality by reducing and mitigating components of nonprosocial and antisocial phenomena and behavior. Whereas we can think of helping and caring as approach phenomena and behavior, non-approach or anti-approach responses to encountering a conspecific include mere tolerance and defensive reactions such as avoidance or aggression. Among phenomena and behavior studied which provide windows into the hypothalamus's involvement in nonprosociality-related phenomena and behavior is the involvement of the hypothalamus in territorial animals' defensive reactions.

> Social aggression and avoidance are defensive behaviors expressed by territorial animals in a manner appropriate to spatial context and experience. The ventromedial hypothalamus controls both social aggression and avoidance, suggesting that it may encode a general internal state of threat modulated by space and experience. … . Neurons in the mouse ventromedial hypothalamus are activated both by the presence of a social threat as well as by a chamber where social defeat previously occurred. Moreover, under conditions where the animal could move freely between a home and defeat chamber, firing activity emerged that predicted the animal's position, demonstrating the dynamic encoding of spatial context in the hypothalamus. (Krzywkowski et al., 2020, p. 1)

One studied defensive phenomenon providing windows into the hypothalamus's involvement in sociality-related phenomena is the involvement of the hypothalamus in the experience associated with social defeat. Social defeat "enhances activation of the paraventricular nucleus of the hypothalamus" (Litvin et al., 2011, p. 393). Krzywkowski et al. (2020) "found that social defeat induced a functional reorganization of neural activity as

optogenetic activation could elicit avoidance after, but not before social defeat" (p. 1). "When compared to undefeated animals, socially defeated mice exhibited an anxiogenic [anxiety producing] behavioral profile towards a novel male conspecific" (Litvin et al., 2011, p. 393). This research provides just a sample of hypothalamic encoding of sensory and spatial information facilitating sociality-related phenomena and behavior (Krzywkowski et al., 2020).

Another window into hypothalamic involvement in sociality-related phenomena is the "reduced activation of the hypothalamus…frequently associated with decreased amygdala activity in" (Caria et al., 2020, p. 7) autism spectrum disorder and in those carrying the OXTR rs53576A allele, especially while processing facial information (Aoki et al., 2015; Tost et al., 2010). OXTR rs53576A is an oxytocin receptor gene (OXTR) variant that has been shown through neuroimaging research to be associated with reduction of grey matter volume in the hypothalamus and reduced functional amygdalar connectivity (Conner et al., 2018; Tost et al., 2010). The OXTR rs53576A allele has also been shown to be associated with impairment of maternal behavior and compromised sociality (Conner et al., 2018; Kogan et al., 2011; Riem et al., 2011; Rodrigues et al., 2009).

"Projections of the central amygdala to the hypothalamus and brainstem" (Caria et al., 2020, p. 7) activate the fear response mechanisms of the autonomic nervous system (Caria et al., 2020; LeDoux, 2000). "Stimulation of amygdaloid OXT receptors is then assumed to inhibit these efferences' activity so as to decrease aversive responses" (Caria et al., 2020, p. 7) to social encounters (Janak & Tye, 2015; Knobloch et al., 2012; Viviani et al., 2011), "which would be increased in case of diminished amygdala activation. Accordingly, increased hypothalamic activity and amygdala deactivation appear to mediate initiation and consolidation of social relationship in healthy individuals. Such a reverse" (Caria et al., 2020, p. 7) pattern of amygdalar

and hypothalamic activation associates with multiple sociality-related experiences and behaviors, including pair and maternal bonding (Acevedo et al., 2012; Bartels & Zeki, 2004; Caria et al., 2020, p. 7; Mercado & Hibel, 2017; Strathearn et al., 2009), the trustworthiness and trust of other persons (Caria et al., 2020; Krueger et al., 2007), and visual facial processing of very familiar faces (Caria et al., 2020; Wolfe et al., 2018).

"Prosocial behavior can be enhanced by hypothalamic [activity] through the modulation of two complementary responses: enhancement of social stimuli saliency processing and reduction of fear and avoidance behavior" (Caria et al., 2020, p. 7). Those responses both depend on amygdalar functions (Caria et al., 2020; Shamay-Tsoory & Abu-Akel, 2016; Wittfoth-Schardt et al., 2012).

> Notably, AVP [arginine-vasopressin] and OT [oxytocin] have opposite modulatory effects on fear and anxiety-related behavior: the former by enhancing sympathetic responses such as stress level, anxiety, aggressiveness and boosting fear memory consolidation, the latter by acting on complementary parasympathetic responses that facilitate prosocial attitude and interactions as well as extinction of conditioned avoidance responses. These opposite regulatory neurophysiological processes result from activation of distinct elements of an inhibitory network within the medial part of the amygdala, and consecutive integration of different afferences to the central amygdala into a modulatory output to the hypothalamus and brainstem for appropriate anxiety and fear responses [Huber et al., 2005]. (Caria et al., 2020, p. 7)

The very few examples offered in this subsection of the sociality-shaping roles of the hypothalamus must not be misunderstood to imply the hypothalamus's actual number of sociality-shaping roles or even the number of the hypothalamus's already known sociality-shaping roles. The many and varied sociality-shaping roles of the hypothalamus, including its role in bridging the nervous system and the endocrine system, make the hypothalamus an extremely important brain structure for benevolutioneering's conceptualization and operationalization. Dozens of substantial dissertations could be written about already known or

suspected sociality-shaping roles of the hypothalamus, and far more remains to be discovered about the hypothalamus than what is already known.

Striatum

Also part of the limbic system, the striatum is located lateral to and in front of the thalamus in both of the brain's hemispheres. The striatum is made up of gray matter and white matter. The striatum's white matter is the internal capsule. The striatum's gray matter consists of the caudate nucleus and the lentiform nucleus. The lentiform nucleus consists of the globus pallidus and putamen. Multiple sociality-related functions appear to involve the striatum. For example, the behavior trait social desirability, the tendency to present oneself to other people in positive ways in seeking social approval, has been positively associated with reduced striatal dopamine receptor binding (Andrejević et al., 2017).

According to Chakroff and Young (2014), human beings experience behaving prosocially as rewarding, in part, because of activity in the ventral striatum. Chakroff and Young (2014), characterized the ventral striatum as "a reward area" (p. 98), helping to facilitate, specifically, anticipation of reward. Chakroff and Young (2014) reported that ventral striatal activation correlates with assisting others by contributing money and receiving money. According to Moll et al. (2006), ventral striatal activation levels correlate with how much money is given to assist another person.

Fliessbach et al. (2007) reported that a dual-participant study in which side-by-side fMRI scanners were utilized to simultaneously monitor and compare activation of the ventral striatum associated with reward amounts of which each participant was aware showed that ventral striatal activation with known identical reward amounts differs from striatal activation with known non-identical reward amounts. It is quite a significant matter that sociality-related rewarding

experiences such as satisfaction are shaped not only by one's own experience of acquiring and possessing but also by the awareness of what others acquire and possess. People's aptitudes and success are on a continuum. Except for a shrinking few of the most fortunate persons, there is a relentless flow of information about other people seemingly more fortunate than oneself. That relentless flow of information is becoming ever more dramatically amplified by humanity's rapidly increasing connectivity. That points to just one of the reasons that the ventral striatum is included in the list of brain regions considered an important candidate for prosocial neuroenhancement such as that envisioned within this exploration's conceptualization of benevolutioneering.

Corpus Callosum

Centrally located beneath the cerebral cortex, the prominent C-shaped corpus callosum is the brain's most prominent interhemispheric commissure. The corpus callosum's apparently important role in prosociality-related behavior is suggested by the fact that reduced corpus callosum size has been associated with low sociability (Fairless et al., 2008). In the .025% of our species whose corpus callosum fails to develop, there is notable social function impairment (Paul et al., 2007). Booth et al. (2011) demonstrated, however, that in some cases of agenesis of the corpus callosum in autistic patients, reasonably functional social cognition skills can be successfully learned through specialized training. This is not necessarily evidence of minimal contribution of the corpus callosum to sociality-related functions when the corpus callosum is present and normally functioning. Rather, this might be viewed as evidence of the brain's impressive adaptability, together with surprising cases of anencephaly and hemispherectomy with normal or near-normal functionality. In a case study presented by Melogno et al. (2020), a child with complete agenesis of the corpus callosum and no known comorbidities displayed

approximately a 3-year delay in development of abilities related to theory of mind. Agenesis of the corpus callosum is also associated with impaired "strategic understanding and use of interpersonal emotions" (Mangum et al., 2021, p. 2) as well as "mild executive function deficits, particularly manifest in response inhibition and switching, sustained attention and vigilance" (Mangum et al., 2021, p. 2).

The foregoing exploration of a sample of specific brain structures involved in sociality-related phenomena and behavior should not be understood to infer that any specific phenomena or behavior can be linked exclusively to only one small region of the brain. Such oversimplification would distort the staggering complexity of the nervous system's diffuse functional organization and interconnectivity with other body systems. Tendencies within research specialty communities to precisely localize specific, isolated neurocorrelates of particular behaviors, behavioral traits or phenomena often result in expanded explorations involving diffuse regions and multiple body systems. For example, Andrejević et al.'s (2017) examination and analysis of "the association between social desirability and white-matter microstructure throughout the whole brain…revealed associations within multiple major white-matter tracts, demonstrating that socially desirable behavior relies on connectivity between distributed brain regions" (p. 1255). In this chapter's next section, the focus shifts from specific brain regions to more diffuse considerations. This is a move closer to functional exploration, an important step toward a broader systems-oriented model, a more subsumic paradigm.

Sociality-Related Neurochemistry, Neurotransmission, Endocrinology, and Neurogenetics

According to Wiseman (2016), "exploring how realistic moral bioenhancement might turn out to be, one important step is generating an understanding of the various ways in which neurobiological substances can dispose persons to behave and think in certain ways" (p. 87).

"Affiliative behaviors," according to R. J. Nelson (2011), "are affected by peptide hormones such as vasopressin [arginine vasopressin (AVP)] and oxytocin, as well as by glucocorticoids" (p. 450). "Peptides are chains of amino acids that occur in low concentrations in the nervous system" (Andreassi, 2000, p. 19). The nonapeptide oxytocin is synthesized by neurons in the hypothalamus (Kandel, Schwartz, et al., 2013), more precisely, in "magnocellular neurons in both the paraventricular and supraoptic nuclei" (Green et al., 2013, p. 573). Oxytocin is then released from the posterior pituitary gland's axon terminals (Green et al., 2013; R. J. Nelson, 2011). R. J. Nelson (2011) said that, apparently, the functions of oxytocin and vasopressin in the affiliative behaviors of mammals involves the effects of oxytocin and vasopressin on serotonin and dopamine, however, "the exact interaction between dopamine and OT [oxytocin] appears complex and may vary according to behavioral contexts" (McGregor & Bowen, 2013, p. 424). In mammals, Vasopressin and oxytocin are both released from the posterior pituitary gland (R. J. Nelson, 2011). Vasopressin, although "not yet a rock star like oxytocin" (Kurtz, 2016, p. 2), is, functionally, quite significant. Vasopressin is considered here with Oxytocin because of the significant effects on sociality of this closely structurally and functionally related pair of peptides. Definitely not regarded as a molecule of hugs and love as Paul Zak (2013; Luis Congdon, 2015) popularized oxytocin to seem, vasopressin's reputation has been more characterized by its role in aggression and other less prosocial behaviors and emotions than with mothering, bonding and affiliation. As mentioned, oxytocin is not really all about love and hugs either (Churchland, 2011; De Dreu, 2012; De Dreu & Kret, 2016; Numan, 2015; Pfaff, 2015; Wade, 2011), as can be seen by anyone watching a mother aggressively defend her young. Unconvincingly, Wiseman (2016) attempted to attribute the polarized reputations of oxytocin and vasopressin to gender bias. In Kurtz (2016), I explored the seeming

polarity of oxytocin's multiple functions. In-depth treatment of that seeming polarity is beyond the scope of this dissertation.

Finding that spraying oxytocin into one's nostrils increases altruistic behavior (Churchland, 2011; Luis Congdon, 2015; Zak, 2013) might appear immediately applicable for reverse engineering prosociality. Such increases in altruism, however, affect, almost exclusively, ingroup-directed behavior and are accompanied by increased outgroup-directed antisocial behavior. It would be most convenient if reverse engineering prosociality was as simple as discovering that nicer people had more oxytocin or some other neurotransmitter or hormone than less nice people, finding that relationship was linear and equally affecting every person in every situation, universally administering plenty of oxytocin like fluoride in public water supplies, seeing everyone becoming and remaining exceedingly altruistic to everyone else, and living happily ever after. However, neither oxytocin nor any other so far identified substance manifests such a straightforward, linear influence on prosociality. Prosociality, as discussed throughout this dissertation, is not a straightforward construct. Rather, the complexity of oxytocin underscores the staggering complexity of benevolutioneering, of any notion of neuroenhancement, including reverse engineering prosociality. The neurocorrelates of human sociality considered with adequate precision to effect such finely adjusted prosocial neuroenhancements as envisioned in the benevolutionary model might even number in the billions. That is both good news and bad news. The bad news is how staggeringly complex that challenge really is to bring about maximized advantage to our species through benevolutioneering. The good news includes the recognition of how incredibly effective and versatile benevolutioneering could be with such precise tuning and with the potential for almost limitless combinations of interventions as needs and preferences vary from person to person. With a merely binary construct of sociality,

adjustable for extent only by varying the amount of oxytocin sprayed into a person nostrils or dosage frequency, such potentially rich precision and variety of interventional combinations would be much more difficult to imagine and model. Logically, that is necessarily how single silver bullet solutions function. Fortunately, the nervous system's complexity represents limitless opportunities for creative intentional hyper-accelerated evolution. Oxytocin, nevertheless, is clearly important and, in some ways, unique in its multiple roles in functions likely involved in reverse engineering prosociality.

It does appear to be true that "intranasal oxytocin administration tends to make individuals less aggressive, more trusting (at least of the ingroup), and more confident in social life" (Narváez, 2014). So there is evidence that oxytocin actually does influence sociality. Oxytocin research is already providing important clues for developing treatments for several disorders, including some debilitating conditions, which "display symptomatic altered or deficient social behavior" (Donaldson & Young, 2008, p. 904) including schizophrenia and autism (Beeney et al., 2016; Donaldson & Young, 2008; Rettner, 2013). There is some hope that oxytocin might play in a role in the treatment of borderline personality disorder (Beeney et al., 2016). That is intriguing, because of research which seems to indicate borderline personality disorder's characteristic confusion regarding and inconsistent misrepresentation of the sense of self and the sense of others (Baron-Cohen, 2012; Beeney et al., 2016; Churchland, 2011; Narváez, 2014).

Oxytocin-related research offers clues about the staggering complexity of reverse engineering prosociality. Nothing related to the oxytocin molecule's structure—or any other molecule—is likely inherently prosocial. Oxytocin is among the numerous substances that transmit information within the body. Substances conveying information from neuron to adjacent

neuron across a neural synapse are neurotransmitters (R. J. Nelson, 2011). Substances chemically transmitting information through the circulatory or lymphatic system are considered hormones (R. J. Nelson, 2011). The hormone-neurotransmitter distinction is not absolute (Churchland, 1989; R. J. Nelson, 2011), because substances can function in both capacities, as do oxytocin (Fineberg & Ross, 2017) and vasopressin. Additionally, the information conveyed by oxytocin varies according to such factors as: Location of the oxytocin's target in the nervous system, actions of and interactions with other neurobiological substances; oxytocin receptor distribution, and processes underway involving the structure receiving the oxytocin-carried information (Chakroff & Young, 2014; Churchland, 1989, 2011; Donaldson & Young, 2008; Fineberg & Ross, 2017; Heinrichs et al., 2009; McGregor & Bowen, 2013; R. J. Nelson, 2011; Numan, 2015). Oxytocin's complex involvement in prosociality-related functions is not an indication of implausibility of reverse engineering prosociality. Instead, that complexity is another indicator of the degree of complexity involved in benevolutioneering—many orders of magnitude more complex than reverse engineering something on the order of the International Space Station or the Large Hadron Collider at CERN. Interestingly, for all of oxytocin's functional complexity, one functional characteristic of oxytocin is a bit less complex than that of the same characteristic of certain other neurotransmitters. Angier (2009) conveyed that, in the role of oxytocin as a neurotransmitter, in contrast with other neurotransmitters, it appeared that there is only one type of oxytocin receptor. This reduces the complexity of precisely specifying exactly how oxytocin affects each of the many areas of the brain in which it is used in countless combinations of activated or inactivated receptor sites and in countless combinations with other neurotransmitters and other signaling processes. Yoshida et al. (2009) mapped oxytocin receptor "localization in many cortical, limbic, hypothalamic, and brain stem regions" (Neumann & van den Burg, 2013,

p. 64). That mapping did not involve the human brain. Because, so far, receptor site localization techniques are inappropriate for research in human beings (Churchland, 2011; Heinrichs et al., 2009; McGregor & Bowen, 2013) distribution of human beings' oxytocin receptor sites is unmapped. "No techniques yet exist to determine directly the receptor density and distribution in live subjects" (Churchland, 2011, p. 52). Yoshida et al. (2009) mapped oxytocin receptor sites using Venus knock-in mice, and "comparable facts concerning receptor density in human anatomy are not yet determined, since injection methods to tag the receptors cannot be done in living humans, and are not effective when performed on dead brains" (Churchland, 2011, p. 52). With neurotransmitter research in general:

> there are often major difficulties in measuring the ebb and flow of the peptide in the brains of awake animals engaging in behavior. This seriously limits our knowledge of how various drugs impinge acutely on brain OT [oxytocin] release. An additional problem is that there are currently no radioligands that allow us to probe central oxytocin receptor (OTR) dynamics in human clinical populations. Existing pharmacological probes for OTRs that are used in animal models often lack specificity, and there is also continuing uncertainty about the extent to which peripherally injected or intranasally administered OT penetrates the brain. (McGregor & Bowen, 2013, p. 420)

According to Heinrichs et al. (2009), "development of specific radioactive labeling of neuropeptides in position emission tomography will provide a better understanding about how OT [oxytocin] and AVP [vasopressin] receptors are mapped in the human brain" (p. 549). Such mapping is one of many layers of discovery necessary to help make benevolutioneering a reality.

