The Future Evolution of Consciousness

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Consciousness and the Physical World

Consciousness is at the center of human reality. Consciousness is the medium in which everything that is meaningful to humans is manifested and understood. Although humans possess physical bodies, and live within a physical world, and utilize a host of physical technologies in the management of their lives, human contact with the physical world comes through consciousness. At the core, humans are conscious beings with conscious selves that think, feel, desire, remember, and imagine within their conscious minds. Hence, if we are to thoughtfully consider the future of humans, the central question we should ask is how human consciousness will transform in the future, a topic of inquiry that I approach using the expression "the future evolution of consciousness."

A plausible and realistic vision of the future evolution of consciousness should be grounded in a philosophically and scientifically sound theory of the nature of consciousness, as well as sound theory of the relationship of consciousness and the physical universe. How can we meaningfully and plausibly consider the future of consciousness, without some level of understanding of its nature? Further, consciousness appears intimately tied to the physical world, since consciousness is our interface with the physical world and our conscious minds appear embodied and dependent on our complex bio-physical make-up, notably our nervous system and brain (Lombardo, 2011b).

Understanding consciousness and its relationship with the physical universe is, however, one of the central challenges, if not great conundrums, within science and philosophy. There are numerous competing theories regarding the nature, dynamics, and structure of consciousness, and in particular, how activities within the brain and within consciousness are connected (Blackmore, 2004, 2006; Damasio, 2010; Koch, 2012; Nagel, 2012; Tononi, 2012; Chalmers and Hameroff, 2014).

Acknowledging these challenges, I believe certain scientifically valid and philosophically sound statements, as pieces of a solution to the overall puzzle, can be made regarding consciousness and its relationship with the physical universe.

To begin, human consciousness is a rich and complex phenomenon. Within consciousness, we experience an ongoing stream of varied thoughts, emotions, desires, feelings of our body and its movements, memories of the past, creations of imagination, multi-sensory perceptions of a physical world, intentions and acts of will, and an overall and ongoing sense of personal identity and self (Baars, 1997). It should be highlighted, though, that this rich and diverse tapestry of consciousness possesses an integrative quality—all the elements coming together (relatively speaking) as a whole

with an ongoing sense of one person, or self, experiencing this whole. Consciousness is a highly differentiated unity (Edelman, 2006; Koch, 2012; Tononi, 2012).

Yet consciousness is also dynamic, flowing with new thoughts, perceptions, emotions, and images that appear and replace old ones from moment to moment; there is perpetual "becoming and passing away." Still, through this ongoing temporal transformation, the sense of continuity and integration (to a degree) is maintained; we experience connections and relationships among our feelings, thoughts, and perceptions, and have a sense of personal continuation (Lombardo, 2011b).

In short, there is both unity and diversity and relative stability and change within human consciousness. I will refer to this rich, dynamic, and integrative reality of human experience as "holistic consciousness." Consciousness is a dynamic and integrated whole with many distinctive and fluid components.

Continuity and change also exist within the physical universe. The physical universe shows an overall evolutionary pattern and history. A hierarchy of levels of increasing order and complexity have emerged over time, successive levels of increasing order and complexity building upon simpler previous levels. Thus across time, starting at the beginning, diffuse energy flow, quarks and electrons, atoms of increasing complexity, stars and galaxies, chemical molecules and planetary systems, self-replicating molecules, nucleated cells, bio-ecological systems, and technologies and societies have successively come into being (Morowitz, 2002).

Moreover, each new level of increasing order appears to introduce more efficacious and complex mechanisms of evolution and change, thus generating an "evolution of evolution," and accelerating the rate of evolution (Gell-Mann, 1994; Anderson, 1996; Kurzweil, 1999, 2005; Chaisson, 2005).

Finally, creativity and the repeated manifestation of novelty permeate the ongoing evolutionary process, and are especially apparent at the emergence of new levels of complexity. Ongoing creation and self-transcendence are a significant dimension of evolution (Fraser, 1978; Davies, 1988; Kauffman, 2008; Lombardo, 2011e).

