

Multidisciplinary and Interdisciplinary Approaches to Futures Education

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Introduction

The rich tapestry, breadth, and intricate interconnections between the topic of the future and the myriad dimensions of human reality afford the opportunity to teach the future and enhance future consciousness through multiple academic disciplines. In this paper I describe a variety of interdisciplinary and multi-disciplinary approaches to futures education. I draw upon both the distinctive methods and content areas of these various disciplines. I present these approaches to futures education in a narrative form, explaining and chronicling how each of them has emerged in my teaching over the years. The educational approaches are not incompatible and can be used in combination with each other in a variety of educational venues.

Futures Education as Integrative Studies

Futures education can be taught as a course in integrative studies, or reciprocally, integrative studies can be taught within the context of the future. This approach to futures education is both multi-disciplinary and interdisciplinary.

In 1992 I was given responsibility for selecting an appropriate topic for the capstone course of “Integrative Studies” at my college, Rio Salado College in Tempe, Arizona. Ideally, the capstone course was supposed to pull together under some integrative theme the diverse set of courses students complete in their two-year associates degrees in arts and sciences. Since the arts and sciences cover such diverse areas as physics, chemistry, biology, psychology, economics, fine arts and music, sociology, political science, philosophy, and world religions, a capstone topic must be broad enough to cover and synthesize into a coherent whole all the major dimensions of human existence (and nature). Of particular importance, it should bridge the divide between the relatively distinctive contents and methods of science and technology versus the humanities and the arts.

The insight came to me that all of the major dimensions of human reality and nature could be examined in the context of the future; that is, one can ask what is the future of science, the future of art, the future of the earth and the environment, the future of society and human psychology, etc. Further, since human existence is not separated into a set of distinctive components as the academic disciplines are, it makes perfect sense to ask questions such as how science will impact society in the future, how changes in society will impact

human psychology, how environmental changes will affect politics and economics, or how changes in health and medicine will impact culture and life styles. Hence, in the context of the future, one can pull the pieces together, considering how the diverse dimensions of human reality and nature are interactive and interpenetrating. Consequently, one is able to realize an integrative vision of reality in the context of the future. Students have already studied in their first two years of college many of the diverse areas or dimensions; now, within this integrative studies course, they are asked to consider how these dimensions fit together within the context of real life (albeit the “hypothetical” real life of the future). They are asked to consider the “big picture” – an essential feature of deep learning – and they are asked to consider how the various academic disciplines apply to life – another key feature of deep learning. (“Deep learning” can be defined as learning that pulls the learning together into synthetic wholes, penetrates to the personal core and transforms it, and leads to knowledge that can be applied to new situations and problems.) Within this context, students are also asked to imagine different scenarios of interaction; for example, one can imagine alternative scenarios of how technology and the environment will transform and interact in the future.

This integrative studies approach to futures education worked very well for a number of reasons. First, students were given the opportunity to exercise and develop their creative imagination and deep learning regarding the disciplines they had studied. It is not enough to simply memorize facts and formulae within a discipline; in the context of the future, the students are asked to creatively extrapolate on what they have learned in each discipline. Second, students were asked to think synthetically, combating the excessive fragmentation and compartmentalization that goes on in the typical college curriculum. In addition to deep learning and imagination, intellectual synthesis is another fundamental higher cognitive skill that is exercised in futures education as integrative studies. Because students were asked to engage in active learning, there was a significant level of energetic student discussion within the classroom. Written assignments highlighted integration, extrapolation, and flexible imagination.

Within this educational format, I also connected the global with the personal and the hypothetical with the practical. A directive that ran through many of the written assignments was to develop hypothetical future scenarios for the world at large and then to consider how the proposed possible changes would impact the student’s own life and the student’s plans for the future. This was an important type of assignment since students frequently had not seriously considered how changes in the world would affect their own personal futures; they had not seen themselves as part of the whole. Within this context the student had to also think proactively; if such changes are coming in the world, how might the student take advantage of such changes? What type of job – what type of lifestyle – what type of personal philosophy – would make the most sense in a hypothetical future? And further, students were led to place such considerations in the context of alternative futures, so that they developed informed and flexible mindsets regarding how to approach different conceivable futures.