Oxytocin research is also critical in exploring reverse engineering prosociality because of oxytocin's possible functions involved in transformative peak experiences, enlightenment phenomena and transformative practices preceding prosocial changes in self construct (Churchland, 2011; Grigorenko, 2011; Newberg, D'Aquili, & Rause, 2001; Yaden et al., 2017). "Religious and spiritual experiences are likely associated with oxytocin release (Sasaki et al., 2011), which may contribute to feelings of emotional warmth and closeness" (Yaden et al., 2017,

p. 285). Grigorenko (2011) advanced the hypothesis of oxytocin and vasopressin as instrumental in spiritual phenomena. Grigorenko grounded that hypothesis on findings indicative of oxytocin's and vasopressin's roles in establishment of neurochemistry facilitating affiliative behavior and the fact that oxytocin and vasopressin are also important for facilitating the affiliative personality trait.

Variations in genes coding for oxytocin and vasopressin make a significant contribution to the diversity of human sociality-related behavior (Chakroff & Young, 2014; Churchland, 2011; Donaldson & Young, 2008; Gregory et al., 2009; Heinrichs et al., 2009; Scicurious, 2011; Yamasue et al., 2012). "Polymorphisms on the oxytocin receptor (OXTR) gene are associated with individual differences in prosocial behavior" (Chakroff & Young, 2014, p. 97). Scicurious (2011) said that even the slightest

> single nucleotide changes in the genes that code for receptor proteins, …[referred to as] polymorphisms or SNPs [single nucleotide polymorphisms]…can change the proteins within the genes, and can change how well the receptors work, where they go, and what they do. (para. 5)

Mechanisms of that type are associated with sociality-impacting conditions such as autism (Gregory et al., 2009; Heinrichs et al., 2009; Scicurious, 2011; Yamasue et al., 2012). Gregory et al. (2009) was the first to report evidence implying epigenetic regulation of OXTR in the development of autism. Oxytocin might have a pharmaceutical function by way of epigenetic modulation of OXTR or other gene-level intervention that might be proven therapeutic (Gregory et al., 2009; Yamasue et al., 2012). All, however, is not genes. Sasaki et al. (2011) demonstrated what they interpreted as culturally mediated epigenetic influences resulting in differences in sociality and religiosity among culturally diverse individuals sharing the same OXTR genotype variant, in this case, Koreans and European Americans: "Among people who were more genetically predisposed toward social sensitivity (i.e., G/G genotype), Koreans had greater

psychological well-being if they were more religious; however, European Americans with the G/G genotype had lower psychological well-being if they were more religious" (Sasaki et al., 2011, p. 1394).

Neuropsychology of Prosociality: A Simplified Functional Model of Prosocial Behavior

Fundamentally, sociality requires, first, a sentient being's recognition of the existence of another sentient being as possibly sentient. Further, sociality involves a sentient being's consideration of another sentient being's experience and perspective. Among the fundamental components of sociality are mechanisms facilitating consideration of another presumably sentient being's experience and perspective in terms of one's own experience and perspective. This can involve reasoning that another presumably sentient being has and experiences a mind likely similar to one's own mind with perceptions, sensations, thoughts, memories, perspectives and plans similar to one's own. This can also involve mechanisms for representing and experiencing another sentient being's sensations vicariously, almost as if the other being's sensations were one's own. As it is discovered that there are qualitative and quantitative differences in the ways each individual experiences these mental functions, it is challenging to discover and characterize the presumably necessarily contrasting structural and functional physiological correlates of these functions and phenomena. That underscores the significance of the last two section's considerations of the neuroanatomy of sociality and sociality-related neurochemistry, neurotransmission, endocrinology and neurogenetics.

According to Völlm et al. (2006), fMRI research investigating the neuronal correlates of theory of mind and the neurocorrelates of empathetic function reveal that both of these functions involve networks associated with inferences regarding other people's mental states, thought to involve a neuronal network of what has come to be referred to as mirror neurons (Churchland, 2011; Keysers, 2011). Relative ventromedial prefrontal volume is apparently related to the

ability to make inferences regarding other people's mental states and even predicts the size of a person's social network (Lewis et al., 2011). Evidence reported by Haas et al. (2015) seems to indicate that:

> individuals characterized as trusting others more exhibit increased gray matter volume within the bilateral vmPFC [ventromedial prefrontal cortex] and bilateral anterior insula. Greater right amygdala volume is associated with the tendency to rate faces as more trustworthy and distrustworthy (U-shaped function). A whole brain analysis also shows that the tendency to trust is reflected in the structure of the dorsomedial prefrontal cortex. These findings advance neural models that associate the structure and function of the human brain with social decision-making and the tendency to trust other people. (Haas et al., 2015, p. 175)

Whereas competitive functioning appears to involve specifically the inferior parietal and medial prefrontal cortices, cooperative functioning appears to involve the orbitofrontal cortex (Decety et al., 2004). According to Wichman and DeLong (2013):

> The lateral orbitofrontal circuit arises in the lateral prefrontal cortex and projects to the ventromedial caudate nucleus. It engages portions of the basal ganglia output structures and thalamus and then returns to the orbitofrontal cortex. It appears to play a major role in the mediation of empathetic and socially appropriate behavior. (p. 991)

Perceiving social support from others was positively associated with left amygdala volume, and that association "was identified at the laterobasal and superficial subregions" (Sato et al., 2016, p. 237).

For many of the same reasons that "understanding people's preferences and decisions is not as simple as observing their actions" (Gluth & Fontanesi, 2016, p. 1028), although the incredible insight provided by modern scanning technologies is, with progressive specificity, revealing the neurocorrelates of brain activity associated with what might be considered components of prosociality, complex prosocial functions such as morality might not necessarily be fully decipherable even if every imagined component's neurocorrelates had already been entirely mapped (Nagel, 2013). Nagel (2013), in his critical review of Greene (2013), is skeptical of the value of recent trajectories of moral psychology (Greene, 2013; Haidt, 2007; Kristjánsson,

2016). Possibly ineffable meta-constructs such as motives underlie observable behaviors (Gluth & Fontanesi, 2016) and mechanisms (Nagel, 2013). Perhaps, but that does not constitute reasonable grounds for dismissal of either moral psychology's valuable application of systems tools or of insights gained through the use of functional imagining technologies in moral psychology research. Rather, it serves as one more critical reminder of the need for profound humility and openness to the existence of degrees of complexity beyond the capacities of unaided human cognition at the frontiers of neuropsychological exploration. Further, extending consideration of the possibility of ineffable meta-constructs such as the assertion of motives underlying observable behaviors (Gluth & Fontanesi, 2016) and mechanisms (Nagel, 2013), no matter how abstract or indirect, rather than confounding relentless exploration, should prompt searching for physiological correlates of suspected meta-constructs, in this case, motives. Jordan et al. (2015) asserted that the most important reason human beings behave cooperatively is anticipated reward in arrangements of direct reciprocity. Because motivational influences of anticipated rewards appear to be dopamine-related functions, Jordan et al.'s (2015) assertion suggests a critically important role for dopamine in reciprocity as a factor in motivating morality. Prompted by Jordan et al.'s (2015) assertion, the exploration can be expanded to include the dopaminergic reward system's role in motivating cooperation and, presumably, any other prosocial behavior.

So far, our consideration of physiological correlates of prosociality has provided ample evidence that altruistic behavior "does not just happen" (Pfaff, 2015, p. 50). Considering further the plausibility of actually intentionally shaping altruistic behavior, the plausibility of just the one aspect of benevolutioneering most closely resembling reverse engineering prosociality, this section, offering a very simplified functional model of prosocial behavior, incorporates and

builds on my earlier discussion (Kurtz, 2017b) of Pfaff's (2015) five-step theoretical framework of "how altruistic action occurs" (p. 50): (1) Internally represent a considered action. (2) Form a perception of the action's recipient. (3) Merge the image of the recipient with the actor's self image. (4) Envision the action's consequences as pertaining to the actor's self. (5) Perform the action.

Step 1 of Prosocial Behavior: Represent What the Actor is About To Do

Arguably, it typically seems to human beings that potential volitional actions are often imagined and vetted before being either vetoed or carried out. Other times, it can seem that actions are carried out somewhat automatically or even against the preference of the actor who can sometimes feel somewhat like a spectator. Volition is not a simple construct. Is all human behavior volitional? I propose considering the possibility that volitionality be modeled as existing on a multi-dimensional continuum rather than being viewed as a binary, yes-or-no categorization. Although possibly a step in the right direction, that might still be extremely oversimplified if volition actually represents a staggeringly complex notion with thousands of components each existing on their own multi-dimensional continua or, especially, if aspects of volition involve non-Newtonian metaphysical factors, implying infinite-dimensional continua, a question far from settled.

Pfaff (2015) represented step 1 of Altruistic Brain Theory (ABT) as consisting of corollary discharge, anticipatory signals sent in advance of signals that would command muscles to carry out activity associated with the contemplated behavior, to brain regions that need to effect a state of readiness for action in concert with muscles that would carry out the activity associated with the contemplated behavior. This might connect importantly with Libet's

treatment of volition in terms of how Libet hypothesized *won't power* in his characterization of volition in contrast with the notion of *will power* and how that is involved in seemingly:

> freely voluntary acts [which] are preceded by a specific electrical change in the brain (the 'readiness potential', RP) that begins 550 ms before the act. Human subjects became aware of intention to act 350-400 ms after RP starts, but 200 ms. before the motor act. The volitional process is therefore initiated unconsciously. But the conscious function could still control the outcome; it can veto the act. (Libet, 1999, p. 47).

How, though, and where do the processes associated with free will originate? Is the original initiation of an idea for a behavior really outside of conscious control or even outside of awareness? Could that sometimes be the case but not other times? Can a person override that process whenever they choose? Issues surrounding volition, such as how and where intentions come about, might play a critical role in determining whether reverse engineered prosociality amounts to more intended consequences than unintended consequences. Although modern neuroscience has been seen as calling into question historic and still widespread understandings of free will (Roskies, 2010), these debated issues are far from resolved. According to Philip Ball, free will is beyond the scope of physics, and so it cannot be ruled out by physics (Calverd et al., 2021). Could these debates be perpetually intractable within strict materialist paradigm if these issues happened to be about issues which are essentially nonmaterial? Is it possible that the functions of the human nervous system might involve physics more exotic than Newtonian dynamics, such as quantum mechanics (Globus, 2011; Penrose, 1994)?

I propose it is possible that some processes, such as those described by Libet (1999), which, although vigorously disputed by Mele (2009), to many neuroscientists, seem to exclude actual volition, might be evidence that the nervous system relies on retrocausality. Evidence was reported by Schwartz (2007) that seemed to indicate retrocausality where conscious nervous systems are arranged to interface with such known quantum mechanical events as hearing sound produced by Geiger counters detecting particles produced by a radioactive isotope's decay. As

modeled within the Copenhagen interpretation of quantum mechanics, well-reasoned explanations have been presented for the role of consciousness in collapsing a photon's alternate wave function with initial perception by a conscious entity of that photon's manifestation as either wave or particle as differentiated by either double slit or by gold foil permeability and deflection experiments, respectively. According to Ramachandran (2004) free will is one of the most significant characteristics of the self, but Ramachandran (2004) grappled with what seemed to him intractable paradoxes inherent in the idea of actual personal agency as it relates to certain neuroscientific findings such as certain of Libet's (1999) observations regarding volition. Ramachandran offered a few potential syntheses. One possible synthesis Ramachandran (2004) considered was that:

> the solution to the problem of the self is not a straightforward one. It may instead require a radical shift in perspective, the sort of thing that Einstein did when he rejected the assumption that things can move at arbitrarily high velocities. When we finally achieve such a shift in perspective, we may be in for a big surprise and find that the answer was staring at us all along. I don't want to sound like a New Age guru, but there are curious parallels between this idea and the Hindu philosophical (albeit nebulous) view that there is no essential difference between self and others, or that the self is an illusion (Ramachandran, 2004, p. 98).

In considering below step 3 of Altruistic Brain Theory, I will return to Ramachandran's point. Free will and the nature of the self are extremely important considerations in the conceptualization of benevolutioneering.

Also involved in step 1 of Altruistic Brain Theory is the nature of and potential interventions for behaviors experienced as less voluntary or even involuntary. This category of behavior includes such actions as those associated with restless leg syndrome, alien hand syndrome, Tourette syndrome, obsessive compulsive disorder, eating disorders associated with super-morbid obesity, addictions, even just particularly difficult to break habits, broken resolutions, and immediately regretted remarks.

Doñamayor et al. (2018) said "goal-directed strategies and the awareness of volitional intention are affected in current heavy alcohol users" (para. 1). Doñamayor et al. (2018) also said that, in binge drinkers, "alcohol use severity…correlated with decreased conscious awareness of volitional intention" (para. 1). If neuroenhancement intervention could physiologically modify neurocorrelates of self-control for any of those conditions mentioned or other conditions which diminish willful self-control, would it be accurate to say that the intervention had reduced that person's freedom? It seems, instead, that the person's freedom would be profoundly increased. Is it accurate to assert that neuroenhancement interventions that would increase self-control would actually increase personal freedom? I propose that there are many non-prosocial behaviors that could be modeled as addictions. Addiction is a human construct.

While most rational and sincere, reasoning with particular clarity, an individual resolves to make truly desires positive changes, lifestyle improvements, more wholesome habits, becoming kinder to everyone, then reliably fails, year after year, to carry out those resolutions, could benevolutioneering correct such powerlessness to personally control one's own behavior and character? Even such notoriously intractable behavioral conditions as serious obesity appear to have genetic components (Zimmer, 2014). According to Goldman (2015), heredity endows modern human beings with vestigial drives from which stem behaviors and common aspects of culture that, although historically practical, are no longer adaptive. It is a common experience to wish certain of one's desires and habitual ways of thinking could be eliminated. Such unwelcome, frustrating drives, desires, and thoughts could involve behaviors and feelings that are inherently antisocial and are regarded by many within one's culture as unacceptable. Other vestigial drives, desires, impulses, and ways of thinking might be socially acceptable, even celebrated, but they could be, nonetheless, maladaptive in modern society. "Perhaps, for

example, spite and schadenfreude have overstayed their welcome. How about the trait of associating intense enjoyment with activities and arrangements in which success means another's failure? Here, though, axiological challenges inherent to the construct of prosociality emerge" (Kurtz, 2017b, p. 37). Regardless, the construct of competition and the very common trait of competitiveness represent uncomfortable challenges to prosociality (Kohn, 1986; Ricard, 2015), challenges related to the prosocial behavior's second step, formation of one's perception of the recipient of an action under consideration.

Step 2 of Prosocial Behavior: Form a Perception of the Action's Recipient

One of the characteristics of human sociality that formerly better served our species offered certain benefits when far fewer human beings shared our planet and were spread out in relatively discreet, even isolated, people groupings. That characteristic is the social dynamic in which outgroup competition increases ingroup cooperation (Polosan et al., 2011; Puurtinen & Mappes, 2009), while ingroup competition reduces cooperation between one's unrelated outgroups (Polosan et al., 2011; West et al., 2006). Have any mechanisms been identified that might help explain how and why human beings function like that? According to Chakroff and Young's (2014) model of prosocial behavior, prosocial behavior begins with perceptions of another living entity, first that the entity is in fact a living thing, then perceiving that the other living entity is sentient, in that it likely has a mind, next estimating that entity's mind's likely location on the spectrum of mental sophistication, and, finally, assessing that entity's capability and intention of harming or benefiting oneself or one's interests. Oxytocin plays an important role in increasing ingroup-focused prosocial emotions and behavior. Oxytocin tends to have the opposite effect on emotions and behavior toward one's outgroup. "That all probably worked a lot better in small, isolated communities" (Kurtz, 2017b, p. 37). 2021, though, "is not characterized

by small, isolated communities. Pfaff's (2015) Altruistic Brain Theory's second step, the actor forming a perception of the considered action's recipient, is where ingroup bias so very often derails altruism" (Kurtz, 2017b, p. 37). Gamond et al. (2017) paired transcranial magnetic stimulation (TMS) with an ingroup-outgroup face-adjective bias experiment. Gamond et al. (2017), situating this oxytocin-mediated ingroup-outgroup dynamic in the right cerebellum and in the dorsomedial prefrontal cortex (dmPFC):

> In two behavioral experiments, we found an in-group bias (i.e. faster categorization of positive adjectives when preceded by in-group faces) but no evidence of an out-group bias. Interestingly, TMS [transcranial magnetic stimulation] over both the dmPFC [dorsomedial prefrontal cortex] and over the (right) cerebellum significantly interfered with the modulation exerted by group membership on adjective valence classification, abolishing the in-group bias observed at baseline. (Gamond et al., 2017, p. 932)

Interestingly, and likely usefully, Proverbio and De Gabriele (2019) found that ingroup-outgroup bias-manifesting own-race effect disappears when the faces are replaced with same-race and other-race babies' faces. "Apparently, the mechanism involved in the adult orienting response to paedomorphic facial characteristics somehow overrode the ingroup-outgroup bias of the own-race effect. Information of that nature should prove extremely useful in reverse engineering prosociality" (Kurtz, 2017b, p. 38).

