

## Future Studies

*"I believe quite firmly that an inductive knowledge of a great number of things in the future is becoming a human possibility. I believe that the time is drawing near when it will be possible to suggest a systematic exploration of the future."*

H.G. Wells

### The Origins, History, and Nature of Future Studies

Besides science fiction, the other main contemporary thread of futuristic thinking is **future studies**. Whereas science fiction is fictionalized narrative, generally future studies is non-narrative and non-fictional in its format and approach. Just as he did with science fiction, H.G. Wells significantly influenced the development of future studies. As noted in the last chapter, Wells wrote both fiction and non-fiction about the future, and his non-fiction books and articles were a primary stimulus behind the creation of future studies in the twentieth century.<sup>1</sup> As a provisional and general definition, future studies can be described as an empirical and scientifically based approach to understanding the future.

Throughout its development, there has been debate over what the best name is for this discipline, and if, in fact, the study of the future constitutes a distinctive academic course of study and research.<sup>2</sup> Part of the process of acquiring a disciplinary identity is establishing among its practitioners a consensual name. Various names have been proposed, including *futuristics*, *futureology*, *futureing*, *futureism*, *futureibles*, and *futures research*.<sup>3</sup> At least in the United States, *future studies* has emerged as the most accepted and popular name of the discipline.

Regardless of the name, the study of the future has evolved into an academic and professional pursuit, involving scientific theory, research methods, and a great variety of different educational curricula. Various college courses and programs on the future are offered at numerous schools worldwide. For example, Anne Arundel Community College in Maryland has created an Institute of the Future which offers various in-person and online courses and educational modules on the study of the future and how to enhance one's capacities to constructively think about the future.<sup>4</sup> Some other noteworthy programs include the Future Studies Master's Program, first established at the University of Houston at Clearlake, which offers a graduate degree in future studies<sup>5</sup>; The Hawaii Research Center for Future Studies at the University of Hawaii offers a masters program in future studies<sup>6</sup>; The Australian Foresight Institute at Swinburne University of Technology has a masters program in strategic foresight<sup>7</sup>; and finally, as an outstanding example of futures education, The Center for Futures Studies at Tamkang University in Taiwan provides extensive undergraduate and graduate coursework in future studies.<sup>8</sup> These courses and

programs cover key issues and research methodologies pertaining to the future, and some prepare students for careers as professional futurists.

In addition to educational programs, a large number of organizations worldwide, such as the **World Future Society (WFS)**, are dedicated to the study of the future.<sup>9</sup> The WFS produces a variety of publications, including a bi-monthly popular magazine titled *The Futurist*, a professional journal titled the *Futures Research Quarterly*, and a newsletter titled *Future Survey* that covers noteworthy recent books and articles relevant to the future. The WFS holds annual world conferences and publishes an ongoing variety of books and research studies, including the following:

- *Communications and the Future: Prospects, Promises, and Problems*
- *The Global Economy: Today, Tomorrow and the Transition*
- *Careers Tomorrow: The Outlook for Work in a Changing World*
- *Frontiers of the 21<sup>st</sup> Century: Prelude to the New Millennium*
- *21<sup>st</sup> Century Opportunities and Challenges*
- *Thinking Creatively in Turbulent Times*
- *Foresight, Innovation, and Strategy*

Cynthia Wagner edited the last of these books; all of the other publications are edited by Howard Didsbury.<sup>10</sup> There is also the **World Future Studies Federation (WFSF)**<sup>11</sup> composed of academicians, professional futurists, and institutions. The WFSF, which emphasizes a global, inter-cultural perspective on the future, holds bi-annual conventions, offers professional courses, and publishes a variety of professional works on the future. Some other noteworthy futurist organizations include: **The Arlington Institute**, which publishes an excellent electronic newsletter on trends, discoveries, and events relevant to the future; **The Acceleration Studies Foundation**, which also produces a high quality electronic newsletter, as well as holding annual conferences on accelerative change and the future; **The Copenhagen Institute for Future Studies**, a research and consulting organization; **Evolve**, an educational and inspirational network for “conscious evolution”; the **Foundation for the Future**, which examines long-term future developments for the next thousand years, as well as the evolution of human intelligence; and the various **Transhumanist** organizations, which focus on the future evolution of humanity, especially through the use of technology and science.<sup>12</sup> So as not to slight any of the many other important futurist organizations, the reader is referred to the World Wide Web Bibliography at *The Odyssey of the Future* website for a much more extensive list of futurist institutes and professional groups.<sup>13</sup>