Consciousness is embedded and has evolved within this evolutionary physical universe. There are, however, two different views on the evolution of consciousness set within the context of the evolution of the physical universe: 1) Consciousness was present within the physical universe from its beginning, even if in an ill-defined form; versus: 2) Primordial consciousness only emerged within physical systems once physical systems realized some necessary level of complexity (for example, the formation of a primitive nervous system in animals) (Lombardo, 2011b) and then began to further increase in complexity.

Yet, whatever its point of origin, both views see consciousness, in conjunction with physical and ongoing biological evolution, as evolving in complexity and integration over

time. Living in an evolutionary universe it stands to reason that the long term history of consciousness reflects an overall evolutionary trajectory.

Evolution, as a general theory of the dynamics of the cosmos, has been applied not only to consciousness, but to a variety of associated dimensions of human reality, such as culture, society, and technology. These complex systems of order, imbued with intelligence, are frequently seen as the highest or most evolved systems within the known cosmos; they are evolutions of evolution at the top of the hierarchy of existence (Kelly, 2010; Phipps, 2012). Human existence, encompassing consciousness, is a multi-level evolutionary phenomenon, existing at the cutting edge of evolution.

Hence, contrary to many futurist visions, which conceptualize our conscious minds as being fundamentally the same in the future, yet set within transformed technological realities, we should realistically expect that human consciousness will significantly transform in the future. Human nature is not a static but rather a transformative reality, set within the context of a transformative universe (Lombardo, 2009).

Furthermore, we should anticipate that the future evolution of consciousness will be holistic, involving cognitive, emotional, motivational, behavioral, and personal dimensions; again, contrary to another common futurist vision, we will not simply be smarter in the future (faster thinking, bigger memories), but our feelings, desires, and values will also evolve. As noted above, human consciousness is a rich and complex dynamic reality.

Reciprocity is a key principle regarding the relationship and ongoing evolution of consciousness and the physical universe. At the most general level, consciousness and the physical universe form a reciprocity: Consciousness is always embodied within a physical system, and the physical universe is experienced and meaningfully understood through consciousness. There is no evidence for disembodied conscious minds. Reciprocally, our most immediate or direct contact with the physical universe is through conscious perception (vision, hearing, and touch, for example), but even our more abstract and penetrating grasp of the physical universe, through science and philosophy, is contextualized and grasped within the categories and constructs of the conscious human mind.

Moreover, if the evolution of the physical universe has facilitated and supported the evolution of consciousness, the evolution of consciousness facilitates the evolution of the physical universe. We are transforming the world around us through social evolution and technological creations, which are manifestations of our purposeful and intelligent consciousness. It is, in fact, a noteworthy reciprocal loop of interdependency that our conscious minds intentionally transform our physical reality (including medical and biological interventions), and in so doing, instigate psychological changes within consciousness, thus further empowering us to orchestrate additional changes in ourselves and the world (Lombardo, 1987, 2009a, 2011b).

Past and Future Consciousness and Purposeful Evolution

Not only is evolution a process occurring across successive generations of conscious minds, individualized consciousness can be understood as an evolutionary process, with some level of holistic transformation and increasing complexity occurring across the life span of the individual. As noted earlier, there is a dynamic and transformative quality to human consciousness, and this ongoing dynamic quality exhibits an evolutionary pattern and directionality throughout the length of an individual life. The life span of each conscious mind is an experiment in evolution (Edelman, 2006).

The evolutionary dimension of individualized consciousness becomes more pronounced as the underlying physical system across evolutionary stages becomes more complex and flexible. Human consciousness, though clearly exhibiting dimensions of stability, preservation, and survival, shows notable developmental changes throughout the individual life span. Individualized human consciousness is an evolutionary flow with a notable directionality and increasing complexity and maturity across time (Lombardo, 2013a, 2013b). Humans, through learning, self-assessment, planning, and goal setting, purposefully evolve their conscious minds throughout their lives.