It is during the second step of Pfaff's (2015) Altruistic Brain Theory's second step when, as touched on above, oxytocin seems to really confounds prosociality. Oxytocin, as mentioned, is associated with increased ingroup-outgroup bias. It seems, though, that oxytocin's ingroup-outgroup effect is somewhat more complication than that simple understanding might usually suggest. Hecht et al. (2017) pointed out that, most research evidencing oxytocin increasing ingroup-outgroup bias involved male participants. Hecht et al. (2017) demonstrated that, in women, oxytocin applied intranasally reduced characterizations of shapes in an animation as friends or non-friends. The observed reduction in such characterizations was reflected in reduced

activation of neurocorrelates of cognition related to social categorization. According to Hecht et al. (2017) their findings demonstrated significant gender differences in reaction to oxytocin. That is potentially quite useful in considering reverse engineering prosociality.

It is also during the second step of Pfaff's (2015) Altruistic Brain Theory, forming a perception of the recipient of a considered action, when altruism malfunctions in cases where empathy is impossible for someone without a functional theory of mind (Völlm et al., 2006). Autism spectrum disorders can involve the lack or impairment of a functional theory of mind. As modeled herein, benevolutioneering extends that understanding beyond those with an autism spectrum disorder diagnosis.

> Even if functionality of theory of mind or the process of forming empathy stemming from theory of mind might be one of the variables of the variety of human personalities, it might be possible that enhancing such functions could result in many people, not only people at the level considered a disorder, becoming much more altruistic. (Kurtz, 2017b, p. 39)

According to Lewis et al. (2011), ventromedial prefrontal cortex volume predicts the capacity to understand other human beings. It is imaginable that comparing the ventromedial prefrontal cortex of people adept at understanding people with people lacking the ability to understand people, noting the different characteristics beyond simple volumetrics, could help lead to interventions in which the ventromedial prefrontal cortex is enhanced in ways that increase capacity to understand other people. Could development of such an intervention, along with thousands or even millions of other, similarly precise interventions, add up to reverse engineering prosociality?

Step 3 of Prosocial Behavior: Merge Images of Recipient With Actor's Self-Image

The third step of Pfaff's (2015) Altruistic Brain Theory is merging the actor's self image with the image of the recipient of the action under consideration. "Candidate neurocorrelate structures, processes, and neurochemistry of self-other merging come together in this step with

consideration of possible interrelatedness of variations" (Kurtz, 2017b, p. 39) of one's self construct, the constructs of other persons, "altruistic self-other merging, self-other construct affects of certain disorders, and self-other construct affects of certain peak human experiences sometimes identified with spiritual enlightenment or transcendence" (Kurtz, 2017b, p. 39). This is the stage of Pfaff's (2015) Altruistic Brain Theory at which the reverse engineering prosociality appears most promising.

Within Pfaff's (2015) model, merging of the actor's self image with the actor's image of the recipient seemed to be treated as very literal merging of information, actual blending of data. Batson (2011), though, seemed to dismiss, as merely a metaphor, the whole construct of self-other merging. Curiously, though, Batson's (2011) seeming dismissal came after he characterized the self is a construct that is fluid, a construct that

> depends on one's immediate environment, present company, and personal role being fulfilled. It seemed that Batson regarded and treated the self as a construct when talking about the self's fluidity, but, when objecting to the notion of merging the self with one's concept of the other person, Batson had somehow reified the self for the occasion. (Kurtz, 2017b, p. 39)

If, however, the self is essentially a mental construct, then why would merging one's mental construct of the self with one's mental construct of another person's self be treated as if one was mixing apples and oranges—or, in this case, perhaps, mixing concrete apples and ambition or some other abstract thing. As Batson (2011) characterized his model of the actual process of altruism, "Far more likely…empathetic concern reflects an extension value to include an interest in the welfare of the other, distinct from oneself, that is beyond self-interest" (pp. 159–160).

According to Singer and Lamm (2009), when one witnesses another in pain, the brain regions showing increased activation are the same areas that show increased activation when one personally experiences pain. This represents, at least at some level of the brain representing the

experience of pain, a kind of self-other merging that, arguably, actually does occur (Cuff et al., 2016). As indicated by fMRI research, witnessing the experiences of another person is apparently processed as personal experiences would be processed, but the magnitude of neurocorrelate activation depends on how much effort a witness puts forth to focus on taking the other person's perspective as if focusing on one own experience (Jackson et al., 2006). This kind of self-other merging fosters empathy. Without some measure of this kind of self-other merging, cognitive empathy would not be impossible or would, at least, be impaired (Decety & Sommerville, 2003).

The media popularized one aspect of self-other merging in the brain soon after discovery: Mirror neurons. As stated above, according to Völlm et al. (2006), fMRI research investigating the neurocorrelates of theory of mind and the neurocorrelates of empathetic function reveal that both of these functions involve networks associated with inferences regarding other people's mental states, thought to involve a neuronal network of what has come to be referred to as mirror neurons (Churchland, 2011; Keysers, 2011). According to Keysers (2011) mirror neurons seem to differ from the brain's other cell types in that they are not activated only with one's own performance of a certain action. Mirror neurons are activated, as well, when one sees another person performing a certain action. Our current understanding of the brain's function, particularly the current notion regarding the brain's "division of labor" (Keysers, 2011, p. 14) has been influenced by the discovery of mirror neurons. "Mirror neurons have a dual purpose, both perceiving the world *and* acting on it" (Keysers, 2011, p. 14). The function of mirror neurons was discovered in 1990 in Parma, Italy by the team of researchers that included Leonardo Fogassi, Vittorio Gallese, and Giaomo Rizzolatti. Their team observed a certain neuron in a monkey's premotor cortex activate when the monkey saw somebody grab a raisin

using their fingers as well as when the monkey personally grasped the raisin with its own fingers (Keysers, 2011). The team noticed the neuron not activating when the monkey watched somebody picked up a raisin with a pair of pliers (Purves et al., 2012). Molenberghs et al. (2009) "reported that human neurons functioning as part of the so-called mirror neuron system have been identified in the premotor cortex, the supplementary motor area, the primary somatosensory cortex and the inferior parietal cortex" (Kurtz, 2017b, p. 41). It is possible that some kind of dysfunction of the mirror neuron system could affect some aspects of the compromised sociality associated with autism spectrum disorders (Goldman, 2006).

It does not appear that the mirror neuron system, although apparently linking one person to another in terms of perception of action and certain aspects of experience, functions in those brain regions apparently involved in facilitating one's concept of self or one's concept of oneself in relation to others. A considered earlier in this dissertation, there is evidence that self-other representations are facilitated by, at least in part, activity in the right temporoparietal junction. One's sense of self can be compromised by right temporoparietal junction. dysfunction (Eddy, 2016).

Zhao et al. (2016) showed that oxytocin can reduce self-centered behavior, thereby facilitating altruistic behavior, by blurring "the distinction between self and other" (p. 2512). Consistent with the dual-nature of oxytocin's effects considered in Kurtz (2016), Zhao et al. (2016) and Zhao et al. (2019) showed that oxytocin alternately facilitates selfish behavior by increases a person's self-other distinction.

If a prosocial neuroenhancement intervention considered use of oxytocin to reduce the self-other distinction, some means would need to be discovered to selectively target only those oxytocin receptor sites associated with activating functions that facilitate altruistic effects. Some

means of selectively blocking or otherwise avoiding activation of oxytocin receptor sites associated with activating functions that facilitate functions related to undesirable promotion of selfish behavior stemming from increased self-other distinction would have to be devised.

It is important to precisely conceptualize the notion of the self. What is meant by the term self? Bayne (2012) conceptualized the self as a thing that is merely a virtual object. According to Bayne (2012), the self ought to play three roles: (1) the thing to which conscious states are ascribed, (2) the object of first-person reflection, and (3) that which should have a perspective or point of view *on* the world rather than just being a thing *in* the world. Ramachandran (2004) constructed a different list characterizing the self.

Ramachandran (2004) offered five defining characteristics of the self: (1) continuity of experience, (2) unity or coherence instead of experiencing oneself like multiple entities, (3) embodiment or ownership of one's body, (4) a sense of agency or free will, and (5) reflection or the self's awareness of the self. Ramachandran (2004) "allowed for—but certainly did not promote—the possibility that the actual nature of the self is not perceivable within the current Western perspective but is something as radically outside the Western perspective as was relativity when introduced" (Kurtz, 2017b, p. 42). Ramachandran (2004), while not strongly advocating such a view, nevertheless, did acknowledge that "there are curious parallels between this idea and the Hindu philosophical (although somewhat nebulous) view that there is no essential difference between self and others, or that self is an illusion" (p. 98).

There are intriguing, even though particularly tragic, disorders that involve dysfunction of particular aspects of the self. Among such disorder are dissociative identity disorder (DID) and other dissociative responses that might offer clues about the construct of the self and how it functions in the brain. According to Vermetten (2006), significant reduction of amygdalar and

hippocampal volume has been observed the brains of female dissociative identity disorder patients. Hypnosis in combination with Eye Movement Desensitization and Reprocessing (EMDR) has reportedly been somewhat effective in the treatment of dissociative identity disorder (Fine & Berkowitz, 2001). Could it be significant that "there is evidence that the dorsal region of the cortex is essential to concern for the well-being of the self. Lesions in these areas result in a loss of self-concern" (Flanagan, 1992, p. 50). "Lesions in ventral (temporal) regions of the cortex diminish attention to and awareness of the external world" (Flanagan, 1992, p. 50). In phantom limb experiences, even though the physical body is reduced, the body image part of the self is not reduced, "the subject has an experience of a body with boundaries beyond those that really exist, so that he or she has an experience of a body larger than it really is" (Tye, 2003, p. 45). This seems particularly intriguing when consider with Sheldrake's (2012) notion of mind as extended in space beyond the cranium. Eddy (2016) said that "problems with self-other distinctions may reflect or pose a vulnerability to the symptoms associated with Tourette syndrome, Schizophrenia, Autistic Spectrum Disorder and Obsessive Compulsive Disorder" (p. 465).

> Research in social neuroscience provides increasing evidence that self and other are interconnected, both on a conceptual and on an affective representational level. Moreover, the ability to recognize the other as "like the self" is thought to be essential for social phenomena like empathy and compassion. (Trautwein et al., 2016, para. 1)

Meditation practices, including loving-kindness meditation have been shown to be capable of enhancing aspects of prosociality such as empathy and compassion (Trautwein et al., 2016). Follow experiences of transcendence, a sense of oneness with everyone has been reported. That sense of oneness has been accompanied by a sense of the reduction of or loss of one's sense of self or a sense of unity and we-ness replacing one's sense of having a separate ego or self (Burris & Rempel, 2012; McNamara, 2014; Newberg, 2010, 2014; Newberg & Waldman, 2016;

Ricard, 2015). In considering reverse engineering prosociality, an important question is whether or not research has been identifying neurocorrelates of such phenomena. It has, fortunately. Unfortunately, such research has been somewhat scarce (Schjoedt, 2009).

Whenever strange phenomena related to alterations in one's sense of self are under consideration, it is critical to consider how certain seemingly transcendent or spiritual or oneness experiences could be distinguished from pathologies (Johnson & Friedman, 2008) while keeping in mind the challenges of recalling and discerning how designations of pathologies have certainly not always been and may at some points not always be entirely free of bias. Such bias might range from straightforward considerations such a deeming homosexuality a mental illness to wildly abstract metaphysical bias involving differing ontologies. Nevertheless, there are alterations of the sense of self that stem from horribly distressing, tragic psychiatric disorders. It would be ridiculous to model the terrible effects of a brain tumor as some kind of prosocial spiritual breakthrough.

Inhibition of superior parietal lobe activity has been associated with spiritual practices associated with diminished sense of self (Newberg, D'Aquili, & Rause, 2001). More recently, Yaden et al. (2017) pointed to research that identified "a region slightly posterior to the temporal lobe but anterior to the superior parietal lobe: the inferior region of the parietal lobe" (p. 292) as associated with such spiritual experiences. Urgesi et al. (2010), for example, indicated that inferior parietal region tumor removal was followed by increased inclination toward religious beliefs and spiritual experiences. Inhibition of the inferior as well as the superior regions of the parietal lobe, commonly identified with proprioception and representation of the physical boundaries of one's body, has been implicated in certain spiritual experiences of enhanced unity and connectedness (Beauregard & O'Leary, 2007; Yaden et al., 2017).

Step 4 of Prosocial Behavior: Envisioned Consequences as Pertaining to Self

The fourth step of Pfaff's (2015) Altruistic Brain Theory is where Pfaff (2015) modeled the altruistic brain construct as actually emerging. Pfaff (2015) modeled Altruistic Brain Theory's fourth step as the crucial function of pairing step 1's representation of a considered action under consideration with step 3's combined construct of oneself and the considered action's would-be recipient and then conveying that paired construct to the prefrontal cortex to that which Pfaff (2015) called an "ethical switch" (p. 60). Pfaff (2015) characterized "Step 4 is important because it enables us to evaluate the relative goodness of the act intended toward another person" (p. 61). If the prefrontal cortex suffered significant traumatic damage, as in the usual telling of Phineas Gage's story, with the usually described accompanying moral deficits expected with tragic injury of that sort, any kind of effective repair would likely be eagerly welcomed by the patient's loved ones and by the broader community. It would be difficult to determine whether or not a patient might prefer to be repaired if several years had elapsed and the patient's wound had long ago surface-healed. If medical technology existed to safely and reliably effect such a repair, would it be necessary for the patient, in their compromised state to desire and consent to such intervention? "Reverse engineering prosociality may encounter parallel, although very much subtler, dilemmas. A prefrontal cortex performing certain prosocial functions at 85% or at 60% might be deemed quite a different matter than a prefrontal cortex obliterated by a metal tamping rod. Might mediocre moral decision making someday be viewed as a kind of low-grade community moral nausea?

Step 5 of Prosocial Behavior: Perform the Altruistic Act

The fifth step of Pfaff's (2015) Altruistic Brain Theory is rather straightforward: The person executes the behavior. However, Pfaff (2015), modeled this behavioral step to also

include the cognitive behavior of exercising won't power, because vetoing a considered action could be the altruistic course. According to Pfaff (2015), neurocorrelates of moral restraint's won't power are in the prefrontal cortex (PFC). Ideally, no harmful behavior actually takes place. Unfortunately, sociality-related behavioral processes are not always ideal. That must, of course, be considered in conceptualizing and operationalizing the reverse engineering of prosociality. That aspect of benevolutioneering, won't power, merits very special consideration and is outside the scope of this dissertation.

This chapter has considered a modest sample of potential brain regions that appear to be possible neurocorrelates of components of prosociality. This chapter also characterized one model, Pfaff's (2015) Altruistic Brain Theory, of how a prosocial construct, altruism, might function in the brain. In this chapter's final section, consideration shifts to imagining types of possible approaches to eventually designing benevolutioneering's actual intervention vectors.

Vector Modalities by Which Enhancement Interventions Might Be Effected

In theorizing about impacting human sociality with technological interventions, it is important to consider some of the possible means of affecting the nervous system or other body systems, such as the immune system and the gut biome, to actually effect intended enhancements. First, what has already worked or, at least, shown promise? Have any effective sociality enhancement interventions actually been intentionally implemented? Are there or have there been any experimental efforts to investigate potential means of decreasing antisocial behavior or increasing prosocial experience and function rather than merely cataloguing it and all of its underpinnings? In fact, Yamasue et al. (2012) reported promising early cross-species research efforts to investigate prosocial behavioral enhancement by administration of oxytocin in nonhuman animals and in certain human participants diagnosed with autism. It appears that some individuals diagnosed with autism might have malfunctioning empathy circuits (Yamasue et al.,

2012), and there has been some evidence that intranasal application of oxytocin might help compensate for some of those malfunctions.

Decades earlier, in 1963, a controversial Spanish neuroscientist, José Manuel Rodriguez Delgado, developed, implanted, and dramatically demonstrated an electronic brain stimulator device, which he called a stimoceiver, that allowed him to press a button on a remote transmitter and stop a charging bull (Delgado, 1969; Snyder et al., 2009). Although Delgado claimed his device arrested the bull's instinctual aggressive behavior, actually, because of the location of the stimulator electrode wire in the bull's caudate nucleus, what had been arrested was more likely the bull's voluntary movement control (Snyder et al., 2009). Nevertheless, Delgado's research raised the intriguing idea that it might one day be possible to more or less directly deactivate antisocial brain activity and to stimulate prosocial brain activity thus helping an individual become a more prosocial person. As it turned out, though, Delgado might have been responsible for setting back the development of implantable enhancement technologies:

> The public mood surrounding brain implants soured with the publication in 1969 of his [Delgado's] book Physical Control of the Mind: Toward a Psychocivilized Society, in which Delgado (somewhat naively) downplayed the Orwellian prospects of the devices and encouraged people to embrace the technology. If everyone would consent to implantation to mediate their tempers and traumas, the world would be a better place, he claimed. Two researchers he had briefly worked with raised an outcry the following year when they suggested the devices could be used to quell black citizens rioting in America's inner cities. Funding dried up, and with the advent of effective drugs to treat mental illnesses, electrical brain stimulation fell into obscurity… (Swain, 2014, paras. 10–11)

Today, a half century later, electrical brain stimulation is in therapeutic use. Deep brain stimulation is used to treat people with such conditions as Parkinsonian movement disorders, Tourette syndrome, and obsessive-compulsive disorder. Debate continues among neuroethicists regarding the contention that deep brain stimulation "induces changes to personality, identity, agency, authenticity, autonomy and self" (Gilbert et al., 2021, p. 1). Although less precisely

targeted, electroconvulsive therapy (ECT) certainly involves application of electricity to the brain. ECT is used in treating persistent major depression (Fitzgerald et al., 2018), as is magnetic seizure therapy (Fitzgerald et al., 2013, 2018).