Because integrative studies is inter-disciplinary, multiple modes of consciousness and methods of inquiry and understanding can be incorporated into the course. Though the distinction is not absolute and complete, art (music, painting, poetry, kinematics, cinema, etc.) does not approach reality and human experience in the same way that science or analytic logic does, nor does the spiritual, religious, and mystical come at reality in the same way as the secular and scientific. Different disciplines can shed different kinds of light on the future and its possibilities, and assignments can reflect these disciplinary differences. For example, art specifically highlights emotional and aesthetic experience, a mode of consciousness that clearly needs to be considered and experienced in approaching the future as much as it does in confronting the present (Lombardo, 2009a). Following Gardner's (1983) proposal for multiple forms of intelligence, and considering how these forms of intelligence are reflected in different disciplines, assignments can be essay-like, media-like, literary-narrative, and so on. But still, in the spirit of integration, taking students through such multiple modes of consciousness and multiple methods of inquiry and expression should create a more holistic experience of the future.

Finally, experiential learning played a role in the integrative studies course, further expanding the diverse forms of learning and modes of consciousness realized in the course. We routinely incorporated field-trips so the students could directly immerse themselves in experiments with a future focus, such as Pablo Soleri's urban experiment at Arcosanti and the Biosphere in Oracle, Arizona.

Futures Education as Philosophy

The Integrative Studies capstone course was part of an integrated educational program with over-arching educational goals (such as composition skills, self-development, social awareness, and information literacy) and an integrated curriculum, where courses were taught in pairs, with common assignments between each pair of courses. It made sense to me at the time that the appropriate course to pair with "Integrated Studies" at the end of the two year degree was introduction to philosophy. Philosophy surveys and considers all of the major "big questions" or issues of life and existence; it is broad and comprehensive in its examination of reality, covering topics such as ethics and values, the good society, the meaning of life, the nature of knowledge, the human mind, the self, consciousness, and the existence of God.

Thus, the second approach to futures education is teaching the future within the framework of philosophy; this was done in conjunction with teaching the future as integrative studies. To begin, I should note that I found a way to align each of the thirteen main areas examined in the futures course with a main area (issue or question) in the philosophy course. For example, one lesson in the futures course was globalization and the future of human society, which was aligned with social and political philosophy and utopian thought in the philosophy course. In like manner, the future of the environment and biotechnology was aligned with environmental ethics and the philosophy of life; the future of

information technology, the World Wide Web, and artificial intelligence was aligned with theories of knowledge and theories of mind and consciousness; and the future of science and cosmology was aligned with metaphysics and philosophical theories of reality. For each topic on the future, there was a corresponding topic in philosophy and these aligned topics had a set of integrative assignments. Hence, each of the major questions or issues covered could be examined from two alternative perspectives: where do we see things possibly heading in the future, and what is the meaning and central philosophical importance of the issue under consideration.

Moreover, the content and methods of the two courses complemented each other beautifully and mutually enhanced the understanding of each course. In considering the main issues of philosophy, the idea occurred to me that the big questions of life would undoubtedly be illuminated by developments in the future. If in the philosophy class, for example, we posed a question on the nature of reality, then in the corresponding Integrative Studies class we might ask what possible developments in science could help us to better understand this issue. Or, for that matter, we could ask what virtual reality and its possibilities tell us about the philosophical problem of reality. If we asked what the ideal society was – or even if there was one – we would pair it with the question of what future developments or social experiments might help us to better see what the good and not so good was regarding our social reality. Clearly, I thought that advances in artificial intelligence, robotics, and global network information systems would definitely impact our understanding of mind, self, personhood, and consciousness. Further, the future would not only illuminate present philosophical issues but would create new ones. Consider the new ethical issues emerging in the context of developments in genetic engineering or the environmental impact of increasing urbanization, population, growth, and industrialization. Consider what philosophical questions may emerge if and when we contact intelligent alien life. In my mind, empirical possibilities illuminate conceptual, logical, and philosophical understanding.