The evolutionary flow of individualized consciousness is greatly facilitated through the evolution of past and future consciousness. That is, as consciousness has evolved across animal and human history, awareness of time has expanded and articulated, inclusive of the capacity to remember and learn from past experience and the capacity to act with knowledge, anticipation, desire, and purpose toward future goals (Shlain, 2003). Consciousness of the past, through learning and memory, brings increasing meaning and understanding to the present and informs and empowers consciousness of the future, while consciousness of the future, through anticipation, imagination, planning, and goal direction, not only brings further understanding to the experience of the present, but influences the unfolding of the future. It is this process of understanding, integrating, and guiding the ongoing present flow of consciousness through learning and anticipation that generates increasing complexity and evolution in the individualized life span of consciousness (Lombardo, 2006a, 2007, 2013a).

The integrated capacities of past and future consciousness have become especially pronounced in the human mind, and represent an evolution of evolution—a generalized capacity to speed up and bring evolution under intelligent and purposeful guidance and control. This “evolution of evolution” applies to the flow of individualized consciousness (described above), transformations across generations in human nature and consciousness, and the historical development of the world at large, social, technological, and ecological. If evolution at the biological level involves random trial and error and natural selection, evolution facilitated at the conscious level (through learning and purpose) enriches and empowers the biological evolutionary process. The flow of events into the future—the ongoing evolution of both consciousness and the surrounding physical world—becomes a consequence of acquired knowledge, envisioned future states, purpose, goal setting, and planning. Bringing the flow of evolution under conscious control, with a sense of both past and future, is a significant jump forward in the mechanisms of evolution.

To whatever degree humans acquire increasing knowledge of themselves and the physical world, including an understanding of the evolutionary process itself, and to whatever degree such knowledge is thoughtfully utilized in realizing human goals and purposes, humans engage in the purposeful evolution of themselves and the world. In a sense, this evolution of evolution is "evolution becoming conscious of itself."

At the center stage of this evolution of evolution is future consciousness, informed by a vast and ever-growing repository of knowledge and culture acquired through learning and memory. Our conscious minds—indeed, the central function of our higher brain processes—revolves around the capacities of future consciousness, including anticipation, goal setting, purpose, and planning. This future directionality of our consciousness, from an evolutionary point of view, makes perfect sense, since it is much more efficacious to anticipate, think out, and guide the future than it is to react to it as it unfolds and manifests in the present (Hawkins, 2004; Kurzweil, 2012; Seligman, et.al, 2013).

Future consciousness, though, is a psychologically holistic capacity involving cognition, emotion, motivation, and personification, drawing into its operations all the fundamental dimensions of holistic consciousness. Future consciousness is the total integrative set of psychological processes and capacities utilized in creating meaning, value, and direction with respect to the future (Lombardo, 2013a).

Future consciousness guides the ongoing development of individualized consciousness —humans attempt to guide and direct their psychological development and life paths through future consciousness. Across generations, through future consciousness we attempt to direct our collective development and transformation. For example, through learned anticipations, we attempt to nurture and guide the development of our children.

The expansion of past and future consciousness within the human mind is one dimension of the overall evolutionary trajectory within living forms toward expansiveness of consciousness in both space and time. Integrating greater vistas along both temporal dimensions of awareness moves the conscious mind progressively away from egocentrism and the immediate here and now, which are qualities of the more primitive mind (Lombardo, 2006a). This ongoing evolutionary process (which is mirrored or recapitulated in the psychological development of individual minds from birth to maturity) facilitates the development of ecological, global, historical, and cosmic consciousness. This expansiveness of awareness and understanding is a fundamental dimension of wisdom (Lombardo, 2011a, 2011c, 2011d).