There are far more subtle applications of electricity and magnetic fields to the nervous system, and such applications show promising capabilities to allow purposefully bringing about desired changes in personality. Transcranial direct current stimulation (tDCS) of the ventromedial prefrontal cortex is being explored as an intervention to improve empathic abilities and to reduce violent behavior in forensic offenders (Sergiou et al., 2020). Dawson et al. (2016) explored amygdalar activation for treating certain kinds of psychopathy. Mood disorders such as depression have reportedly responded to direct electrical stimulation of the lateral orbitofrontal cortex (Rao et al., 2018).

Electromagnetic radiation is not the only means of affecting the brain through the skull. Sound, too, is a potential tool. Transcranial focused ultrasound has also shown promise as a selective intervention tool (Bachtold et al., 1998; Legon et al., 2014; Tufail et al., 2010; Tyler et al., 2008).

There are many other potential vectors for delivery of enhancement interventions, including benevolutionary enhancement interventions. Pharmacological approaches, many already in use, offer endless possibilities for effecting the way the nervous system functions. Dramatically improving artificial intelligence pharmacological modeling tools represent unprecedented promise of developing new drugs that could so dramatically revolutionize pharmacology that the entire field would be unrecognizable.

The possible vectors for effecting benevolutionary enhancements include, among others, genetic interventions, epigenetic interventions, and nano-scale surgical interventions. It seems

likely that there will be gut biome modification interventions incredibly more precise and controllable than today's fecal transplants. There could be direct endocrine system interventions, entheogenic interventions, electronic brain implants and other cyborg technologies, engineered tissue implantation and optogenetic manipulation of individual neurons. I imagine dramatic new possibilities for biofeedback and neurofeedback that could be made possible by development of novel, ultra-precise monitoring techniques facilitated by coordinated swarms of internal nano-scale robots monitoring, potentially, any aspects or any combinations of aspects of any body systems and wirelessly relaying data through the cloud to deep learning systems driven by quantum computers.

Our new kind of future of intentionally impacting, with precision, our own organism is limited only by our imagination. Recursively, we can even develop enhancements for our imaginations.

CHAPTER 7: DISCUSSION AND RETROSPECTIVE OVERVIEW

In Chapter 1, I identified this dissertation's central research question as: Is benevolutioneering, the intentional evolution and species-wide voluntary implementation of radically benevolent neuropsychology, possible and beneficial? I further stated that exploring this central question involves asking 10 additional questions. I will discuss the central question after considering those 10 related questions and whether or not this exploration answered each of them.

1. How is benevolutioneering conceptualized? Although Chapter 5 has provided a cursory conceptualization of benevolutioneering, that conceptualization suffers from at least two constraints. First, practicality limits dissertation scope and length. Benevolutioneering must ultimately be conceptualized and operationalized to degrees that dwarf the length and scope of any reasonable dissertation project. Second, because benevolutioneering is so staggeringly complex as to be out of reach of unaided human cognitive capacity, adequately conceptualizing and fully realistically operationalizing benevolutioneering will require the assistance of artificial intelligence resources still under development. Appreciation of the magnitude of the scope and complexity of what benevolutioneering seeks to accomplish, as well as the need for employing strong artificial intelligence to even adequately conceptualize benevolutioneering is among this exploration's most important findings and conclusions. This exploration has provided evidence and deliberation supporting the plausibility and importance of developing and implementing benevolutioneering. Ideally, this dissertation and subsequent exploration, publication, and collaboration will serve to prime the pump of a very much larger effort to conceptualize and

operationalize benevolutioneering. So, how is benevolutioneering conceptualized? Benevolutioneering is, so far, inadequately conceptualized.

2. What is meant by possible? This dissertation has explored, by way of examples of conceptual hints about (1) what is and what might become conceptually possible, (2) possibly physiologically and technologically operationalizable, and (3) possible to achieve in terms of voluntary species-wide acceptance of benevolutioneering's enhancement interventions. In one sense, as has been pointed out in this exploration, certain aspects of some candidate components of benevolutioneering have already been proven possible because they have already been developed and implemented. Asking if benevolutioneering is possible necessarily involves considering time frame. We could instead ask: Is a crewed mission to Mars possible? It is very likely not entirely possible at this moment to climb into a rocket and successfully execute safe round-trip travel to Mars. It is, still, however, extremely likely possible to conceptualize, operationalize, and execute safe round-trip travel to Mars, and that process is currently reasonably, actively underway. Nevertheless, certain absolutely mission-critical conceptual problems have not yet been solved, and certain requisite technologies are still actually under development, but that is, as expected, simply part of the staggeringly complex process of operationalizing and executing that project. This parallels very well my understanding of the question of benevolutioneering's possibleness as represented in this dissertation.
3. What is meant by beneficial, how can benefit be distinguished from harm, and who would benefit? This dissertation has explored the challenging nature of and some approaches to determining universal values and criteria by which anything seemingly

nonuniversal could be regarded beneficial instead of harmful. This has been deliberately considered herein at length. One example of such criteria for determining whether anything is beneficial rather than harmful is that it is beneficial to increase freedom and harmful to reduce freedom. Subsumic epistemology, in its focus on perspectives and its validation of every honest, genuine perspective, provides starting points for developing tools for distinguishing benefit from harm. Who would benefit? Unlike many other approaches to human enhancement, benevolutioneering, as conceptualized herein, would benefit all of humanity.

4. Is there reasonable cause for concern that common human behaviors now causing profound, unnecessary suffering, if unchecked, actually could lead to gravely dystopian futures or even human extinction? In Chapter 1, this question was considered in exploring suffering and unprecedented jeopardy of dystopias or even human extinction. Philosophical hazards, increasingly effectively lethal weaponry, environmental destruction, risks associated with artificial intelligence, and the possibility of transhumanist neuromodifications compromising essential humanness were identified as most concerning. Chapter 3 expanded consideration of what is at stake with the possibility of transhumanist neuromodifications compromising aspects of essential humanness, including the possibility of de-reifying first-person subjective phenomenology. Then Chapter 5 underscored the roots of humanity's existential hazards in characterizing the banality of evil within our species. Arguably, this dissertation has provided evidence for the reasonableness of being quite concerned that common human behaviors now causing profound, unnecessary suffering, if unchecked, actually could lead to gravely dystopian futures or even human extinction.

5. Is there any likelihood of transhumanist enhancement disparities amplifying man's inhumanity to man? Again, Chapters 3 and 5 offer important considerations related to this question. In light of what Chapter 5 highlighted about evil's banality within our species, the very normalness of the capacity for extreme cruelty, coupled with Chapter 3's portrayal of transhumanist anticipation of enhanced human capabilities, the likelihood of amplifying man's inhumanity to man appears significant enough to warrant grave concern. At various points throughout this dissertation, competitiveness and selfishness have been characterized, explored, and pathologized. Absent benevolutioneering, if humanity's most successful competitors are the first and then, consequently, maybe the only people to avail themselves of the most power-enhancing transhumanist technologies, then their enhancements will make them even far more effective competitors. Such a dynamic implies that it would almost certainly become a self-reinforcing cycle that seems all but certain to amplify man's inhumanity to man beyond all precedent.
6. Would certain human enhancement technologies likely fundamentally alter brain, mind, consciousness, identity, volition, and essential phenomenological aspects of being human? In Chapter 3, I explained how and why I believe this is, in fact, a very serious risk.
7. Without significantly technologically enhancing human prosociality species-wide, are fears of dystopian futures justified? This question synthesizes questions 4–6. Yes, in light of this dissertation's exploration, I believe fears of dystopian futures are justified unless we use our best technologies and develop even more powerful technologies to

profoundly enhance benevolent human prosociality species-wide. This dissertation's findings support that assertion.

8. Has human sociality ever been technologically enhanced? Yes, it has. Human beings have generally applied any technologies that appear at all likely to improve sociality and morality as soon as such technologies are developed. This has sometimes but not always benefited the recipients of such endeavors. Some recipients have been tragically harmed. As has been shown, some of these endeavors, beneficial and harmful, have provided clues that are useful for conceptualizing and operationalizing benevolutioneering. Some of these endeavors can serve as shocking deterrents to further arrogance, carelessness, and disregard of recipient autonomy.
9. How could consensus be approached in identifying candidate characteristics as therapeutic targets, discerning beneficial characteristics worth amplifying or adding, and identifying traits to reduce or mitigate? This is similar to but not identical with the first part of question 3, what is meant by beneficial. The important distinction is that the first part of question 3 is asking how benefit can be conceptualized while this question concerns how to approach consensus. There are certainly important differences between achieving cogent theoretical conceptualization and achieving any kind of consensus. Several insights that have been articulated within this dissertation are relevant to answering this question. For example, recognizing that this question and related questions are inherently simultaneously phenomenological and axiological, this dissertation has proposed the likelihood of certain core values. This dissertation has further proposed that adequately fulfilling those core values reduces or eliminates the very salient, conflict-oriented, axiological alloys that are commonly

mistaken for fundamental values and that manifest as perceived axiological impasses underlying seemingly intractably incompatible axiologies and interests seeming to prohibit consensus about desired traits and candidate traits for mitigation. This dissertation has suggested that one of the best potential approaches to adequately fulfilling deep, authentic core values, which also represent individuals' deepest longings, is the test-drivability of benevolutioneering implied by benevolutioneering's conceptualization as reversible. Experiencing the joy, human connection, intimacy, meaning and fulfillment inherent in being a recipient of benevolutioneering's enhancements would be an incomparable experience. It might be argued that some people would not value, even while experiencing, the experience of positive, prosocial phenomenology afforded by having received benevolutioneering enhancement because they lack even the capacity for such experiences. Those missing capacities are among the most significant candidate traits for benevolutioneering's omnibus intervention as are any and all capacities necessary to experience and appreciate each component of profoundly benevolent prosociality.

10. What kind of philosophy would be necessary to underlie conceptual development of plausible species-wide technological enhancement of prosociality given the need for consensus in identifying candidate characteristics as therapeutic targets, discerning beneficial characteristics worth amplifying or adding, and identifying traits to reduce or mitigate? Subsumism, introduced in Chapter 4 and developed throughout this dissertation, has been proposed as benevolutioneering's indispensable philosophical foundation, without which any approach to moral enhancement or sociality enhancement would be fundamentally internally inconsistent. Without consistently

> respecting others' freedom and autonomy, any moral enhancement agenda or sociality enhancement agenda would be rendered absurd because morality or prosociality without freedom as a non-negotiable, foundational tenet would be neither moral nor prosocial. Any technological intervention modifying moral or social functioning not premised on freedom and administered, as far as feasible, only to voluntary recipients would be an ultra-tyrannical program. Enhancement recipients are unlikely to voluntarily accept an intervention that will establish or enhance traits that seem antithetical to their own values. As reflected in discussing question 9 above, subsumic axiology, stemming from subsumic ontology offers tools for addressing apparent axiological incompatibilities.

Clearly, consideration of those 10 questions is important to the discussion of this dissertation's central question: Is benevolutioneering, the intentional evolution and species-wide voluntary implementation of radically benevolent neuropsychology, possible and beneficial? In fact, answering those 10 questions provided the short answer. The following retrospective overview of this dissertation's exploration is a longer answer to that central question.

In my mind and throughout this dissertation I have grappled with two seemingly contradictory impressions. First, certain things seem to be declining in very important ways that make life less good for human beings, including but not limited to dehumanization, depersonalization, increasing estrangement, more of what Marx (1932/2011) identified as alienation, increasing loneliness, reduced freedoms, compromised privacy, and less compassion. People seem increasingly less kind to each other, less caring, and less loving (Konrath et al., 2011; Zaki, 2019). Many reactions, throughout 2019, 2020, and 2021, to the COVID-19 pandemic, renewed calls for improved race-relations, and many countries' recent political

dynamics seem to have amplified expressions and demonstrations of selfishness, tribalism, competitiveness, and eagerness for conflict and combat (Bavel et al., 2020; Lawton, 2020). Simultaneously, zooming out to consider trends over longer swaths of human history, I have considered what seems legitimate evidence, such as that presented by Steven Pinker (2011), showing important aspects of human wellbeing improving over time, such as the increasing percentage of people who are literate (van Zanden et al., 2014), improved education (van Zanden et al., 2014), sanitation (Bartram et al., 2014), vaccinations (Chard et al., 2000), reports of significant trends of decreasing violent crime (Lurigio & Staton, 2020) and war-related mortality (Gat, 2013) per capita, and the decreasing number and percentage of human beings living in extreme poverty (Ravallion, 2016), a debatable trend because of its particularly complex measurement challenges (World Bank, 2017). Humanity has begun recognizing and working to reduce various forms of slavery and human trafficking. Society has been working to address mistreatment of long-abused segments of humanity, including women, groups mistreated because of their skin color or ethnicity, people mistreated because of sexual preferences and gender identities, religious minorities, and others. Humanity might somehow even be able to all but eliminate prejudicial behaviors related to these and other characteristics and lifestyle categories. We have been making progress in curtailing hate crime and hate speech, and perhaps, given enough time, we might even be able to all but eliminate such behaviors. We have been working to counter bullying, and, eventually, maybe we could even eliminate it. During the recent “me too” movement, we have been addressing issues involving widespread sexual harassment and abuse by individuals in society’s various powerful roles. Perhaps we could largely eliminate such terribly abusive harassment behaviors, given enough time. I think it is possible that, even by continuing to use the means we have been using, even on our current

trajectory, we might be able to all but eliminate homelessness and make it so that people are all given enough money to be able to meet their needs. Theorists as well as captains of Western industry have recently been predicting that a guaranteed minimum income is unavoidable if the current economic system is to persist in any recognizable form. In many parts of the world people are even beginning to address mistreatment of nonhuman animals.

Perhaps society can effectively reduce suffering associated with measurable problems. Maybe we can reduce certain problems that are quantifiable, and, apparently, we are. We seem to be making progress, in the long run, in terms of fewer homicides, fewer rapes, and less violent criminal behavior. Although progress might be gradual, maybe we are managing to actually address certain forms of antisocial behavior. Whether we are progressing rapidly enough to avert extinction or horribly irreversible dystopian futures is a very real, urgent concern.

At the same time, it seems there is more angst, more loneliness, more tribalism, and more bitter competitiveness (Becker et al., 2021; Boursier et al., 2020; Peng & Roth, 2021; Webb & Rosenbaum, 2021). Maybe there is no less or even more actual hatred and more prejudice in private and inside people's minds. Even though, in most cases today, people cannot as easily immediately act on their interior bigotry with impunity, it might be becoming more subtle, less detectable, less quantifiable. Although there might be no consensus on whether such trends are positive or negative, it is the case that we have fewer durable marriages (Härkönen, 2014; Ruggles, 1997; Wagner, 2020), fewer children raised full-time by both of their biological parents (Härkönen, 2014; Pew Research Center, 2015; Ruggles, 1997; Wagner, 2020), more children cared for in child-care institutions rather than being cared for full-time by their parents (National Research Council and Institute of Medicine Committee on Integrating the Science of Early Childhood Development, 2000), increased racism and xenophobia (United Nations, 2016),

increased nationalism (Presnall, 2020), and increased border protectiveness (Koulish & van der Woude, 2020). I recognize that not all of those trends are universally considered negative trends. That would be likely for any similar list of concerns. It would be surprising, however, to find very many people without a list of such concerns about what they perceive to be negative trends. Simultaneously, though, it is increasingly difficult and less likely for people to directly harm one another physically with impunity. We still have to hire people and go to work and school and stores with people and pretend to be civil, although many might be less and less fond of the people for whom and with whom they work or learn or shop or worship, less likely to love those people or form life-long bonds with those people. Fewer and fewer people are leaving their houses to socialize with their communities. Recent epidemiological concerns have been prompting many people to stop shaking hands and stop hugging, work from home more, and attend school online from home, which might lead to more people realizing that many traditionally face-to-face vocational and educational functions could be accomplished remotely or even, ultimately, by A.I. and robotics.

We might be reducing both disadvantages as well as advantages of major aspects of messy human existence if we further distance, mechanize, and dehumanize society. If we become, educationally and professionally, more STEM (Science, Technology, Engineering, and Mathematics)-oriented and less humanities-oriented (Drees, 2021; Taal, 2021), then, as humanities educations are reduced or eliminated in favor of additional STEM emphases, students who might be reading less bad literature are also reading less good literature, and students who might be exposed to less frivolous artwork are also exposed to less moving, enriching art. While more children are being raised in increasingly regulated schools and child-care centers, more old people are being warehoused and maintained in increasingly regulated residential senior-care

facilities where quantifiable improvements are possible with better and better measurable quality control but where people could be increasingly estranged, lonelier, and sadder. Quality control efforts can, of course, measure factors that are reasonably measurable. Less tangible realities such as sadness, hopelessness, purposelessness, ennui, resentment, despair, loneliness, and alienation, though, might be much more difficult to uniformly, reliably, and profitably quantitatively measure and much easier to ignore. It would be challenging to accurately and effectively measure joy, fulfillment, hope, human warmth, and the feeling of having loved ones love you. Such soft, fuzzy, phenomenological aspects of the human experience can be regarded by some people as woo-woo, as sentimental drivel, even as spiritual or religious hokum. We are considering two very different dimensions. Maybe indications and apparently effective solutions which measurably demonstrate progress and seem to offer more tangible evidence of intangibles, such as hopefulness, actually primarily and mostly involve measurables. Measurables can lose track of the joys of being human, even of the joys of being mammals or of simply being alive. Certainly, there are measurables that can really harm people and really cause significant suffering. We should, of course, mitigate such realities as far as possible. Although we might very well be reasonably solving such problems, are we having more mental illness, more depression, more people experiencing ennui, angst, alienation, and far less community support?