Complimentarily, in what ways can philosophy enhance futures education? One approach to thinking about the future is simply to extrapolate from present trends – to make (probabilistic) predictions – to get concrete and specific about tomorrow, whether the issue is population growth, climate warming, the number of automobiles, or the increasing speed and pervasiveness of technologies. But an alternative way of coming at the future is to get philosophical about the whole topic. One way to get philosophical is to simply ask what would be ideal or preferable and why. A variation on this question is to ask what would make life more meaningful and fulfilling in the future. A further variation would be to put ethics or enlightenment or wisdom or spiritual growth at the forefront; what would this mean regarding the future? How could we grow in wisdom or enlightenment? (Anderson, 2003; Macdonald, 2004) In philosophy, the question of the meaning and purpose of life is one that can also be addressed in the context of the future. From another angle, we can always take a philosophical stance on any set of concrete predictions; we can get thoughtful and reflective about trends and possible developments. If individuals and

societies communicate, work together, and integrate in numerous ways via ever-growing information technologies, what would this mean regarding individual and collective intelligence and identity? (Glenn, 1989; Kurzweil, 2005; Stross, 2005) If we need to develop a more mutually beneficial relationship with nature and the environment, what kind of transformation in our philosophical mindset would be required? Can we articulate a new philosophy of ecological awareness and ecological identity? (Laszlo, 2008; Sahtouris, 2000) If we examine the various theories (and paradigms) regarding the future, what are the main philosophical differences and similarities among these alternative points of view? The future is as much a dynamic and interactive evolution of diverse philosophies as it is an interaction among trends, machines, and economies. Can we get philosophically systematic regarding the array of different theories of the future? (Lombardo, 2006b) Finally, taking the philosophical position of Spinoza or other holistic-cosmic thinkers, one can always ask how the potential futures of humanity fit into the cosmos as a whole. What does human existence mean from a cosmic perspective, or conversely, if we take a cosmic perspective on history, evolution, and time, what implications follow regarding the future of humanity? (Fraser, 1987; Tipler, 1994; Wachholtz, 2000). Our thoughts on the future should be informed by the big philosophical picture of things.

Looking at philosophy through the eyes of the future stretches one's imagination and looking at the future through the eyes of philosophy enhances the depth of one's thinking and consciousness. Indeed, futures education can be seen as a natural addition to the traditional offerings in philosophy. After teaching philosophy and futures education as an integrative pair for a number of years, I continued along other pathways (see below) in bringing these two domains of thought and inquiry together. I taught the integrative studies and philosophy courses as the culminating pair in our integrative educational program from 1992 until 1999 when the program was phased out due to budgetary considerations.

Futures Education through Science Fiction

Since reading H.G. Wells' *The Time Machine* as a youth, I have been repeatedly impressed by the way that good science fiction literature brings the mind-boggling possibilities of the future to life. Over the years I have presented various educational workshops on the interconnection of science fiction and futures studies, and I have published on the topic as well (Lombardo, 2006b).

First consider that science fiction is literature, as opposed to expositions of theories, facts, abstractions, and probabilities. Science fiction is a narrative vehicle by which reality (a hypothetical reality of course) is experienced vicariously in the form of a story with drama, characters, plot, and concrete settings. There is a clear difference between reading and thinking about a theory, a set of predictions, or a hypothetical future scenario, and reading and thinking about a story where these predictions are realized in the context of drama, unique characters, and an unfolding plot. These are different modes of consciousness. In literature, the reader feels the scenario and participates vicariously in the action, the tension, and the drama. Stories throughout history

and throughout all cultures have had a powerful psychological and cultural impact upon people; the narrative grabs one attention and provokes the full array of human emotions; the narrative is memorable and inspiring. The future can be approached as literature, and that is precisely what science fiction does.