The Self and Society

A key feature of the conscious human mind has been the ongoing development of an integrative coordinator and center of experience, the purposeful human self. The conscious human self is self-reflective and self-evaluative, and articulates and coordinates, to various degrees of success, purposeful human action and thinking. The

self assesses and judges its thoughts, emotions, motives, and actions, and learns from experience. Moreover, the self assesses and guides its own purposeful self-evolution. The self engages in self-narrative and self-talk, providing an ongoing story to itself for interpreting experience and guiding its future development. The self is the narrator, audience, and main character in the ongoing self-reflective story it tells itself about itself. The self lives and navigates within the dynamic flow of its self-generated narrative. The human self is purposefully evolving, pulling itself up by "its own bootstraps." Individual autonomy and self-responsibility have evolved through human history, as the self has acquired greater clarity, self-awareness, and self-control (Jaynes, 1976; Baars, 1997; Damasio, 1999, 2010; Baumeister and Tierney, 2011; Lombardo, 2013a).

The purposeful nature of the self notwithstanding, "no man is an island." Individualized conscious minds and society form a reciprocity in mutually instigated evolution. On one hand, the ongoing evolution of an individualized conscious mind requires social interaction and shaping. Each of us is educated by others; each of us attempts to model our own identities based on significant others; each of us presents ourselves within the social arena for evaluation and feedback.

But, reciprocally, individualized conscious minds facilitate social-cultural evolution. We present ourselves and voice our values and beliefs in the social arena, in a manner analogous to genetic variations populating an ecosystem. Distinctive selves become competitive "memes" within the social arena. The social arena evaluates these varied voices and incorporates the input of those individuals that hold the most perceived value and promise for the group.

In both cases, the evolutionary process, to a significant degree, is purposeful and under the guidance of future consciousness, the intent of which is to improve the intellectual, personal, and ethical capacities of individuals and groups. We purposefully self-evolve through social interaction and mutual evaluation.

A popular argument is that the individualized self is an impediment to the further evolution of consciousness and human society. The conscious self needs to be transcended (Anderson, 1997, 2003). Yet, contrary to this point of view, our present sense of self seems ill-formed, fragmented, and only marginally efficacious when it comes to self-control of our actions (Baumeister and Tierney, 2011). As captains of our ships, we are far from a position of clarity, unity, and complete self-empowerment. A key dimension of the future evolution of consciousness and human society—for the capacities of the whole reflect the capacities of the parts—will be the purposeful development of more integrated, focused, and capable conscious selves. We don't need to transcend our egos, we need to further strengthen them.

The Theory of the Singularity

There have been significant evolutionary jumps in complexity within the physical cosmos. Each is an evolution of evolution. These creative leaps can also be described as "singularities," where the subsequent evolutionary level is incomprehensible and

transcendent relative to the previous level (Fraser, 1978; Morowitz, 2002; Kauffman, 2008; Chaisson, 2009, 2012).

Given this repeatedly transcending nature to the cosmos, it is highly probable that humanity and humanity's descendants, embedded within this evolutionary process, will pass through one or more subsequent "singularities" in the future. The self-conscious human mind and the human species will be transcended through our own actions of purposeful evolution. We are a journey rather than a destination—a chapter in the evolutionary saga rather than a culmination. Just as probable, there will also be a diversification of species and types of conscious minds. It is also very likely that new psychological capacities, incomprehensible to us, will emerge as well.

The creation of intelligent, conscious machines has been a common theme within science fiction (Gerrold, 1972; Clute, 1995; Egan, 1997; Sawyer, 2005, 2009). The current suggestion that within a few decades we will create computers beyond the memory and processing capacities of the human brain, and that through "downloading" human minds, or engineering functional artificial intelligence at a human level, we will be able to create non-biological conscious minds, are expressions of this longstanding vision (Kurzweil, 1999, 2005, 2012). There seems to be no convincing reason why such an achievement could not be realized (Lombardo, 2012). We can view such future minds as our evolutionary children, transcendent to our more limited spheres of consciousness and intelligence (Moravec, 1999).