Technological progress often solves tangible problems, measurable problems, making our lives easier, improving our lives in very real ways, concrete ways, easily measurable ways. That is certainly true of home appliances. Washing machines eased enormous burdens and improved lives. Washing machines allowed many people who used to gather on wash day to stop gathering on wash day. Laundry was probably not inherently pleasurable for most people, but did gathering

on wash day serve critical social support functions and help to enhance the lives of many with certain aspects of meaningfulness and community?

> Doing laundry used to be a collective enterprise. When I was a child in the late 1940s and early 1950s my mother and grandmother washed the family's clothes together… . Every Sunday we would dump the dirty clothes in a big wicker basket and drive to my grandmother's house where all the womenfolk would spend the afternoon in the basement, talking and laughing as we worked. …We neatly folded clean smelling piles of socks, sheets, towels, and underwear that would have to last us a week. Crisply ironed dresses and slacks, on hangers, waited to be hung, first on those little hooks over the side doors of the car, then in our closets at home. Nostalgic as these memories are, doing laundry was not romantic. It was exhausting, repetitious work, and neither my mother nor I would trade in our automatic washers to go back to it. Yet, during my childhood, laundry was a communal activity, an occasion for gossip, friendship, and bonding. Laundry was hard work, everyone in the family and in the society knew it and respected us as laborers. Further, having laundry and the day on which to do it was an organizing principle (Monday, washday; Tuesday, iron; Wednesday…) around which women allocated their time and resources. (Bush, 2009, p. 118)

Camaraderie among construction workers, for some time discouraged in some cultures by project managers who believe "strong relationships among workers…strengthen the collective bargaining power of labour" (Kazaz & Ulubeyli, 2007, p. 2139), will necessarily be further diminished and might become a thing of the past as more and more buildings are built by robots using 3-D printers (Lubell, 2021) and other emerging fabrication technologies. It is beneficial that construction site accidents and worker exploitation will certainly be reduced or even eliminated. Nevertheless, people will not be gathering to work as teams; they will not sit near one another eating their lunches, sharing their weekend plans, and commiserating about life's problems. We can probably reduce conflict within families by having everyone spending their at-home hours engaged in solo pursuits on separate electronic devices and by having stricter domestic violence laws and enforcement. But what might be lost? Less conflict indeed. But how much less intimacy? How much less loving support? How much less family bonding?

In the movie, *Parenthood: It Could Happen to You* (Howard, 1989), the protagonist, Gil, played by Steve Martin, was admonished by his wife, Karen, played by Mary Steenburgen, "Life

is messy." If we clean up the mess of life, we necessarily end up cleaning away some of life itself. We can poison ourselves with our own disinfectants. When we take too many antibiotics, we end up killing off beneficial bacteria, and that leads to illness. We are disinfecting ourselves socially, cleaning up unfortunate messes. Instead of having the tools to recognize and fine tune how our high-contact, over-involvedness with each other can be made loving instead of putrid, we risk sterilizing or even eliminating our relationships with one another. When we use broad spectrum antibiotics to treat an infection, we end up eradicating not only targeted microorganisms associated with infection. We now recognize that we kill microorganisms in our gut that we need to function well and thrive. Quite recently we have been discovering it is not only microorganisms in our gut that we inadvertently eliminate but also microorganisms in other body systems with which we must coexist in order to thrive. Through our antibiotic interventions we had, for years, been compromising very important life functions. It is becoming apparent that we are a vastly complex multispecies ecosystem, not single, discreet, genetically homogenous, isolated specimens.

Societal mechanisms can also be compared to a sound system. When there is distortion in only one small frequency range, a sound engineer can use the sound system's equalizer to precisely adjust the relative volume level of only the troublesome bandwidth. If one vocalist is singing off-key the sound engineer can use the sound system's mixer to turn down only the signal from the problematic vocalist's microphone. Imagine, though, turning down the sound system amplifier's master volume control until no sound problems can be heard instead of using the equalizer to precisely address distortion in one small frequency range or turning off only the off-key singer's microphone. Some of society's modern approaches, including scientific approaches, might be turning down or might end up turning down the master volume so we

might end up with silence at the concert instead of music. If we can just get rid of those faulty, inconsistent human voices, this could be a flawless choir. Instead of turning the master volume down little by little until there is no signal or cancelling all future concerts, could we not improve the human choir by ordering voice training to bring those two tenors and that one soprano up a few notches and help the tone-deaf baritone to take drum lessons and the fading alto to transition to photography instead of music? Some aspects of what we consider human nature, even aspects until now regarded as essential human nature, might have reached an age of needing to retire from the choir. Could this be true of schadenfreude, hate, spite, tribalism, and maybe even competitiveness? Other aspects might be able to be tuned up. Some voices might just need to be turned down to create a reasonable blend. Other voices might need to be amplified far more than they have been. Surely there are wonderful, even if subtle, human attributes. Maybe many of these beautiful voices are often drowned out by less subtle, overly loud voices. But the answer is not to turn down the master volume because the mix is unpleasant.

Instead of eliminating many of the most beautiful aspects of human nature, perhaps, in our interventions to address malignancies, we can very carefully eliminate only malignant tissue, preserving all healthy tissue nearby. Like neurosurgeons we should operate with microscopes, micromanipulators, and laser scalpels, carefully checking continuously, in our conscious patient, the functions of each tiny area of tissue as we work to excise tumor and preserve healthy tissue.

Our approaches should improve in ways similar to oncology's progress in continually developing better and better chemotherapies and other interventions. At one point, nearly all cancer patients receiving chemotherapy could expect severe side effects from the wide swath approaches that were probably the best modern medicine could, at the time, offer to improve

chances of survival. Increasingly, however, chemotherapeutic interventions more precisely target malignant cells with less compromise to healthy cells, thereby reducing side effects.

Here are two slants. First: Do not ever tamper with whatever anyone regards as human nature, even the parts that cause terrible suffering. All those aspects of human nature have come to be regarded as sacred, as making us who we essentially are. Second: Humanity is so flawed. We need to get rid of the human element. Get the humanity out of the way. Get rid of all the non-neat, non-mechanistic, non-reducible, volitional, emotional, non-measurable, non-digital, fuzzy, spiritual woo-woo and humanness. Perhaps it would be better to say: "Humanity—humanness—has some significantly faulty aspects. Some of what we think of as human nature needs to be very carefully fixed, and other aspects of what we think of as human nature just need to be eliminated."

Commonly, dystopian science fiction, such as Orwell's (1949/2017) *1984*, spotlights going too far to clean up humanity's messiness and flaws, thereby tragically reducing or even eliminating many of the best aspects of human lives, aspects that might be widely regarded as defining essential humanness. Arguably, one of the most notable elements of essential humanness often reduced or eliminated in dystopian literature is freedom. Freedom is particularly important to essential humanness, because love is predicated upon freedom. Creativity grows out of freedom. Love and creativity involve important varieties of perspective and of behavior. Seeing in color is so much richer than seeing in black and white. But binary systems, on-off switches, are far more manageable than spectra, so much more controllable. The desire to establish and maintain control is a complex matter. An interesting and important aspect of being in control is that being in control can facilitate choosing to reduce or eliminate future ability to control things. Consider the case of a person with control of a handgun choosing to

exercise that control to fire a bullet into their own brain. Consider using one's legal control to sign a contract that irrevocably yields important personal control to a third party.

Benevolutioneering, as conceptualized and explored herein, does not seek to improve only easily quantifiable aspects of human life. Benevolutioneering, as conceptualized herein, also explores actually addressing factors of human existence more difficult to quantify, factors associated more with humanities, existential aspects, transpersonal aspects, even spiritual aspects of warm, loving, non-alienating, intimate, psychically healing identities, relationships, and systems. Arguably, some measurables are damaging and should be fixed or eliminated, but the best solutions might not involve sterilization, mechanization, and industrialization, which can make us have more inside problems even while we improve or eliminate outside problems.

In addition to cleaning up measurable external characteristics, there is a tendency to overreact by generalizing "better safe than sorry" and one-size-fits-all approaches in which the size everyone is forced to wear is drawn from worst case scenarios involving catastrophic outliers. As we try to make things less bad, so much baby is being thrown out with bathwater. Efforts to make things less bad are very different than efforts to make things better. Avoiding and reducing hurt is very different than creating and increasing joy. Decreasing damage is not identical to increasing well-being, thriving, flourishing, etc.

How can the human condition seem to be getting better while it is also seems the human condition is getting worse? In this dissertation's exploratory process, I wrestled with that. Widely differing perspectives and varying measurement protocols paint contrasting pictures of every trend of asserted human progress or decline, nevertheless, it seems unlikely that very many people would deny recognizing that considerable unnecessary suffering and unrealized joy stem

from certain patterns of human behavior. Beyond chronic misery, such behavior patterns could lead to profoundly dystopian futures or even to human extinction.

Transhumanists expect humanity to employ or even merge with technology to transcend present physiological and cognitive capacities. Such technologies could fundamentally alter essential humanness. Based on surprisingly significant evidence and seemingly sound reasoning, many people, most notably a growing number of our era's most intelligent thinkers, expect exponential acceleration of technological progress to quite soon bring resource ubiquities of material, energy, and time, ushering in utopian futures of human enhancement, abundance, even immortality. New depths of despair could result from realizing the illusory nature of self-centered pursuits of happiness and the collapse of major sources of enterprise and enjoyment with the end of scarcity and, thereby, the end of competition for resources. Enhancement disparities could hideously magnify "man's [perennial] inhumanity to man" (Burns, 1873, p. 26). Without significantly enhanced prosociality, dystopian fears might be justified. I have proposed that we could solve such problems, in part by treating less prosocial common human characteristics as curable disorders. We would, however, need to identify candidate characteristics as therapeutic targets and discern beneficial characteristics worth amplifying or adding. In what radical ontology, epistemology, and axiology could such projects be rooted? I probed that question in conceptualizing and exploring benevolutioneering, the intentional evolution of benevolent neuropsychology. Is benevolutioneering possible, beneficial, even imperative? That has been this theoretical dissertation's central question. This study has explored the possibility of philosophical scaffolding for conceptual basis and ongoing development of technology to facilitate profoundly enhanced benevolent human sociality species-wide.

This study employed an exploratory theoretical approach for subsumic futures studies, influenced by humanistic, existentialist, and transpersonal psychological perspectives. A suitable philosophical foundation, subsumism, was necessary. Constructing subsumic ontology and epistemology has been integral to benevolutioneering's exploration. Distinguishable from, even while subsuming, trivialism, dialetheism, modal realism, and related constructs, subsumism treats all genuine perspectives as valid, infinitesimal puzzle pieces of boundless reality.

The rate at which human enhancements are emerging parallels our era's staggering rate of technological progress. Exponential acceleration of both rates, a possibility, could bring about resource ubiquities of material, energy, and time. This dissertation necessarily explored transhumanism, belief in and support for the notion that our species will use or even merge with technology to transcend present physiological and cognitive capacities. Some within the transhumanist movement predict and advance notions of exponential acceleration of technological progress ushering in a utopian future of universal local ubiquity of all imaginable physical resources, profound human enhancement, and immortality. Certain technological enhancement attempts might fundamentally alter brain, mind, consciousness, personal identity, volition, and other essential phenomenological aspects of being human. Our axiology, ontology, and epistemology of consciousness and of life determine how we distinguish enhancement from diminishment or even exanimation. Accordingly, special attention has been given to notions of value, sociality, mind, consciousness, and related constructs, including how such notions are conceptualized among selected prominent transhumanists and within the scientific communities where rapid technological progress seems most likely to facilitate such transhumanist futures.

To explore certain characteristics as therapeutic targets and to identify other characteristics worth amplifying or adding, candidate prosocial and less prosocial processes have

been considered. Certain seemingly less prosocial constructs have been explored as universal and as undergirding important aspects of species-wide antisociality. This dissertation explored pathologizing such constructs and then conceptualizing such constructs as eventually treatable. Aspects of radical ultra-prosociality, of profound benevolence, have been explored as candidate replacements and augments for certain of today's prevailing inherently antisocial, less prosocial, even moderately prosocial constructs. Certain aspects of prosocial constructs such as altruism and benevolence might be transpersonal, nonoperationalizable, inherent aspects of consciousness that can be obscured even by mundane, banal universal antisociality.

In consideration of one important worldview, benevolutioneering is a proposed intervention for preventing humanity's extinction and promoting humanity's flourishing by intentionally accelerating human evolution along what some theorists believe is a long established, although extremely gradual, trajectory of increasing prosociality (e.g., de Waal, 2015; Emory University, 2010a; Pfaff, 2015). Extinction, from perspectives associated with this worldview, could otherwise result from humanity's technological development rate tragically outpacing humanity's rate of prosocial development (Persson & Savulescu, 2014). In consideration of additional perspectives associated with alternate worldviews shared by many within whose schemas humanity has long been corrupted away from some earlier or even original, better nature, benevolutioneering is an intervention for reducing suffering, preventing humanity's extinction, and promoting humanity's flourishing by intentionally restoring within humanity some aspects of an earlier, better nature before humanity degrades beyond a point of no return.

This dissertation conceptualized and explored benevolutioneering and subsumic philosophy, benevolutioneering's necessary philosophical underpinnings. Conceptually,

benevolutioneering can be generally situated among other developing models of moral bioenhancement such as the model propounded by Persson and Savulescu (2014), one of the most widely discussed moral bioenhancement models. Benevolutioneering's subsumic philosophical foundation and benevolutioneering's a priori aspect of extreme benevolence significantly distinguish benevolutioneering from other moral bioenhancement approaches.

As stated earlier, according to Ugazio et al. (2014), the term *morality* conveys "the expression of judgments classifying behaviors into good/right and bad/wrong ones" (p. 157). Nominally, quests for moral enhancement, including moral bioenhancement as well as various traditional moral enhancement approaches, seek to improve compliance with systems of distinctions between right and wrong or good and bad behavior. Benevolutioneering, though, conceptualized as increasing personal volition and personal freedom, seeks to enhance intrinsically motivated prosocial phenomena and behavior.

Herein, exploration of technologically enhancing prosociality has been situated within broader explorations of possibilities of profoundly improving human beings' lived experience, increasing human beings' well-being, and reducing the probability of catastrophic misfortunes humanity now faces and, as this exploration has considered, humanity seems likely to soon confront.

Selected paradigm-shifting developments that seem likely to represent some of our species' greatest hazards have been explored in order to consider the potential importance, value, and maybe even, according to some thought leaders, the necessity of some kind of moral neuroenhancement such as benevolutioneering. Those selected developments include artificial intelligence, weapons of mass destruction, habitat loss through environmental destruction, pandemics, world-wide dystopian tyranny and unprecedented widespread cruelty, and the

perpetuation of current and historic all-wretch-and-no-vomit banality of the alienated, competitive human condition punctuated with horrific episodes of unthinkable cruelty.

Much human misery and many of humanity's gravest hazards stem from certain aspects of human values, social behaviors, and social structures that characterize what has been labeled human nature or the human condition. Long conceptualized by many as original sin, and, more recently, by many if not most, as vestiges of successful adaptations from earlier stages in an evolutionary heritage, such human characteristics underlie incalculable suffering, anxiety, and significant catastrophic risk. For millennia, such unfortunate aspects of the human experience have been increasingly amplified by technologies and systems as they have been developed to extend and multiply human effort. Recent and imminent exponential rates of technological development transcend cumulative quantitative change's historic trends, thrusting upon humanity paradigm shifts into new dimensions of suffering, unprecedented existential jeopardy, and exciting opportunities to mitigate such threats while profoundly improving life experience species-wide.

Species-wide benevolutioneering would be a revolutionary paradigm shift. Without an antecedent revolutionary, species-wide philosophical paradigm shift, species-wide benevolutioneering would be a vanishingly remote possibility. Profound species-wide shifts in fundamental human paradigms are extremely rare. Such shifts are rare enough to be considered impossible before actually occurring, unlikely to be recognized while occurring, then difficult to explain after. Stochastic rather than intentional, such historic paradigm shifts have arguably been evolutionary and associated with certain significant inflection points. Perhaps such inflection points have sometimes involved thresholds that have been reached, points at which certain quantitative factors have accumulated to levels that amount to significant qualitative transitions.

In some cases, catastrophic events occur or novel factors emerge, prompting profound adjustments system-wide. Historians, grappling with the twists and turns of human history, rely on such catalysts as major meteor strikes, radical climate reversals, society-revising technological inventions, even disruptive new philosophical and religious ideas. I assert that humanity has just encountered multiple catalysts of unprecedented revision.