While numerous definitions exist, according to Wendell Bell there is a significant degree of consensus among futurists in the field regarding the purpose of future studies. Bell states that the “most general purpose of future studies is to maintain or improve the freedom and welfare of humankind” with the addendum that “some futurists would add the welfare of all living beings, plants, and the Earth’s biosphere...”<sup>14</sup> Ed Cornish, the founding President of the World Future Society and editor of *The Futurist*, provides a similar definition, stating that the goal of “futuring” is to make for a better future.<sup>15</sup> These are very broad definitions—perhaps too broad, for these definitions could apply to the social and

psychological sciences and the humanities as well. Bell adds that futurists' distinctive contribution is **prospective thinking**, in particular, "to discover or invent, examine and evaluate, and propose possible, probable, and preferable futures." In a similar vein, Cornish identifies foresight as the key skill emphasized in the discipline, and also includes the three-fold listing of possible, probable, and preferable futures as the main areas or questions of study in the discipline.<sup>16</sup> These descriptions of future studies coincide closely with the futurist Alvin Toffler's statement 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."<sup>17</sup>

This definition roughly describes science fiction as well as future studies—although perhaps science fiction is not as systematic. Science fiction clearly is visionary regarding the possible, often explores probable developments in contemporary trends, and through "warning scenarios," definitely evaluates the moral and ethical implications of our present world and potential future realities. To be more precise in our definition of future studies, we should add to Bell and Toffler's definitions the qualification that future studies is a non-fictional approach, often highlighting scientific methodology, whereas science fiction is a fictional and literary approach to the future.

Michael Marien, the editor of *Future Survey*, takes a broader, more diverse, and less clearly circumscribed view of future studies, and even includes science fiction as a stylistic form of futures thinking. In disagreement with Bell, Marien does not think that there is universal agreement among futurists regarding the nature of the discipline. However, he does offer a six-fold classification system of "purposive categories of futures-thinking" that is similar to Bell and Toffler, including the possible, probable, and preferable, but adds, examining present changes, taking panoramic views, and questioning.<sup>18</sup> Marien's ideas are discussed in more depth below.

One key feature of future studies is its research methodology. According to futurists like Bell and Cornish, future studies attempts to employ scientific research principles in the study of the future. Future studies research attempts to be both rational and empirical. The discipline has developed some distinctive research methods of its own, but as Bell notes, it has also utilized research methods developed in other academic disciplines. All told, an extensive and varied futurist methodology has evolved over the last century.<sup>19</sup> Future studies research involves the statistical collection and analysis of vast amounts of world data, mathematical extrapolations, predictions based on statistical trends, monitoring of trends, scenario development, surveys and polls, game theory and techniques, ethnographic research, and computer simulations and experiments on the possible complex interactions of different social variables and trends. One distinctive approach used by futurists is the **Delphi Method**, which involves the polling, comparing, and integrating of expert opinions on different aspects of the future.

The richness of future studies may make it difficult to come up with a simple singular definition of the discipline, but various writers have attempted to provide a comprehensive overview of the area. Richard Slaughter, the former

President of the World Future Studies Federation, has written numerous books and articles on future studies,<sup>20</sup> and has provided an extensive list of core developing concepts in the field.<sup>21</sup> He has also edited a three-volume work *The Knowledge Base of Futures Studies*,<sup>22</sup> with the intent of bringing together contemporary global thinking and common principles regarding the study of the future. On an even more massive scale, George Kurian and Graham Molitor have edited and published the *Encyclopedia of the Future*, in another effort to articulate the comprehensive scope and conceptual details of this discipline.<sup>23</sup>

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To provide some history on the development of future studies, a good place to begin is Warren Wagar's essay on "Futurism."<sup>24</sup> He states that Wells' book *Anticipations* (1902) marks the beginnings of futurism.<sup>25</sup> For Wagar, though, future studies didn't take off as a popular area of concern until the 1960s. As he points out, contemporary future studies began in the 1960s due to a combination of factors: (1) The need in business and government for long-range planning; (2) Advances in technological and economic forecasting; and (3) The erosion of discipline boundaries, which led to futurism emerging as a real interdisciplinary activity.

In a subsequent article, "Utopias, Futures, and H.G. Wells' Open Conspiracy," Wagar discusses in more depth Wells' later book, *The Open Conspiracy* (1928). Wagar describes Wells' dissatisfaction with many general features of his world, including nationalism, corporatism, capitalism, and elitism, problems that according to Wagar are still with us today. In *The Open Conspiracy*, Wells advocated that humanity work against the dominance of nation states, and develop a third way to approach the future, besides the two prevailing systems of modernism and fundamentalism. Wells strongly advocated for a new world system that was secular and scientific.<sup>26</sup>

According to Wagar, although Wells created many pessimistic and nightmarish images of the future in his science fiction, he was also influenced by positive utopian visions inspired by the Enlightenment. Wells offered both criticisms of his time and, based on such critiques, proposals and ideals for a new and better world.