But, two basic concerns regarding this futurist vision need to be addressed. First, it seems that creating an intelligent, conscious mind entails possessing a sound theory of consciousness and how consciousness fits into the physical world. On this first concern, at present there are numerous competing theories, and all these theories, philosophical and scientific, seem to various degrees inadequate or incomplete. Though an effort to address features of the puzzle of consciousness has been presented in this essay, the general mystery of consciousness remains. Second, theories of artificial intelligence or machine consciousness tend to excessively highlight the cognitive dimensions of the mind, to the exclusion of emotion, motivation, value, character, and personal identity. A viable and comprehensive theory of a conscious mind (to be instantiated within a machine) needs to be holistic, encompassing the rich and complex nature (at the very least) of human minds (Lombardo, 2012).

The Preferable Future Evolution of Consciousness

Since human evolution will increasingly be a product of purposeful evolution, guided by our highly evolved capacities of future consciousness, a key issue for our future will be the ongoing articulation of preferable directions for our evolution. After all, we are going to guide our future evolution through our values and accumulated knowledge, both of which will continue to evolve. We will continue addressing the question of what constitutes a better, more highly evolved conscious mind. As in the past, we will keep working on the question, and debating, revising, and improving upon our answers. What is preferable regarding the future of consciousness?

As our understanding of consciousness needs to be psychologically holistic, our visions of preferable directions for our psychological evolution need to be holistic as well. As an ideal, it is not enough to just envision smarter humans. There are numerous holistic theories that describe higher levels of psychological functioning, states of mind and consciousness, and mental well-being. These theories, to various degrees, address the cognitive, emotional, ethical, social, perceptual, personal, experiential, and spiritual dimensions of the human mind. Throughout human history we have attempted to voice such theories and ideals; to practice, test, and implement them; and through education on these theories to influence the ongoing development of the human mind and human society. This is part of our ongoing and purposeful collective psychological evolution (Hampden-Turner, 1982; Csikszentmihalyi, 1993; Hergenhahn and Olson, 2003; Snyder and Lopez, 2005.)

General standards for defining the preferable direction of human evolution should be consistent with our understanding of basic human psychology, consciousness, the human condition, and the overall nature of reality. In so far as both human psychology and physical reality are dynamic and evolutionary processes, our basic theory of "what is good" or "what is best" regarding our preferable evolution should be dynamic and evolutionary as well. We are self-evolving and dynamic beings existing in a self-evolving universe, and hence, our ideals need to be framed in a dynamic and evolutionary way. A static vision of the ideal human is unrealistic and ultimately counterproductive.

What I call "flourishing in the flow of evolution" provides a realistic and psychologically well-grounded conception of our ideal ongoing evolution. To flourish constitutes what is best or good within human reality, and we should use this standard of excellence as our guiding light for our future. Flourishing is a complex and holistic psychological process, involving cognitive, emotional, motivational, personal, and social dimensions, but as a general point, to flourish is to grow, with vitality and exuberance (Seligman, 2011; Lombardo, 2013a). Flourishing can be conceptualized as the ideal state of evolution within the ongoing flow of consciousness within the human mind.

It is the essence of our nature that we self-consciously, with purpose and knowledge, guide and maximize the evolutionary process. Hence, not only should we aspire toward flourishing in the flow of evolution, we should aspire toward progressively increasing our capacities to enhance this psychological process. We should flourish, and we should learn how to flourish better. Through an increasing understanding of the psychology of flourishing and through self-reflection and the use of this knowledge, we can enhance our capacities to purposefully realize greater states of flourishing.

Psychological evidence indicates that when humans are flourishing, they experience deep and long-standing happiness, and when humans feel in control of their lives and psychological states (as architects of their own well-being) they feel greater happiness and are most efficacious in generating further positive psychological states. Generating states of flourishing and guiding the future realization and enhancement of such states is the good life and the pathway to happiness (Keyes, 2002; Keyes and Haidt, 2003;

Haidt, 2006; Rubin, 2009; Seligman, 2011). Authentic happiness is the purposefully realized experience of flourishing.