As mentioned in Chapter 5, most people either accept a model of biological evolution, believe that God created humanity, believe in one of the ancient accounts of literal divine creation, or, in some cases, might be open to some combination of such explanations of our origins. Associated with each of such varied belief systems are important worldviews with certain models of how life has been proceeding between inception and present conditions. Perhaps organisms have been developing by cause and effect, according to chance, or some mechanistic-stochastic blend. Perhaps life and the rest of reality have been continually sustained or occasionally affected by some manner of divine influence. Regardless of one's worldview, an actual point in human history at which humanity initially takes direct control of the various aspects of the fundamental engineering and programming of all living organisms, including homo sapiens, seems extremely likely to be associated with one of the most significant transitions in the course of human history. I found helpful, in terms of broadening my perspective, the following excerpt of an audio file of a lecture presented by Alan Watts.

> [In] the time of Darwin's theory of evolution, of seeing the human mind as a fortuitous development from much more primitive forms of life coming forth by purely mechanical processes, by natural selection, and by the survival of the fittest. And therefore, man was, in general seeing, as a fluke of nature and embodiment of reason, emotion, and values for which the more basic processes of nature had no sympathy and about which they did not care. If, therefore, the human race was to flourish, we must take charge of evolution. It can no longer be left to spontaneous processes, but must be directed by human ingenuity. Despite effect, that although our brains are capable of dealing with the colossal number of variables at once, our conscious attention is not. Most people cannot consider more than three variables at the same time without using a pencil. And this shows that in many

> ways the scanning process of man's conscious attention is very inadequate for dealing with the infinitely many variables, the multidimensional processes of the natural universe. However a serious attempt has been made, and scientific naturalism issued in a fantastic fight with nature. In this whole notion of the conquest and subordination of nature which has, as a matter of fact, very ancient, non-scientific and biblical origins. With the idea of man as the head, and chef, and ruler of nature, in the image of God, and the time has now dawned upon us all when our attempts to beat nature into submission are having alarming results. Because we see that it is very dangerous to mess around with processes that we don't understand, that have enormous numbers of variables, and we have begun to wonder whether we hadn't better leave well enough alone. (Alan Watts Organization, 2019, paras. 4-6)

Historically, at least collectively, humanity has had little or no choice regarding adaptation to changing conditions, including the profoundest transitions. Arguably, such adaptations have been largely deterministic, stochastic, or otherwise almost entirely outside the sphere of human control. I assert that if humanity is beginning to fundamentally self-engineer and self-reprogram consistent with purposiveness and, therefore, necessarily according to particular axiologies, then the nature of modification and of the time scale of modification of the human organism and of all other organisms is to be so fundamentally changed that the nature and mode of adaptation to such modifications will necessarily also change. I further assert that because continuing evolutionary processes or ongoing divine creation is to be abruptly commandeered by unprecedented intentional self-engineering and self-programming, it is important that humanity's adaptations to modification become nothing less than intentional. Philosophies, evolved over millennia, so far more or less adequate to facilitate human society, cannot likely beneficially be left to develop piece meal as unintentional memes. Certain axiologies and means of axiological adaptation, until now more or less adequate, will not necessarily beneficially facilitate new realities in societies of self-engineering, self-programming human beings.

Humanity's adaptations have long taken place within relatively small groups, manageably sized subpopulations, with little or no reference to distant people groups and their

adaptations. This has allowed adaptations to separately shape various cultures, each with more or less fitting ontologies, axiologies, schemas, ethical systems, and social structures. The abrupt emergence of humanity's unprecedented intentional self-engineering and self-programming coincides with unprecedented abrupt reduction in isolation, geographical and cultural separation, and insulation. The benefits of discreet, isolated, insulated cultural milieus have all but disappeared as our world has been reshaped by the World Wide Web, jet travel, converging ecological influences and interests, and soon, according to many forecasts, unprecedented migration caused by climate change (McFarland, 2019; Schwerdtle et al., 2019; Shultz et al., 2019). This monumental convergence of these two unprecedented catalysts of sea change has arisen as human beings have just developed weaponry powerful enough to abruptly extinct our species, possibly at a single person's whim. The spectrum of cultures, each with their respective ontologies, axiologies, schemas, ethical systems, and social structures, results in innumerable apparently intractably conflicting interests. Apparently incompatible legal systems, notions of fairness, justice, compromise, negotiation, mediation, and democratic solutions, are no match for the avalanche of disparate, conflicting needs overwhelming humanity with countless competing human emergencies of staggering complexity.

Arguably, one could characterize many, most, or even nearly all extant and, presumably, historic ontologies, axiologies, and epistemologies as both inherently competitive and as tending to favor parsimony. These two characteristics, competitiveness and parsimony, I propose are closely related. In thought, in conversation, and in agenda, human beings are capable of simultaneously considering only a limited number of factors or processes. A relatively modest degree of complexity exceeds the capabilities of even the most powerful human minds and certainly far exceeds the capabilities of the overwhelming majority of human minds.

Additionally, it seems that the overwhelming majority of human minds might not be able to recognize or are reluctant to acknowledge the fact that the vast complexity of every aspect of reality overwhelms human cognitive resources. Such aspects of human finiteness necessarily result in cognitive and conversational realities associated with such resorts as salience, triage, heuristics, even reductionism. Consequently, indispensable epistemological parsimony facilitates practical necessities of cognitively, conversationally, and even culturally modeling and processing actually manageable subsets of reality's overwhelmingly immense datasets and staggeringly complex systems. Human progress has necessarily relied upon the utility of epistemological parsimony. The axiological inclination to unjustifiably ontologize Occam's Razor, to adhere, in a sort of fundamentalist dynamic, to orthodoxies that ascribe significant ontological authority to Occam's Razor, rather than curtailing parsimony to its valuable epistemological functions, is another matter. In fact, the conflation of these philosophical categories meta-epitomizes this very tendency. This is probably the best that could have been reasonably expected of humanity, and, for millennia, this has, more or less, adequately served humanity. Nevertheless, there is no justification for adhering to the fallacy that use of Occam's Razor has any capacity whatsoever to produce models accurately representing the nature of reality. Although the limits of human cognition necessitate usefully simplified models of subsets of reality for purposes of advancing beneficial technologies, the unprecedented development of technology extending human cognition, strong artificial intelligence, vastly reduces the necessity to continue relying on parsimony to develop oversimplified models of subsets of reality.

Strong artificial intelligence might be arriving just in time, because online connectivity, air travel, unprecedented international migration, and planet-wide economic interdependence, is forcing humanity to grapple with countless new profound complexities of routinely closely

interfacing with hundreds of the world's cultures. So, it does indeed seem fortunate that humanity is now rapidly developing tools capable of augmenting and extending cognitive capacities, collaborative capacities, sense-making capacities, and maybe even meaning-making capacities. Capability, however, is not destiny.

Humanity's information handling capabilities are no longer limited to more or less single trains of thought. Information processing technology is extending humanity's capacities to model, develop, and utilize vastly more complex ideas, theories, systems, even staggeringly complex systems of logic and metalogic. Although hardly a new idea, the notion of massively parallel processing (Potter, 1985) has been extending to such configurations as massively parallel processing cores with plural chains of processing elements and respective smart memory storing select data received from each chain (Cadambi et al., 2013) and, more recently, ability to perform such operations as massively parallel processing of large-scale combinations of time series data (Ciarlini et al., 2019). Now, quantum computing is making it possible to "efficiently perform computations in an intractably large Hilbert space" (Schuld & Killoran, 2019, p. 1). In October of 2019, Google controversially claimed quantum computing's development has achieved what has been labeled quantum supremacy (Conover, 2019; Hartnett, 2019; Netburn, 2019; Powell, 2008).

Beliefs about reality and acquiring and vetting knowledge are impacted by prevailing value systems. Many values common today are likely to be incompatible with philosophies that will be sustainable when, in the future, human beings are intentionally enhanced, live with ubiquitous resources instead of scarcity, are networked in real time even more directly than with today's internet, and are capable of reprogramming their own DNA. Extant philosophical traditions are rooted in value systems that have developed organically from antiquity with some

degree of continuity. Such philosophical roots are tangled around the essential elements of our language, our sociality, our values, our philosophies, our cultures, our religions, our economies, our governments, our laws, and all of our sciences, even our cognition. Available ontologies, axiologies, epistemologies, schemas, theories, and methodologies are premised upon certain important aspects of what has been often identified as essential characteristics of human nature that are among the very characteristics of human nature benevolutioneering, as has been characterized throughout this dissertation, explores reimagining and re-engineering. This has necessitated initiating development of a philosophical system capable of facilitating transitions to and existence of societies of intentionally self-evolving human beings. Such a philosophical system must also conceptually facilitate species-wide benevolutioneering without such foundational flaws as untenable inherent fundamental ontological, axiological, and ethical contradiction. It has therefore become necessary to develop subsumism, benevolutioneering's suitable philosophical basis, benevolutioneering's indispensable ontological and epistemological foundation.

I suggest that, without subsumic philosophy or some superior subsequently developed philosophical system, benevolutioneering and, perhaps, most, if not all, other models of moral bioengineering would be conceptually incoherent. Benevolutioneering necessarily classifies certain characteristics as targets of amplification or important additions and other characteristics as targets for reduction or mitigation. This means that benevolutioneering necessarily involves promoting what is regarded as good. How and by whom is it to be decided what is good? These are entirely and inescapably axiological considerations. Values associated with prosociality and with antisociality—with selfishness and altruism, compassion, perspective taking, benevolence, schadenfreude, love, hate, spite, greed, generosity, freedom, tyranny, etc., vary on a broad

continuum. Forcing values upon people disregards their freedom. Disregarding personal freedom contradicts subsumism's foundational principles of love, because such foundational love, as conceptualized within subsumic philosophy, is premised upon genuine freedom. Subsumism refuses to coerce or deceive. Subsumic philosophy involves and insists upon a rigorously internally consistent ontology while valuing and regarding as valid all honest perspectives. This both contrasts with and subsumes competitively epistemologized, dogmatically oversimplified ontologies that reduce to zero-sum contests of intractably conflicting perspectives required a priori by schema to be mutually exclusive. Intractably irreconcilable values prevent axiological consensus indispensable for even theoretical plausibility of benevolutioneering as modeled herein.

As earlier stated, *benevolence*, defined as "disposition to do good" (Merriam-Webster, n.d.-b) and as "the quality of being well meaning; kindness" (Lexico, n.d.), conveys the notion of good and better, and must rely on the existence of an intelligible, discernable concept of goodness. How can it ever be possible to develop a fair, just, ethical construct of good or better rather than bad of worse that would satisfy more than 7 billion necessary recipients of species-wide benevolutionary intervention? As Lombardo (2017) made clear, "theories of what is good, as well as theories of the future, start from ideas or assumptions regarding the nature of reality. Theories of ethics or the good always assume theories of reality" (p. 10), particularly "the nature of human reality" (Lombardo, 2017, p. 10). Any intractable ontological impasses would necessarily prevent axiological consensus.

Subsumic ontology has been conceptualized as validating simultaneously every honest ontological perspective. Can such an ontology be conceptualized logically, rather than resorting to such maneuvers as following trivialism's lead, assigning, axiomatically, the same truth value

to pairs of seemingly mutually exclusive statements as both “p” and “not p” as it assigns to well-formed conventionally valid syllogisms? Can such an ontology actually be somehow conceptualized logically rather than resorting to aphoristically layering endless tautologies? Without compromising freedom by forcing or coercing enhancement recipients to unwillingly or unwittingly accept personal modifications affecting personal values, how could nonprosocial characteristics, valued by certain outliers, be legitimate universal targets of modification? For example, while some very highly value competition, others recognize that success which requires preventing or limiting another’s success is not feasible in a society that values and protects everyone’s interests. I propose that subsumic philosophy, as herein characterized and developed, has the potential to eventually facilitate acceptable resolution, at least conceptually, of such otherwise apparent axiological and associated epistemological impasses, beneficially fostering fruitful mutual valuation of widely varying perspectives and interests.

According to subsumic philosophy, belief in the indispensability of competitiveness and competition, self-promotion in reference to others, is not categorized as a perspective or as an actual component of any perspective. This is the case for multiple reasons, for a system of reasons.

Recall that subsumic philosophy is not fundamentally about considering opinions, facts as the notion of fact is commonly conceptualized, or even propositions. It is critical to understand that subsumic philosophy instead considers perspectives. Not all opinions, not all putative facts, and certainly not all propositions are actual perspectives, as perspective is conceptualized within subsumic philosophical thought. Subsumism’s definition and conceptualizations of perspective cannot be divorced from subsumic ontology. Subsumic ontology considers phenomena of the everyday physical world of normal sensory perception to

be representations within the narrow parameters of our four-dimensional physical world, the traditional domain of the natural sciences, an ontological subset of vastly greater ontologies involving numerous additional dimensions. Subsumic ontology does not commit to models of additional dimensions as being merely smaller subsets of already known dimensions or as merely being so vanishingly tiny as to be coiled up at a sub-Planck scale within (Williams, 2014), out of phase with, or otherwise concealed by or within the already more or less accepted four dimensions (Zyga, 2011), as is sometimes encountered within recent string theory literature. Instead, subsumic ontology is open to additional dimensions being more like they are analogized in Abbott's (1884/1984) charming thought experiment of intelligent entities inhabiting a planar world. Subsumic ontology is even open to intriguing possibilities that model the universe we inhabit as some sort of hologram (Yirka, 2013), perhaps even a somehow conscious hologram as intriguingly suggested by proponents of topological geometrodynamics (Pitkänen, 2018). Instead of being treated like values-driven debate competitors vying for popular acceptance to confer legitimate ontological status, varying models and perspectives are each treated as valuable intersection points. These intersection points allow for systems of epistemological triangulation as we Flatlanders, in humility, grapple with intractable realms all but hopelessly beyond our cognitive reach.

Research for this dissertation has explored, focused, and extended a number of sociality-related constructs in conceptualizing benevolutioneering. Such constructs include but are not limited to benevolence, various types of love, fondness, altruism, compassion, empathy, cooperation, competition, spite, schadenfreude, forgiveness, tolerance, self-other and ingroup-outgroup dichotomies, values, happiness, and related constructs such as might be necessary for contextualizing each. Much important exploration is still needed. It would probably prove

valuable to contrast modern prosocial constructs with ancient prosocial constructs. It would be worth finding out if any ancient prosocial constructs persist or if only hybrids are extant. Perhaps only hybrids ever existed. Continuing exploration could prove certain prosocial characteristics to be rare, even mythical creatures. It is possible that futuristic human enhancement technologies could facilitate non-diluted benevolence or otherwise directly substantially enhance profound benevolence. One possible approach that might be worth exploring would involve technologies linking and networking brains, and, therefore, important aspects of minds, such that aspects of conscious experience might be directly phenomenologically shared in real time. Maybe human enhancement could involve better integrating competing personas within each human personality. That might in some ways enhance altruism, although, perhaps, more for some people than others. It is important to consider what might be the nature and function of benevolence in futuristic humanity, and how that could give shape to an enhanced human psyche. At a fundamental level, these matters cannot be best explored apart from one's understanding of and beliefs about consciousness, mind, personhood, and volition.

Subsumism is open to conceptualizations of benevolence that fundamentally differ from and transcend all other merely prosocial constructs. Such conceptualizations of benevolence might not be fully operationalizable in a reductionist materialist sense. Such conceptualizations of benevolence might not coexist with any ingroup-outgroup distinctions and might be conceptually related to what Chalmers (1993, 1995, 2014) called the hard problem of consciousness. This conceptualization of benevolence might well be fundamentally transpersonal, and so might consciousness. Non-reductionist, transpersonal notions of consciousness contrast with much of the scientific community's prevailing views. This is important to the extent that trajectories of human enhancement technology end up being

influenced by the scientific community. If human neuroenhancement ended up rooted entirely in reductionist materialist schemas, such influences could lead to permanent reification of reductionist materialist constructs of sentience, mind, and sociality, which might extinguish some ineffable dimensions of authentic human experience.

The dominant modern view of life and reality might involve the notion that competitiveness and selfishness are both necessary and desirable (Ricard, 2015). It might be the case that many people are quite fond of and particularly attached to less prosocial or even antisocial values and worldviews. There are influential people realizing certain benefits from current paradigms of cooperative competition and competitive cooperation. Is there any conceivable way to imagine humanity voluntarily embracing radically prosocial human enhancement technologies in which people would receive altruism upgrades by which selfishness would be eradicated as, for the most part, were polio and smallpox? It is worth considering several important approaches. First, it is possible that relatively few people want to get old and sick and then die. Second, most people want to be happy and to escape misery. Third, it might become apparent to influential decision makers or possible to convince influential decision makers that converging ecological, economic, and political factors preclude perpetuating the status quo. It might become apparent to world leaders that such factors will not permit societal continuity without fundamental psychological change commensurate with the magnitude of abrupt technological transition. Fourth, significant relevant ideological memes might actually stem from development of adequate bodies of theory along the lines of that under development in this exploration. Examples of similar dynamics are scattered throughout most human histories, and it is not wrong to maintain optimism for such to be the case in anticipation

of the kind of future envisioned by a growing community of ambitious futurists, including some who value profoundly benevolent prosociality.

CHAPTER 8: CONCLUSIONS

Benevolutioneering is the intentional evolution and voluntary species-wide implementation of radically benevolent neuropsychology. This dissertation's central research question has been: Is benevolutioneering possible and beneficial? Based on this dissertation's exploration, I believe it is. It would reveal more, however, to instead say: Even after this dissertation's exploration, I still believe benevolutioneering is possible and beneficial, but my concept of benevolutioneering has changed substantially, and so has the way I consider whether or not benevolutioneering is possible.