I have referred to science fiction as “the mythology of the future” since it embodies innumerable fundamental archetypes of existence in narrative form and is informed and inspired by the possibilities of the future. Though usually grounded in contemporary science and informed technological extrapolations, it is mythic *about* the future and provides myths *for* the future. Myth educates at an intuitive and personal level; myth connects the microcosmic and macrocosmic. Though we live in an age of data, information, and facts (in many respects) psychologically and culturally, we need stories and we need myths for the future (Krippner, Mortifee, & Feinstein, 1998). Science fiction provides such narrative myths.

Consequently, since the 1990s I have used science fiction literature throughout many courses, presentations, and workshops on the future. I often have combined science fiction material with other approaches I take on futures education. For example, I frequently asked students in the integrative studies course to read science fiction novels, or at least view and report on selected science fiction films. Some students, in fact, wrote short science fiction stories as a way to envision a hypothetical future scenario. These types of assignment were of special value in the integrative studies course. Since science fiction provides complex and rich futurist scenarios, bringing together all aspects of human existence (society, culture, psychology, religion, technologies, and environment), one can consider and ponder within the context of a science fiction story the interconnections of all these different dimensions. Contrary to the popular stereotype, good science fiction writers create relatively complete visions of future realities (and not just the technology). Science fiction, in particular, bridges the divide between the humanistic and social and the scientific and technological; science fiction is about humans (and other sentient beings) with feelings, desires, values, and modes of experience often set in the context of technologically transformed realities. Regarding futures education as philosophy, writers like Olaf Stapledon (1931, 1937) (who was a philosophy professor) and more recently Stephen Baxter (1997, 2000), Robert Sawyer (2002), and Dan Simmons (1989, 1997) explore all the great philosophical questions in the context of science fiction (Lombardo, 2006c; Lombardo, 2007a; Lombardo & Lombardo, 2007).

Science fiction movies add a visual dimension to the experience of the future layered on top of the dramatic and narrative dimension provided in science fiction literature. From both pedagogical and psychological perspectives, the image taps into a mode of consciousness and vicarious experience that goes beyond the printed word. Though the literary and intellectual qualities of science fiction film are frequently inferior to science fiction literature, there are still a number of films that synthesize a good story about the future with arresting and stimulating special effects that give the future a multi-sensory meaning. I have used various high quality science fiction films such as *Bladerunner*, *2001*, *A Clockwork Orange*, *Metropolis*, *Things to Come*, *The Matrix*, *Forbidden Planet*,

Twelve Monkeys, Brazil, and Close Encounters to help convey both the excitement of the future and the potential terrors and challenges of tomorrow. In the movie you can see it - you are really there.

Futures Education as History

In creating my original course on the future in the early 1990s, I examined a variety of potential textbooks for the course. Unable to find a single book that covered all of the different dimensions of the future as I outlined above in my discussion of future studies as integrative studies, I began to create a number of short articles to supplement what I could find in printed material. In the process of writing such articles, I became increasingly interested in the historical evolution of future consciousness, that is, the way humans have thought about and approached the future through the ages. Quickly on I came to the conclusion that, in conceptualizing the future, humans have evolved different modes of consciousness - from the mythic and religious to the scientific and secular. Further, it is clear that a grand and complex history of future consciousness and futurist thought lies embedded within the history of human civilizations. Thinking about – envisioning – preparing for the future has been an integral part of the rise of human mentality and civilization from ancient times. One can even speculatively reconstruct, informed by paleontology, archaeology, evolutionary and comparative psychology, biology, and genetics, how humans experienced the future prior to the beginnings of recorded history (Lombardo, 2006a, Chapter 2).

Thus as I wrote and distributed to students various historical descriptions on the development of future consciousness through the ages, it became possible for me to teach the future as history – the history of future consciousness and its evolution embedded within the history of cultures, civilizations, religions, and social and intellectual thought. I have taught the history of future consciousness in many formats over the last decade and a half.