The heightening of future consciousness is pivotal to our capacity to facilitate evolution. Moreover, the heightening of future consciousness is integral to flourishing, as well as the capacity to flourish at higher levels in the future. Future consciousness is the psychologically holistic guidance system of the human mind that purposefully directs its future evolution. Identifying increasing states of flourishing as the ideal direction for our ongoing conscious evolution, future consciousness is the central capacity to realize this direction.

Virtue, Wisdom, and Technology

Understanding character virtues is key to understanding how to flourish, and how to flourish better. Character virtues are holistic personal traits (involving cognitive, emotional, and motivational features) that capture standards of excellence in psychological and ethical functioning. The purposeful development of character virtues constitutes a holistic approach for directing our preferable future psychological evolution; character virtues provide standards for our preferable psychological future.

So, how do character virtues connect with flourishing and with future consciousness? They are fundamental to both. Key character virtues include self-responsibility, the love of learning and thinking, hope and optimism, the pursuit of growth, self-discipline, love, courage, and the adventurous and creative spirit (Lombardo and Richter, 2004; Lombardo, 2013a). This set of character virtues not only facilitates the ongoing development and expression of future consciousness but also captures the essence of the capacity to flourish in life. Connecting the two, a holistic set of character virtues provides the basis for describing enhanced future consciousness.

Wisdom is the central character virtue, synthesizing the character virtues mentioned above; it is the ideal functioning of heightened future consciousness. Wisdom is the key capacity behind flourishing (and helping others to flourish) in the flow of evolution. Though wisdom is often associated with “lessons of life from the past,” wisdom can be given a future focus, defined as the knowledge, desire, and capacity to create maximal well being in the future, both for oneself and others. The pursuit, exercise, and ongoing development of wisdom should be the guiding light of our own future personal lives and the future psycho-social evolution of consciousness and humanity (Lombardo, 2006a, 2009b, 2010, 2011a).

Though wisdom is an ideal mode of consciousness, future human evolution will almost certainly involve technological and biological augmentations; we are embodied conscious minds. The preferable future evolutionary direction for technologically augmented humans (cyborgs) should be the development of “wise cyborgs,” who utilize technologies for the expression and exercise of wisdom along the parameters outlined below (Lombardo and Blackwood, 2011; Lombardo, 2013b):

- Assuming we engage in the biological engineering of our species, the overarching goal should be to orchestrate biological changes that support wiser humans or post-humans.
- Brain research and potential modifications in our neurological structures and activities should have as its central goal the creation of brains that better support the capacity for wisdom.
- In technological networking and the technological facilitation of collective mentality, we should aspire toward creating systems that support wiser social networks and collective intelligence.
- If our conscious experience becomes increasingly populated with supportive "mental agents" that enrich and empower our consciousness (Negroponte, 1995; Stross, 2005), the overall result should be toward a wiser "inner collective." Voices and images in the conscious mind need to be coordinated toward the amplification of wisdom.
- If we dive into virtual reality, we should be pursuing wisdom. What types of virtual realities best support the growth of wisdom?
- If we recreate ourselves in a nanotechnological fashion—if we totally abandon our biological substrate for a robotic form—wisdom should be the anchor for our new idealized technological selves.
- Assuming we move into outer space, exploring and colonizing other planets and building technological habitations in space, we can imagine the growth of "cosmic," as opposed to our present excessively "terrestrial" consciousness. We should aspire toward cosmic wisdom in our diaspora into the stars.

As some illustrative resources, both non-fiction and science fiction, that address one or more types of technological augmentation and/or transcendence of the conscious human mind, see Stapledon, 1931/1937; Simmons, 1989, 1990, 1997; Bear, 1990; Egan, 1997; Kurzweil, 1999, 2005; Garreau, 2005; and Stross, 2005.

Education and Self-Evolution

A key arena where our future psychological evolution will be realized is within education. Formal education serves a variety of functions, including enculturation and vocational and personal development. Wisdom and the development of character virtues are not given significant emphasis within our present educational systems. Yet, the purposeful development of wisdom and character virtues would, more than any other factor, serve the betterment of human life, both individually and collectively (Lombardo, 2006c, 2008, 2011c).