At this dissertation's onset, when I contemplated whether or not benevolutioneering was possible, most of my concerns related to existence and discovery of alterable neurocorrelates of prosociality and bioengineering challenges of developing interventions. Although those concerns remain, I am more confident in those matters after this dissertation's exploration. After this exploration, my greatest concerns involve the challenges associated with achieving universal implementation while relentlessly insisting that benevolutioneering be entirely voluntary for each recipient. Part of my shifted and intensified concern stems from the polarized reaction to recent public health measures in response to the COVID-19 pandemic.

Is it possible for human beings to develop and implement effective, substantial, human sociality enhancement technologies, including moral enhancement technologies? It is tempting to assume this is a question about the future, a question for futurists. As such, any answers to this question would be speculative. The question might even seem to many people to be nothing more than science fiction subject matter and, therefore, frivolous to answer. The question, though, is actually a question of axiology and of history. The question is axiological because the notion of sociality-enhancement, of moral-enhancement, depends on what one values. Enhancing

something is a matter of making that thing better. Morally enhancing someone, enhancing their sociality, is a matter of making that person's sociality better, making that person morally better. Making anything better means somehow increasing a quality one regards as good, and what one considers good or better instead of bad or worse is a matter of what one values.

Significantly resourced efforts are well underway to develop various human modification technologies (Bickford, 2021; Jessup, 2021; Ranisch, 2021; Regalado, 2021; Shaw, 2021). Definitions, conceptualizations, models, and expectations of sociality-enhancing technologies, including morality-enhancing technologies, vary significantly. Preferences regarding moral enhancement, enhancement of sociality, development of sociality-enhancement technologies, and implementation of such technologies also vary significantly. Transhumanists envision, expect, advocate, and pursue development and implementation of various technologies to bring about what they variously consider profound enhancement of human beings, including, for some transhumanists, modifications of sociality and of moral function. Whether or not such modifications would be considered enhancements is an inescapably axiological consideration. That does not, however, represent a necessarily intractable impasse. Although benevolutioneering certainly requires staggeringly complex conceptual work to satisfactorily facilitate species-wide axiological accommodation, this exploration has pointed to a few promising avenues, starting points for this endeavor, hopefully helping to dispel mistaken, although definitely nontrivial, dismissals of benevolutioneering as implausible because of assumed incompatibility of voluntary species-wide implementation and seemingly intractably axiological disparity.

The question of whether or not it is possible for human beings to develop and apply effective, substantial, moral enhancement technologies, sociality enhancement technologies,

while inescapably axiological, is also historical. Human beings have already developed sociality-modification technologies, moral-modification technologies, which have effectively brought about substantial changes regarded by many people as sociality-enhancements, as moral-enhancements. If a person categorizes any of those changes as improvements, then, according to that person's values, the answer is, of course, yes, it is necessarily possible for human beings to develop and implement effective, substantial, sociality-enhancement technologies, moral-enhancement technologies, because they already have.

Additional important questions about human enhancement and human enhancement technologies are future-oriented. Will human beings continue to develop human modification technologies that bring about substantial changes to the nature and functioning of human sociality, including human morality? If we do, and it seems quite likely we will, according to what kinds of values will such changes be regarded as enhancements, as improvements, rather than as regressions, perversions, degradations, or diminishments?

Depending upon one's values, this dissertation's exploration can be framed as prompting prescriptive rather than merely predictive consideration of future development of human sociality enhancement technologies, moral enhancement technologies. Benevolutioneering is inescapably axiological, and there are significant axiological challenges involved in reifying benevolutioneering because of seemingly self-contradictory aspects of benevolutioneering's conceptualization. Benevolutioneering is necessarily grounded in a definition of benevolence in which benevolence strives always to increase freedom. If freedom is to be increased rather than decreased and individual autonomy is to be respected and prioritized, then benevolutioneering's conceptual plausibility hinges on ability to have people's values voluntarily modified and on ability to achieve species-wide consensus that all such modifications actually are enhancements

or, at least, that they are not diminishments. Subsumic philosophy, a work in progress, is a possibly hopeful approach to navigating seemingly self-contradictory aspects of benevolutioneering's indispensably freedom-based conceptualization.

The staggering complexity of human moral functioning and characterization of moral functioning as biologically mediated but not strictly biologically determined (Wiseman, 2016) must be kept in mind. The degree of complexity involved in fully conceptualizing and then developing technologies associated with benevolutioneering is absolutely staggering. Without further development of strong artificial intelligence, possibly involving significant advances in quantum computing, and progressively enhancing human cognitive ability, reifying radically paradigm-shifting benevolutioneering, or even achieving its full conceptual development, seems very likely to elude our species. Failure, though, to bring about, species-wide, radically prosocial moral enhancement such as benevolutioneering would not likely impede general efforts to modify human beings and even to antisocially reshape human nature. Without species-wide, radically prosocial moral enhancement such as benevolutioneering, there is great risk of humanity antisocially reshaping humans and human nature for subsets of humanity to selectively increase such traits as competitiveness, insensitivity, selfishness, ruthlessness, destructive capability, and hierarchical compliance. Nevertheless, expecting further development of artificial intelligence and enhanced human cognitive ability to help bring about benevolutioneering could be belittled as wishing for a magic wand, dismissed as the deus ex machina of nothing more than another work of implausible utopian science fiction. Further, the staggering complexity of the endeavor to develop practical quantum computing and strong artificial intelligence increases the likelihood that many people will dismiss fully developed benevolutioneering as implausible. Skepticism should, however, always to be expected regarding future development of extremely

complex technologies. How many years ago would the International Space Station, current smart phones, the internet, or in-car global positioning satellite navigation systems have been dismissed as implausible? I am old enough to remember hearing smug declarations that human beings would never be able to reach the moon.

Benevolutioneering is not conceptualized as a binary construct. Benevolutioneering is not conceptualized as a single treatment to toggle human nature species-wide into perfected archetypical sainthood. Benevolutioneering is better conceptualized as progressive, asymptotic, and individualized in terms of quality and extent.

This exploratory dissertation has pointed out that humanity has long been implementing, as rapidly as technologies are developed, various interventions intended to enhance sociality and moral functioning. Some such interventions have not all brought about beneficial results. Many such interventions have gravely harmed people. People's autonomy and freedom have, in many cases, been disregarded and then permanently compromised. This exploration highlights the need for significantly increased humility regarding the staggering complexity of the human organism, including the network of systems associated with sociality, morality, axiology, and free will.

Subsumic philosophy allows for the existence and function of genuine free will in the most extreme sense of the concept. Consistent with that philosophical basis, benevolutioneering has been conceptualized as refusing to compromise autonomy at any point and as insisting on increasing freedom whenever possible. It is valuable to contemplate all that is sometimes involved in the process of freeing a wolf with its leg caught in a steel-jaw leghold spring trap. Conceptualizing benevolutioneering as reversible represents an extremely important means of guarding individual freedom. I am hopeful and quite optimistic about the potential persuasive power of what would be, in effect, a test-drive of profoundly benevolent prosociality. Borrowing

Taylor's (1997) insight and applying it to this notion of test-driving benevolutioneering bolsters my optimism.

> When we are healed, there is a fundamental transformation that takes place in personality. Our symptoms have not been alleviated so that we can go back to the way we were thinking and behaving prior to our illness. Rather, we are no longer the person who we were before. In a sense, if we have been saved from physical death, we have died anyway because we die to our previous personality. Psychologically, our attitudes change: what we love is different; our entire outlook is transformed. We see with new eyes. We are born as another person in the sense that we have grown beyond who we once were and we have now moved into an entirely new sphere of psychic functioning. (Taylor, 1997, p. 165)

Far more benevolent consideration needs to be given to respecting the perspectives of people deemed outliners in terms of their moral functioning. In recognition of the banality of evil, focused, resourced, benevolent consideration should be given to classifying as treatable pathologies many universal, mundane antisocial, nonprosocial, non-benevolent human characteristics, including some commonly regarded as inviolable, even treasured, sacred aspects of human nature, as rights, even as virtues and aspirations.

Both the urgency and difficulty of profoundly benevolently enhancing human nature, of radically prosocial moral enhancement, appears to have increased during the years spanned by this exploration. Some of the most challenging and hazardous aspects of human nature have grossly amplified their manifestations during exactly the years spanned by this exploration. This has underscored the importance of immediately prioritizing carefully considering the further development of subsumic philosophy and the development of species-wide benevolutioneering grounded in subsumic philosophy if one values avoiding extinction and values reducing suffering and longitudinally increasing pleasant, satisfying experiences individually and collectively.

From Is to Could to Ought: Should We Consider Benevolutioneering?

To consider moving from is to ought, from description to prescription, it is useful to first acknowledge that this dissertation's research has pointed out that technologies have already been

developed and are being further developed that modify human sociality and human morality. This dissertation has also presented reasonable support for taking seriously the plausibility of benevolutioneering as characterized herein. Benevolutioneering is not merely wishful thinking. Important reasons for seriously considering benevolutioneering have been discovered and realized during the course of my exploration and have been presented in this dissertation. That benevolutioneering could be developed and implemented is arguable and defensible. The ought, however, is plagued with the same burdens as all other normative assertions.

If a humanist approaches the is-ought divide between technologies of human enhancement and benevolutioneering as conceptualized in this dissertation, then it would be worth considering Pinker's (2018) assertion that humanism both identifies *what* we should try to achieve with our knowledge and provides the *ought* to supplement the *is*, in that humanism distinguishes progress from mastery. Considering benevolutioneering as a possible course to help prevent humanity's otherwise possible extinction, Pinker's assertion does not seem to be a stretch. Given humanistic values, especially of the flavor of the humanistic tradition as it has been embodied in the legacy of Saybrook University and its community of scholars, a freedom-increasing, benevolence-enhancing ambition potentially capable of helping to prevent human extinction or development of profoundly dystopian futures might be an ambition which ought to be energetically pursued.

If one approached the is-ought divide between technologies of human enhancement and benevolutioneering as conceptualized in this dissertation as a theist believing in a benevolent deity, it seems important to consider that a benevolent deity would be a freedom-valuing deity, a deity valuing progress toward more loving behavior, less suffering, and continued survival of species of sentient creatures. It seems that voluntary moral improvement would be desirable for a

benevolent deity. Any notion of a benevolent deity who would establish or prefer game-like rules or structures that preclude using, for moral progress, reduced suffering and extinction prevention, any means intelligent creatures could devise, would seem nothing but an oxymoron.

What If Benevolutioneering is Never Developed and Implemented?

If it could be immediately known that benevolutioneering lacks even the slightest chance of being developed and implemented and would ultimately amount to nothing more than a thought experiment, would this exploration have been frivolous? Would the time and effort invested have been wasted? I do not believe it would. Kurt Lewin said, "If you want truly to understand something, try to change it" (as cited in Stam, 1996, p. 31). Benevolutioneering is an attempt to change the system that is the human organism, numerous subsystems of the human organism and the broad system of human society. It follows that considering and attempting benevolutioneering facilitates increased understanding of these systems.

Unlike countless earlier attempts to change humanity, benevolutioneering is conceptualized at the point in humanity's history when emergent technologies are just beginning to make it possible to actually devise interventions to effectively modify human capabilities, human nature, and human sociality. Unlike humanity in earlier eras, our species is facing multiple existential threats which each stem from selfishness. Quite possibly, unlike future attempts to change humanity, benevolutioneering is proposed while there are still human beings to whom proposals can be made. Unlike other current attempts to modify human beings, benevolutioneering seeks, in every human being, to expand freedom, decrease suffering, and radically increase profoundly benevolent prosocial traits such as compassion, generosity, tolerance, honesty, humility, inclusiveness, peacefulness, forgiveness, gratitude, kindness, and even fondness. Other current visions and programs to modify human beings include well-funded projects intended to increase competitiveness, individual fitness for competition, even lethality,

including several country's already progressing projects to develop genetically modified super-soldiers augmented with various cyborg technologies.

This exploration would be valuable even if it was known beyond any reasonable doubt that benevolutioneering technology would always be absolutely impossible. What is the value and utility of this exploration if nothing resembling benevolutioneering is ever developed?

Even if it was the case that benevolutioneering, as conceptualized in this dissertation, would never be developed, this exploration has importantly pointed out that humanity has long been implementing, as rapidly as technologies are developed, various interventions intended to enhance sociality and moral functioning and that some such interventions have not had beneficial results. Many such interventions have gravely harmed people. People's autonomy and freedom have, in many cases, been disregarded and then permanently compromised. This exploration highlights the need for significantly increased humility regarding the staggering complexity of the human organism, including the network of systems associated with sociality, morality, axiology, and free will. This exploration spotlights the importance of more benevolent consideration of the perspectives of people deemed outliners of moral functioning.

Also, in light of the recognition of the banality of evil, this exploration has called for focused, resourced, benevolent consideration of classifying as treatable pathologies many universal, mundane antisocial, nonprosocial, non-benevolent characteristics of human beings which are commonly regarded as inviolable, even treasured, sacred aspects of human nature, as rights, even as virtues and aspirations.

Another valuable contribution of this theoretical exploration is that it occasions consideration of neurocorrelates of particular prosociality-related psychological characteristics. This could help reduce the likelihood of inadvertently overlooking or dismissing such

neurocorrelates as fictional and subsequently inadvertently damaging such neurocorrelates in human enhancement procedures not particularly concerned with prosociality.

Another valuable contribution of this exploration is that conceptualizing benevolutioneering prompted development of subsumic philosophy. The value of subsumic philosophy transcends its role as benevolutioneering's philosophical foundation. Subsumism offers a reconciling worldview, provides a promising ethical framework, and represents a potentially enriching internal and external spiritual discipline.

How Likely is Benevolutioneering? Will This Happen?

Benevolutioneering is not a stochastic meteorological event to be forecast like tomorrow's weather, over which we have no control. Benevolutioneering is not a predetermined event to be predicted like a solar eclipse. Benevolutioneering is not a horserace, for which various outcomes can be assigned odds.

> History, we feel, is what used to happen; it can't really be what's happening around us in the here and now. Things have…settled down. To make us braver about the idea of changing things today, we might turn to…T. S. Eliot's cycle of poems, the Four Quartets:
>
> So, while the light fails
> On a winter's afternoon, in a secluded chapel
> History is now and England
>
> Winter afternoons…have a habit of feeling particularly resolved and established, especially in quiet English country chapels, many of which date back to the middle ages. The air in such chapels is still and musty. The heavy stone floors have been slowly worn away by the feet of the faithful. These are not places and times to think about changing the world. Everything hints that we would be wiser to accept the way things are, walk back home across the fields, light a fire and settle down for a quiet evening. Hence the surprise of Eliot's third line, his resonant: "History is now and England." In other words, everything that we associate with history – the impetuous daring of great people, the dramatic alterations in values, the revolutionary questioning of long-held beliefs, the upturning of the old order – all this is still going on, even at this very moment, in outwardly peaceful, apparently unchanging places – like the countryside near Shamley Green, in Surrey, where Eliot wrote his poem. We don't see it only because we are standing far too close. The world is being made and remade at every instant. And therefore any one of us [could be] an agent in history… . The present has all the contingency of the past – and is every bit as malleable. It shouldn't intimidate us. How

> we love, …approach the arts, educate ourselves, …age and die are all up for further development. Current views may appear firm, but only because we exaggerate their fixity.…We should be confident, even at sunset on winter afternoons, of our power to join the stream of history – and…change its course. (The School of Life, 2016, 2:19–4:55)

Benevolutioneering is doable like a round trip to the moon or to Mars. It will happen if we do it instead of not doing it. It will happen if we make it happen while we still can.

Future Research

The most important conclusion I have reached in nearing the end of this dissertation's exploration is that moving closer to developing benevolutioneering requires much more exploration. This dissertation's most important findings are the trailheads of many of the research trajectories indispensable for further conceptualizing and developing benevolutioneering and subsumic philosophy. Some of those trajectories are already being explored but have been determined to be outside the scope of this dissertation in limiting this dissertation to reasonable breadth.

First, subsumic philosophy's construction is in an early stage. One of the next steps I anticipate in constructing subsumic philosophy is development of subsumic modal logic. Although that work is already underway, it transcends the scope of this dissertation. It is also important to develop a subsumic ethical system and a thorough bioethical consideration of benevolutioneering through a subsumic lens. The subsumic construct of free will needs further exploration.

As only mentioned briefly in this dissertation, in considering the possible implications for actual free will of Libet's (1999) observations of 550 ms delays between initial neurocorrelate events preceding awareness of decision-making and the conscious experience of deciding, I am open to considering the possibility of non-Newtonian mechanisms. I am far from convinced that full-fledged agency, actual nondeterministic, non-stochastic free will, is ruled out by Libet's

(1999) observations. In connection with possible quantum mechanical aspects of consciousness, maybe even in terms of the Orch-OR conjectures of Roger Penrose and Stuart Hameroff (Hameroff, 2014, 2021; Penrose & Hameroff, 2011), to the possibility of which I am also open, I suspect that Libet (1999) might have been observing neurocorrelates of retrocausality. When we consider the relatively slow rates of nerve conduction in terms of the time scales of both common and critical events in human environments, without robust mechanisms for minimizing latency, human existence might be a very different experience. Careful consideration of the biophysics and metaphysics of this idea is needed. I plan to soon further pursue this matter.

Another area critical for further conceptualizing benevolutioneering is neuroaxiology, the neuropsychology of human values. Although extremely important for development of subsumic axiology, neuroaxiology is beyond the scope of this dissertation. Nevertheless, exploration of this important topic is now underway as the focus of capstone research for my psychophysiology certificate program at Saybrook University.