What this meant in practice was to begin with an examination of prehistoric humans, trying to understand as best as possible, their social and behavioral patterns, their technologies and tools, their habitats and art, and from a multi-disciplinary approach (which includes new advances in genetics and evolutionary biology), attempt to reconstruct how prehistoric humans conceptualized time – past, present, and future. We can see what psychological capacities they must have possessed given the fossil records we have found.

From there we can move into the emergence of different ancient civilizations and the myths and other recorded forms of thought and expression and consider how the future figured within these earliest belief systems. Such an early history, as well as later history, can be approached from a cross cultural perspective; we can examine and compare how different societies viewed time and the future. The same cross cultural perspective can be continued throughout

human history up to the present; we can trace and compare the evolution of different cultures regarding their respective mindsets, theories, and ideologies on the future.

In following a historical approach to future consciousness we can observe its multi-faceted and dynamic quality; we can see how themes, archetypes, approaches, futurist movements, and theories develop and frequently influence each other. We can place contemporary views of the future in the context of history and, in the process, understand how they are often present manifestations of age-old themes. We can observe how psychological and social capacities expand and enrich over time. Because history tells the story of any idea – any mindset, any culture, we can observe through history the story of how future consciousness has evolved across the species and across the globe. History provides a way to pull together in a complex and dynamic pattern the rich tapestry of futurist thinking. Strangely, thinking about the future comes alive through the past.

Further, teaching the future as history helps us to understand how all the myriad approaches to the future fit into general cultural evolution. As noted above, ideas and visions of the future are an integral part of most cultures and societies. Invariably they inspire and inform a culture (Polak, 1973). We can see the connections between futurist thinking in a particular time and place and the general temper and Zeitgeist of an era.

Building off of my initial study of futurist thought through the ages, I eventually completed a two-volume book which traces “the evolution of future consciousness” from prehistoric times up to the present, attempting to highlight both different cultures and different methods and modes of consciousness pertaining to the future (Lombardo, 2006a, 2006b, 2007b). I have offered workshops and presentations within this conceptual model, teaching participants futures studies by tracing the development of future consciousness and futurist thought from prehistoric and ancient times up to the present. I have given students and workshop participants numerous kinds of assignments asking them to trace how contemporary futurist themes and ideas have emerged.

Futures Education as Psychological and Ethical Character Development

As a psychologist, I have been naturally drawn to understanding the psychology of future consciousness. There are numerous basic psychological processes within the human mind that support or impact a person’s capacities to think about and imagine the future; there are numerous capacities that influence the level and quality of energy, passion, and emotion associated with future consciousness. Beginning in the mid-1990s I began to systematically describe all of the psychological functions pertinent to future consciousness, such as various thinking capacities, motivation and goal setting, optimism and pessimism, hope and fear, self-efficacy and helplessness, and imagination. Further, it quickly dawned on me in this inquiry that such capacities and functions came in degrees – in levels of strength and deficiency – and thus there were certainly ways to enhance and empower a person’s future consciousness. It even occurred to me

that psychological techniques and procedures for enhancing future consciousness were closely connected with various strategies in psychotherapy; often psychotherapists work at getting their clients to feel more empowered, upbeat, and open about their own futures. In fact, though futures education in general emphasizes cognitive-like skills and methods (such as strategic foresight, etc.), it is the emotional-motivational- personal core of an individual that must be energized if any of the cognitive techniques are going to take root. The future is felt as much as it is thought and imagined. Hence, by the beginning of the new Millennium I had started offering psychological workshops that highlighted how to enhance the creative, constructive, self-responsible, and optimistic dimensions of future consciousness (Lombardo, 2005; 2006a, Chapter 1; 2006c).

A key feature that ties the integrative studies approach together with the psychological approach to futures education is asking students or participants to place themselves in the context of hypothetical futures and consider what personal qualities they need to develop in themselves to thrive, flourish, influence, or simply successfully adapt and survive in such hypothetical conditions. In this way, psychology is tied to possible global futures.