Sadly, our present educational system has come under the influence of administrators who reject evolution as a general model of natural and human reality in favor of static and creationist philosophies. Within such a climate, the teaching of our central role within the evolutionary process has likewise been compromised, as has the development in our young of the capacities for self-evolution and an understanding of the evolution of the species, human society, and nature. On the bright side, such obstruction is a losing battle. Human nature and cosmic reality are evolutionary, and just

as we have influenced this evolutionary process on both levels, intentionally and unintentionally, throughout human history, so we will continue to do so. It is better, in fact wiser, to understand our role in the universe and intelligently and ethically guide the process, rather than reject or ignore it. Education should centrally serve this end (Stewart, 2000).

Science Fiction and Holistic Future Consciousness

Yet, not to sound too closed-minded in this vision of the evolution of human consciousness, let me introduce the special role that science fiction can play in considering the future of humanity and consciousness. Science fiction can be seen as a literary genre for cultivating diverse and imaginative approaches to reality and, in particular, the future of humanity. Science fiction authors create numerous narrative scenarios regarding the future of humanity, technology, society, and the universe at large. This pluralism of points of view stimulates an expansive and flexible state of consciousness.

Moreover, science fiction is psychologically holistic, engaging all the psychological dimensions of the human mind, including thinking, imagination, emotion, ethics, and in the case of science fiction art and cinema, our perceptual senses. Thinking out, feeling with our emotions, visualizing, and evaluating the unending possibilities of the future is a big part of the territory and purpose of science fiction. Moreover, through its network of fans and communities, science fiction taps into the social dimension of human experience as well. Science fiction facilitates holistic future consciousness.

Science fiction can be described as “the mythology of the future”—a narrative mode of understanding the possibilities of the future, as well as a narrative mode for thinking out and guiding the future. Though the term “myth” is often associated with the past and what is make-believe or not true, science fiction shares many commonalities with myth. I would suggest that science fiction is myth informed by contemporary scientific, technological, and philosophical thinking, rather than by ancient philosophies and ontologies. Instead of assuming that myth has no truth value or realistic relevancy to the human condition, we can see myth, following Campbell (1988), as expressive of fundamental archetypes of human consciousness, as well as, quoting Stapledon (1931/1937), expressing “...richly, and often perhaps tragically, the highest aspirations possible within a culture.”

Since humans are psychologically moved and motivated by narrative and myth, science fiction provides an appropriate and powerful medium for creative, goal directed, emotionally compelling, and multi-sensory future consciousness. In fact, science fiction as a subculture and community of fans, artists, editors, and writers, has throughout the last century been energetically creating this forward-looking reality and holistic mode of consciousness (Lombardo, 2006b).

Furthermore, while science fiction may not be strongly associated with the study or exemplification of wisdom, by placing human characters (or even alien or technological

minds) within diverse, challenging, and dramatically engaging futurist scenarios, the conditions for realizing wisdom within such settings and plots, are clearly present. If we agree that wisdom is intelligent and ethical guidance for how we approach the future, then we can see how the development or execution of this capacity can be an essential theme in science fiction stories. (See Orson Scott Card's *Speaker for the Dead* (1986) and Octavia Butler's *Parable of the Talents* (1998) as two excellent examples.) Moreover, if wisdom is future directional and at its highest level realizes understanding and competence for furthering the growth and evolution of conscious minds, then science fiction scenarios are an ideal testing ground for thinking out and anticipating how we may need to evolve in the future.