This dissertation has discussed the constructs of competition and competitiveness. A possibly related cultural element, although beyond the scope of this dissertation, warrants exploration. I plan to explore, from several angles, the shaping influence of the cultural constructs of plot, conflict, and the hero's journey and related notions in story and mythology upon our broad life schemas, expectations, insistence on conflict, rivalry, competition, and personal competitiveness. Comparative cross-cultural study seems particularly interesting.

It will be necessary to re-conceptualize and carefully re-consider benevolutioneering from the vantage points of many worldviews; from Eastern and Western worldviews; from various cultures and subcultures; common philosophical traditions; theological and religious traditions; from nonreligious, anti-religious and variously religious people; from multiple

conservative and liberal points of view; from cognitively gifted, cognitively normal, and cognitively challenged perspectives; from the point of view of each of the developmental stages of Claire Graves' Spiral Dynamics model (Beck & Cowan, 1996; Graves, 2008), each of the stages of development as modeled by Wilber's (2007) Integral Theory; from the point of view of various personality iterations of the Five Factor Model of personality structure (Widiger & Crego, 2019) and the HEXACO model of personality structure (Ashton & Lee, 2008); from the point of view of the very wealthy, those in extreme poverty, and the middle class; from the point of view of both old and young; and from the point of view of people who are regarded as prosocial, antisocial, and asocial. I plan to seek representative contributors from each of those categories and many other categories. Without such a spectrum of perspectives each conceptualizing benevolutioneering, benevolutioneering could not be truly subsumic, and universal implementation would be much less plausible.

GLOSSARY

This section defines a few terms and introduces a few constructs necessary for this dissertation's exploration. Some of the terms are variously defined within the literature of the numerous disciplines associated with this exploration. In some cases, such varied definitions reflect significant ideological divisions among researchers and theorists. In other cases, varied definitions reflect little more than customary terminological variations between the multiple research communities exploring the interrelated topics connected with this dissertation's focus. Some terms are assigned certain narrowed definitions for this exploration. Some terms are assigned modified, refocused, or entirely new meanings for this exploration. Other terms defined in this section are original terms necessarily coined to facilitate the discussion of concepts introduced in this exploration.

Anacumer

I have coined for use within this dissertation the noun *anacumer* (ə-na'-kyə-mə) to manageably combine and convey five of the most important characteristics of human beings with technologically enhanced bodies and brains to be stronger, smarter, and healthier, transformed by anticipated 21st century and 22nd century technologies:

1. **A**ugmented: Ultra-enhancement of human bodies and brains in terms of augmentation by physiological alteration such as genetic and epigenetic engineering, strategic ablation, or precise manipulation of axonal connectivity between specific neurons. This could include upgraded and additional senses and additional or enhanced motor functions, memory and intelligence

2. **N**etworked: Unparalleled network connectivity of each human being with other human beings or nonhuman animals, hyper-networked computers, and artificially intelligent entities.

3. **A**geless: Life span extended (radical extension of healthy life span, essentially human agelessness, immortalized)

4. **C**yborg: Blending of the human brain and body with nano-scale supercomputer technology and with many other machine technologies (Davis, 2006; Geraci, 2010;

Kurzweil, 2005; Skordili, 2013). Such cyborgs could be thought of as human-robot hybrids.

5. **U**biquity of **M**aterial and **E**nergy **R**esources: see entry below, *umer*, for description.

Anacumer is an acronym for **A**ugmented, **N**etworked, **A**geless **C**yborg with **U**biquitous **M**aterial and **E**nergy **R**esources. Additionally, anacumer could almost be considered a bacronym because of its neologistic intentionality, in terms of its phonology, likely associations with similar sounding words, and meaningfully engineered plausible etymology. The term anacumer might bring to mind the word anachronism. An anachronism is "a person or a thing that is chronologically out of place; especially one from a former age that is incongruous in the present" (Merriam-Webster, n.d.-a). The ancient Greek word **ἀ**νάκυψον (anakupson) meant "to raise oneself up, …straighten oneself " (Arndt & Gingrich, 1979, p. 56). The image of raising oneself up or of straightening oneself out connects significantly to human beings who engineer important self-modifications. The ancient Greek word μέρος (meros), etymologically reflected in such words as conformer and isomer. μέρος (meros) meant "part, in contrast to the whole, … component part, …of parts of the body, …share [one's share or portion]…[to] have a share in [or of] something" (Arndt & Gingrich, 1979, pp. 505–506). In the biblical story of the prodigal son, the King James Version of the Bible (*King James Bible*, 1769/2017) translates μέρος as *portion*, meaning inheritance. "And the younger of them said to his father, Father, give me the portion [μέρος] of goods that falleth to me. And he divided unto them his living" (*King James Bible*, 1769/2017, Luke 15:12). Anacumers can reasonably be expected to meaningfully reflect both of these ideas. Importantly, being hyper-networked, anacumers will each be a very small part of a larger, emergent organism—even more so than is the case in 2021. Also, anacumers, the descendants of present-day humanity, will be the heirs of present day humanity's legacy. The

anacumer's five prominent characteristics and yet unimagined characteristics, will be the anacumer's inheritance, the anacumer's portion of our biotechnological legacy.

Within this dissertation, anacumer is used as a noun denoting a person who is an **A**ugmented, **N**etworked, **A**geless **C**yborg living with the experience of **U**biquity of **M**aterial and **E**nergy **R**esources. *Anacumeric* is an adjective to describe conditions, persons, or eras of **A**ugmented, **N**etworked, **A**geless **C**yborgs with **U**biquity of **M**aterial and **E**nergy **R**esources. Anacumericity describes the condition of the existence of **A**ugmented, **N**etworked, **A**geless **C**yborgs with **U**biquity of **M**aterial and **E**nergy **R**esources. *Anacumerity* is the state or quality of being anacumeric.

Benevolutioneering

The term benevolutioneering has been coined to represent the intentional evolution of benevolent neuropsychology, is herein conceptualized as intentionalized, profoundly benevolent autopoiesis of the human organism as a system and of systems of human prosociality. Such autopoiesis involves willful evolution, by technological means, of profoundly benevolent neuropsychology. The term benevolutioneering combines the words benevolence, evolution, and engineering. *Benevolence*, defined as "disposition to do good" (Merriam-Webster, n.d.-b) and as "the quality of being well meaning; kindness" (Lexico, n.d.), is from the Old French word *benivolence*, from the Latin word *benevolentia* (good feeling, good will, kindness) which combined *bene* (good or well) and *volantem* (to wish or will) (Harper, n.d.). In addition to conveying the idea of a good or the good, that etymology also significantly conveys the important aspect of volition. Beyond seeking to increase compliance with an external behavioral standard or any other constraint, benevolutioneering seeks to preserve, enhance, and increase personal volition, voluntariness, and freedom. Benevolutioneering would involve technologically

enhancing prosocial neuropsychology through interventions that would fundamentally increase freedom-based qualities of being well-meaning, kind, and loving. Inclusion of the word *evolution* is intended to indicate a paradigm shift away from long-term, ongoing mechanistic and stochastic development to a new reality of deliberate autopoiesis, intentional self-making. Engineering is included in conceptualizing and naming benevolutioneering because one of the best models for operationalizing benevolutioneering is the notion of reverse engineering.

Exanimation

Deprivation of life or of spirits.

Methuselarity

The transhumanist expectation that, after breakout artificial intelligence will rapidly advance age-extension research and technology. Named after Methuselah, the biblical character, who lived to age 969 (Genesis 5:27).

Mirror Neurons

Mirror neurons have been characterized as unique brain cells that do not activate only in response to specific actions performed by the person within whose brain those neurons are located. Rather, mirror neurons also activate in response to perceiving the actions of another individual (Keysers, 2011).

Morality

Within this dissertation, borrowing Ugazio et al.'s (2014) definition, the term morality is intended to convey "the expression of judgments classifying behaviors into good/right and bad/wrong ones" (p. 157). It is acknowledged that "prosocial behavior is not necessarily the same as 'moral behavior'" (Wiseman, 2016, p. 293), although the two importantly overlap. Nevertheless, morality is important to this dissertation's exploration. "Empathy contributes to

moral judgments by providing information about the emotional reactions of people affected by an action and by motivating a person to act in a certain way" (Ugazio et al., 2014, p. 171). In this way, empathy contributes to prosocial behavior rather than contributing to behavior that is intending to harm or that does, in fact, harm others.

Neurophenomenology

Neurophenomenology is an approach that combines neuroscience with phenomenology to study the mind (Thompson, 2015). Neurophenomenology was pioneered by Chilean Francisco Varela (Varela, 1996). Neurophenomenology is the term Varela (1996) used "to designate a quest to marry modern cognitive science and a *disciplined approach* to human experience, thus placing… [himself] in the lineage of the continental tradition of phenomenology" (p. 330). Varela (1999) referred to Neurophenomenology as "a general research direction…in which lived experience and its natural biological basis are linked by *mutual constraints* provided by their respective descriptions" (p. 112). Neuroscience has for many years worked to catalog and understand neurological events and processes. Phenomenology has worked to catalog and understand subjective experience. Although neurological events and subjective experiences are certainly related, determining the exact relationships between these two realms presents particular challenges. Building on the rich tradition of phenomenology, Varela (1996) established a research tradition that seeks to bring adequate precision to detecting, reporting, and cataloging first-person data regarding subjective experience, such that detected neurocorrelates of the same experience can be coherently associated. Varela studied and practiced Tibetan Buddhist philosophy and meditation (Thompson, 2015). According to Harrington (2012), Buddhism had a shaping influence on the history and structure of neurophenomenology. Buddhist meditation practice represents a long tradition of careful, deliberate, treatment of inner

processes. Some of the methods of Buddhist discipline appeared to Varela to offer the increased precision needed in treating first-person data so that it could be coherently associated with detected neurocorrelates (Thompson, 2015). Varela established within neurophenomenology protocols that carefully structured and attempted to standardize first-person reporting practices. Neurophenomenology's program includes thorough training of study participants in the method's first-person reporting technique. Known as the epoché, this technique has three phases: suspension of habitual thoughts about what is experienced, redirection toward lived qualities of the process of experiencing, and receptivity to experience new horizons (Lutz & Thompson, 2003). The aim, according to Lutz and Thompson (2003) was to "integrate the phenomenal structure of subjective experience into the real-time characterization of large-scale neural operations" (p. 42). Lutz and Thompson (2003) characterized neurophenomenology's ultimate objective as the production of "phenomenological accounts of real-time subjective experience that are sufficiently precise and complete to be expressed in formal and predictive dynamical terms, which in turn could be expressed as specific neurodynamical properties of brain activity" (p. 42).

Omnivalidity

Treating every honest perspective as valid is herein referred to as omnivalidity. The prefix omni means "all[,]…in all ways, places, etc.[,]…without limits" (Merriam-Webster, n.d.-d). Validity is the noun form of the adjective valid. Incorporating validity in the term omnivalidity conveys "well-grounded or justifiable[,]…being at once relevant and meaningful [as in] a *valid* theory[,]…logically correct [as in] a *valid* argument [or a] *valid* inference[,] …appropriate to the end in view" (Merriam-Webster, n.d.-l). Omnivalidity in this dissertation means regarding equally valid every actual perspectival construct or conceptualization and its

associated ontology. Although I have not found omnivalidity in a dictionary, the term is not herein original. This dissertation's use of omnivalidity is similar to Nietzsche's (1911) use: "Parmenides and Zeno inversely hold fast to the truth and omnivalidity of ideas and condemn the perceptible world as the opposite of the true and omnivalid ideas, as an objectivation of the illogical and contradictory" (p. 131). Nevertheless, this dissertation's use of omnivalidity, does not perpetuate the Eleatic school's condemnation of the perceptible world as invalid. Herein, omnivalidity encompasses the perceptible world as valid, particularly in the sense of "appropriate to the end in view" (Merriam-Webster, n.d.-l).

Paradoxy

A paradox is "an argument that apparently derives self-contradictory conclusions by valid deduction from acceptable premises" (Merriam-Webster, n.d.-e). A paradox transcends or contradicts common opinion (Cantini, 2012), and, although seemingly saying opposite things, can still be true (Merriam-Webster, n.d.-e). Subsumism is open to the possibility of certain of philosophy's intractable challenges, such as various intractable problems of consciousness, free will, creativity, some types of putative synchronicities, and aspects of various claims of transpersonal psychology being factual while unexplainable and as, essentially, paradoxical. I coin the term *paradoxy*, to describe an aspect of subsumism's approach to such apparently intractable considerations. Paradoxy views every 4D manifestation as a reductio ad absurdum of an ultratetradimensional reality. Consequently, recognizing a paradox does not signal a subsumic thinker to conclude or expect the existence of a faulty premise or of any erroneous deduction.

Prosociality

Prétôt and Brosnan (2015) defined prosocial behavior as behavior that benefits others at little or no cost to the actor. Neither Dovidio et al. (2006) nor Schroeder and Graziano (2015)

stipulated that prosocial behavior must involve little or no cost to the actor. More commonly, prosocial behavior refers generally to behavior that benefits another (Dovidio et al., 2006; Schroeder & Graziano, 2015). This dissertation, however, uses the terms prosocial and prosociality as general terms conveying the notion of benefitting others or having positive sentiments for others. Herein, prosocial behavior relates to or denotes behavior that is positive, helpful, and intended to promote social acceptance and friendship. It is important to recognize that a variety of definitions and degrees of specificity for prosociality are encountered in the literature. Among those definitions is the idea of just being nice, benefiting another even if accidentally, and various conflicting privately stipulated criteria. One such private criterion is the stipulation seen in Prétôt and Brosnan (2015) that prosocial behavior must cost the actor little or nothing. To describe prosociality more fundamentally, the "prefix *pro* indicates…being for rather than against sociality. Sociality involves the interface of humans being with one another. Considered from each involved human being's perspective, sociality involves the interface of oneself and one or more other human beings" (Kurtz, 2017a, p. 29).

The Singularity

The transhumanist expectation that when exponentially increasing computing power, as described by Moore's Law (Kaku, 2011b; Kurzweil, 2000, 2005, 2011; Ptolemy, 2011), trends upward to where its function reaches near verticality, a point will be reached at which breakout artificial intelligence will overwhelmingly dwarf human intelligence. Since Kurzweil (2005) called that transition point the technological singularity, it has come to be shortened and referred to, in some transhumanist circles, as the singularity. Many of today's transhumanists expect recursively increasing computing power to dramatically increase the rate of progress of such

human enhancement technologies as life-extension, genetic reprogramming, augmented physical and mental capabilities, and human-robot hybridization.

Subsumism

To subsume is to "include or place within something larger or more comprehensive" (Merriam-Webster, n.d.-i). Subsumic is the adjectival construal of the word subsume. Subsumism is the broad ontological, epistemological, and axiological schema developed within this dissertation. Subsumic philosophy is herein developed as a necessary foundation for benevolutioneering. Without subsumic philosophy underlying benevolutioneering, benevolutioneering would be difficult to conceptualize logically and likely just as ethically unjustifiable as most species-wide moral bioengineering models and endeavors would likely be. Subsumic philosophy, benevolutioneering's philosophical foundation, treats all honest ontological perspectives as valid although partial.

Transhumanism

David Vintiner is a photojournalist who "set out to meet the innovators, artists, and dreamers within the transhumanism movement…pushing the boundaries of their biology to become something more than human" (Sanchez, 2020, para. 2). Vintiner defined transhumanism as the belief that "human beings are destined to transcend their mortal flesh through technology, [that]…our biology constrains our experience of reality and that we don't have to accept what nature has given us" (Sanchez, 2020, para. 5). According to Vintiner, "from bionic limbs and eyes to designing new senses and extending life expectancy, these individuals are redefining what it means to be human" (Sanchez, 2020, para. 5).

Ultratetradimensional

Pertaining to dimensionality beyond Euclidean space, extending into Hilbert space beyond the four axes of the space-time. Within this dissertation, ultratetradimensional is abbreviated as >4-d.

Umer

Umer is an acronym coined to convey, within this dissertation, the idea of **U**biquity of **M**aterial and **E**nergy **R**esources. Such ubiquity refers to individuals in the future anticipated to be ultra-resourced in real time, in terms of energy and material resources. This involves resource ultra-ubiquity through ubiquity of multiple forms of free usable energy. This ubiquity also involves free instantaneous universal availability of matter and of arrangements of matter into most imaginable material objects (Kaku, 2011a, 2011b). This is conceptually similar to the so-called replicator technology portrayed in the television series *Star Trek: The Next Generation* (Roddenberry et al., 1987–1994). This replicator-like technology might involve robotic swarm technology (Hamann, 2018) at the nano-scale or even the pico-scale (Gershenfeld et al., 2017).

As this terminology section has begun to demonstrate, consideration of prosocial neuroenhancement requires awareness of the terminology with which relevant constructs have been and are being discussed. Those constructs and related terminology are not straightforward and uncontested. Consideration of the many dimensions of those constructs hints at the theoretical difficulties associated with even conceptualizing the processes associated with intentionally influencing the evolution of prosociality. Developing theoretical constructs necessary to advance—or even prudently avoid—aspects of prosocial neuroenhancement will require further developing increasingly precise taxonomies and associated terminologies.

Within this dissertation, umer is used as a noun to describe a person living with the experience of **U**biquity of **M**aterial and **E**nergy **R**esources. *Umeric* is used as an adjective to describe conditions, persons, or eras of **U**biquity of **M**aterial and **E**nergy **R**esources. Umericity describes the condition of **U**biquity of **M**aterial and **E**nergy **R**esources. *Umerity* is the state or quality of being umeric.

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