Building on the psychology of future consciousness, my colleague Jonathon Richter and I began discussions in 2003-2004 on the challenges and problems facing humanity today, identifying what general capacities and traits we need to strengthen to successfully address these challenges and problems. We arrived at the general conclusion that there was a key set of ethical character virtues such as self-responsibility, courage, optimism, and wisdom that was not only connected with human happiness but, if pursued, would significantly contribute to a better world in the future. Further, we saw these character virtues as critical to enhanced future consciousness. Pulling these thoughts together in a published article, we proposed that enhanced future consciousness, strengthened through the development of key character virtues, would lead to increased human happiness and a better world, addressing some of the key challenges and problems of today (Lombardo & Richter, 2004).

Out of this basic insight of connecting character virtues with enhanced future consciousness, I developed a signature workshop, "Evolving Future Consciousness," for my futurist educational institute, the *Center for Future Consciousness*. (The *Center for Future Consciousness* evolved in a series of stages, officially taking on its present name in 2007.) I have offered this workshop at my college, at futurist conventions, and other venues over the last few years. The basic idea is to present the key character virtues connected with enhanced future consciousness, explain their importance and their impact on human psychology, and engage in didactic and practical activities geared to developing these virtues. Which psychological techniques can be used to enhance courage, optimism, hope, self-efficacy and other character traits? (Seligman, 1998, 2002; Snyder & Lopez, 2005). This character development approach to the future is presented in the context of contemporary trends and future possibilities – again to give participants a sense of the challenges facing all

of us and the potential future directions the world may take (Lombardo, 2006e, 2007c, 2007d, 2007e, 2009a).

Coupled with both the psychological and character development educational approaches, I have frequently asked workshop participants to create ideal future self-narratives. I ask participants to create a story of their personal future – an ideal story that will inspire them and give them a sense of purpose and direction. Combining the future with history, I have asked participants to sketch out a past self-narrative to provide a foundation for constructing a future narrative. Further, I have asked them to identify an ideal self in the future defined in terms of ethical character virtues. One question they are asked to answer is how they could become a more courageous, more responsible, and more optimistic individual in the future.

As an outgrowth of this work on character development, over the last five years I have focused in particular on the virtue of wisdom. Wisdom is often identified as the highest expression of human development and is almost always listed as one of the most important and esteemed human virtues (Macdonald, 1996, 2004; Sternberg, 1990; Sternberg & Jordan, 2005; Trowbridge, 2005). As an educator, I came to the conclusion that wisdom was the most important capacity and virtue to be developed in students and the highest educational ideal to be modeled in teachers. But furthermore, after studying recent research and thinking on the topic, I concluded that wisdom is the highest expression of future consciousness, synthesizing many of the key virtues connected with enhanced future consciousness. Hence, futures education can be legitimately seen as pivoting around the cultivation of wisdom (Lombardo, 2006f, 2009a, 2009b). Centering on this key virtue, I have given workshops and presentations – often to teachers – on the nature of wisdom, its centrality to education, techniques and approaches for developing it, and why it is so critical a capacity in constructively approaching the future. I have revised the entire set of assignments in both introductory psychology and introductory philosophy to pivot on the development of wisdom, which includes enhanced critical thinking, deep learning, personal application of knowledge, and ethical character development (Lombardo, 2008). I have asked teachers at my school to identify ways that they can pursue wisdom (enhancing it) in their own future development.

As two general concluding points regarding this section, futures education can be a very personal journey and experience – an exercise in becoming more self-aware, more self-empowered, and more conscious of one's purpose and direction in life. Additionally, futures education can be approached as a vehicle and medium for personal ethical development. Since thinking about the future often, if not always, leads into questions about preferable futures, and ethical questions invariably lead into thinking about the future, futures thinking and ethics are inextricably tied together. Part of futures education is ethical education.