Another important connection between wisdom and science fiction is that the former involves an expansive level of consciousness, both in space and time, and the latter, since it explores the vast reaches of space, time, and the possibilities of existence, provides a similarly expansive cosmic arena in which to situate its narratives and existential challenges. Wisdom entails big picture awareness and thinking; its evolutionary trajectory is toward "cosmic consciousness," seeing ourselves within the context of the universe (Lombardo, 2009a, 2011a). Science fiction, through stories of space travel, time travel (into the past and the future), the exploration of diverse worlds, and the future of the earth, life, humanity, and the universe as a whole, provides an expansive canvas for thought experiments in cosmic consciousness. Characters are placed within such cosmic settings, encountering challenges, and at least at times realizing moments of deep enlightenment and greater understanding of their place within the universe. Some good examples of science fiction literature that place its characters in "cosmic" settings, as broadly defined above, include Stapledon (1931/1937), Clarke (1953, 1968), Silverberg (1971), Robinson (1991, 1994, 1996, 2012), Baxter (1995, 1997, 2000, 2001, 2002, 2003), Egan (1997), and Wilson (2005).

Science fiction has repeatedly addressed the general theme of future human evolution. These visions include psychological transformations as well as biological and technological ones. At times these evolutionary transformations are seen to be a consequence of natural processes, such as natural selection; other times, our future evolution is envisioned as a consequence of purposeful manipulations, implemented by us or by advanced alien intelligences intervening in our ongoing evolution. These futurist visions of "post-humans" embody the weaving together of biological, psychological, social, and ecological changes in conjunction with technological augmentations (Wells, 1895-1934; Stapledon, 1931/1937, 1935/1944; Clarke, 1953, 1968; Sturgeon, 1953; Anderson, 1954; Silverberg, 1971; Pohl, 1976; Bear, 1990, 1999, 2003; Egan, 1997; Brin, 2012).

It is, though, an ongoing challenge within science fiction, as well as within futures studies, to realistically envision advanced conscious minds (above and beyond simple amplifications in memory and intelligence). We should be aspiring toward holistic psychological evolution and greater depths of wisdom, but how do we realistically and competently envision such conscious minds of the future? Often, depictions of future minds reflect contemporary human psychology (motivation, behavior, and thinking

patterns) placed in high tech settings. Paraphrasing Mihalyi Csikszentmihalyi, it seems far easier for us to imagine improved technologies than to imagine wiser or better human minds.

Still, science fiction is a powerful example of holistic and purposeful future consciousness. Not only does it create and explore multiple futurist narrative scenarios that resonate with all the major dimensions of the conscious human mind, it also engenders debate and discussion within the science fiction community over the plausibility, value, and creativity of these different narratives (Clute, 1995; Clute and Nicholls, 1995; Roberts, 2005). If we are conscious beings of purposeful self-evolution, then science fiction is an important medium through which to "think and feel out" the possibilities and preferable directions of the future evolution of consciousness, humanity, and beyond.

Summary and Conclusion

Human consciousness is an evolutionary phenomenon embedded within and reciprocal with an evolutionary physical universe. Our capacity for future consciousness—in its holistic psychological richness involving thought, memory, imagination, emotion, motivation, and personification—is an evolution of evolution, bringing the evolutionary process under intelligent, ethical, and purposeful guidance and control. Through future consciousness, we are purposefully guiding our own self-evolution, including the evolution of consciousness.

Defining the psychological ideal and preferable direction for our purposeful self-evolution, "flourishing in the flow of evolution" is a realistic and dynamic model for identifying psychological well being. Wisdom (inclusive of various character virtues) facilitates flourishing and the evolution of evolution, and is the highest expression of future consciousness. Wisdom should serve as the guiding light for both our individual future development and our collective evolution, especially as we consider technological augmentations regarding the future of the conscious mind. Education, conceived as a vehicle for facilitating purposeful evolution and ethical character development, should serve the ongoing development of wisdom.

Science fiction provides an arena of imagination and thinking on the possibilities of the future, including the future of consciousness. Science fiction reflects flexible, diverse, and holistic future consciousness expressed in a narrative and mythic form. Science fiction provides a particularly appropriate medium for exploring the ideal of wisdom. A key challenge to science fiction, though, is to envision what future conscious minds will be like, especially minds that can realize higher levels of self-evolution, wisdom, and flourishing within the ongoing flow of evolution within the universe. Still, science fiction offers a prime example of purposeful future consciousness, the key psychological capacity that is driving the future evolution of consciousness.

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