Futures Education through Technology Extrapolation

Over the last year, as a part-time faculty at the University of Advancing Technology in Tempe Arizona, I have been teaching a graduate course on

“Forecasting Emerging Technologies.” We cover in the class the full gamut of different technologies from robotics, communications, and computers to biotechnology, nanotechnology, space technology, and energy technologies. The course could be conceptualized and taught simply as a class in prediction: What new technologies will emerge and when in the coming years? We could simply assess present technological developments and, using our technological imagination, make predictions about the future. I, in fact, use two excellent resource books that present numerous predictions on the future technologies: William Halal’s *Technology’s Promise* (2008) and Ray Kurzweil’s *The Singularity is Near* (2005). Indeed, this is one of the major activities throughout the course – to predict the future of technologies.

But I introduce a second major type of activity and assignment that bridges the gap between the technological and scientific and the social and humanistic. I present the basic argument that social and environmental needs and challenges will drive future technological development. As graduate students in technological areas, my students are frequently very good at making intelligent and informed predictions regarding where technology could head in the future, but I ask them to think through what possible technological developments could help to address the problems and challenges of human society. Of course, I do not believe that all of our problems can be solved through technology, but I am sure that technologies (as in the past) can make a significant impact on improving the human condition. Hence, my technology students need to assess our current challenges and human needs and then, putting on their technological thinking caps, imaginatively propose future technologies that will serve the human good. Ethics, social and environmental challenges, and technological creativity and innovation are synthesized together in such assignments.

I should also note that instead of viewing futures education as simply learning how to make informed predictions based on present trends, such activities bring out the theme that the future is a creative act and a problem solving activity; at least to some degree the future will be a result of thinking in terms of preferable futures, a future that is purposefully created to make the world a better place – in this case through socially, ethically, and environmentally informed technological innovation.

Another interdisciplinary and integrative dimension to the course involves connecting science, history, and evolution with future technological developments. First, in agreement with Halal and Kurzweil, I present technological development as an extension and expression of the ongoing evolution of complexity on the earth and in the universe at large. Students need to understand natural history and evolution and understand how technological growth can be placed within this bigger picture. (Within an even broader framework, one can look at the multi-dimensional evolution of human society as embedded within and an expression of the general evolutionary direction of nature and the cosmos.) Technology students need to see how technology fits into the bigger picture of nature. Second, technological innovation is grounded in science and the growth of science; hence, students are also asked to consider how our contemporary scientific understanding of the world can inform and

inspire new technologies (Kaku, 1997, 2008). My technology students often have a much better understanding of technology than they do of scientific theory and this kind of assignment forces them to consider the science that is behind and grounds technological evolution.

Conclusion

It is clear that there are many modes of consciousness that can be tapped into within futures education. Futures education can be theoretical and abstract or very personal. Futures education can be approached from a mythic and religious perspective or from a scientific and technological perspective. Futures education can involve exercises in imagination, problem solving activities, or ethical deliberation. Futures education can be philosophical, intellectual, or even spiritual, or it can be very concrete and focused on statistics and facts. Futures education can be grounded in text, both non-fictional and literary narrative, or experienced through cinema and visualization (even virtual reality and gaming). And of course, futures education can be set within the context of the broad panorama of history, human and natural, and the diverse array of multi-cultural perspectives – one's sense of the future should be embedded within the more expansive temporal context of past, present, and future.

As an educator I have thought for many years that education (whether about the future or any other topic) should strive for holistic learning experiences. By "holistic" I mean tapping into all the major psychological dimensions of the person, from thinking and imagination to emotion, motivation, and personal self-identity. Attempting to connect with diverse modes of consciousness supports a holistic approach to futures education. Approaching futures education through multiple and often integrative disciplines helps to realize this holistic goal. And as I noted above, I have become fascinated with the topic of wisdom and have striven to integrate it together with futures education (and education in general); wisdom, among other things, brings in the ethical dimension of human consciousness, further expanding the holistic experience of futures education.

In general, the interdisciplinary and the multi-disciplinary help to create a holistic futurist educational experience that taps into multiple modes of consciousness and understanding and addresses the breadth and richness of the human mind.

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