We should note then, that beginning with Wells, future studies did not just involve methods for understanding and predicting the future, but general assessments of human society and normative proposals for improving the world. The fundamental dimensions and features of human reality are described, often from a particular theoretical perspective, and an ideology of the preferable direction for humanity is presented. These basic components of future studies—rational and empirical methodology, theory and description (often critical) of the present, and prescriptive proposals (often involving clear ideologies) for the future—all derive from the philosophy of the Enlightenment. The philosophy of the Enlightenment, which emerged in Western Europe in the seventeenth and eighteenth centuries, inspired by the Scientific Revolution and the rise of secular thinking, emphasized the use of rational and empirical methods for

understanding reality. Based on this understanding, this period articulated visions and values for a positive future, freed of the dogmatism, authoritarianism, and superstitions of religion and monarchical rule.<sup>27</sup>

Continuing to follow Wagar's historical analysis, the earliest organizations explicitly committed to the study of the future were formed in the 1960s: The World Future Society began in 1966 in Washington, D.C.; the **Association Internationale Futuribles** began in 1967 in Paris; and **The Club of Rome** began in 1968. Adding to the above history, Alvin and Heidi Toffler note that *The Futurist* magazine and the World Future Society were started by Ed Cornish and his wife Sally. They also note that many of the original people in the group were couples with highly interdisciplinary interests.<sup>28</sup>

Wendell Bell in his *Foundations of Future Studies* also provides a historical analysis of the evolution of future studies. Taking a somewhat broader and deeper view of the historical roots of future studies, Bell argues that future studies emerged out of the secular approach to social evolution that developed during the Enlightenment. For Bell, science and secular thinking provided the inspiration for the development of future oriented utopias and philosophies for the improvement of humankind.<sup>29</sup> Wells was clearly influenced by the secular perspective on the future, as were other social, political, and governmental leaders and thinkers in the eighteenth and nineteenth centuries. Bell provides an introductory review of the evolution of utopian thought as a precursor to future studies, covering the ideas of More, Jean-Jacques Rousseau, the Marquis de Sade, Condorcet, William Godwin, Henri Saint-Simon, and Karl Marx.<sup>30</sup>

As Bell notes, beginning in the 1920s and 1930s, governmental social and economic planning blossomed. This initiative looked at past and present trends, and then extrapolated and considered possibilities and alternatives for the future. Possibilities were evaluated and governmental policies were implemented based on trend analysis and social values. Such efforts are clearly an example of collective, databased, and systematic thinking about the future. In the decades that followed, operations research, policy science, and **Think Tanks** developed that articulated many of the contemporary principles, methods, and goals of future studies. By the 1960s there were numerous agencies and organizations collecting trend data, identifying values and future goals, and proposing plans and policies for reaching these goals.<sup>31</sup> In the last few decades, such futures oriented research, planning, and thinking has magnified in business, government, and society at large a thousand fold. This whole line of thinking and action can be seen as developing out of the empirical and rational traditions of secular thought.

The fast growth of Think Tanks highlights another significant feature of future studies. James McGann provides a concise and informative overview of the development of Think Tanks.<sup>32</sup> He points out that there are presently around 3000 Think Tanks, 60 percent of which were created within the last 20 years. The rapid changes and challenges of our modern world and the consequent demand for useful information and analysis are fueling the accelerative growth of such organizations. As McGann states, the change from the old to the unknown requires thought and help, and Think Tanks offer such assistance. Hence, the emergence of future studies research and consulting seems intimately tied to the

perception of rapid change and consequent uncertainty. In times of relative stability, people are less likely to think about the future; but when change comes quickly, as seems to be the case in the last century, thinking about the future intensifies. (There are other reactions to rapid and uncertain change, which include retreating to the past or trying to simply live in the present.) In general, the growth of future studies in our times is due to the perception of an increasing rate of change.

In his book *Futuring*, Ed Cornish provides a short history of future studies that should also be included in this examination of the development of the discipline. Cornish mentions early utopian thinking as a fundamental precursor of future studies, and highlights the idea of secular progress as significant in stimulating people to think about how to improve human conditions in the future. Francis Bacon's *The New Atlantis* is a good example of both utopian thinking and the philosophy of secular progress. Not only did the Age of Enlightenment bring with it a positive hope for the future of humanity, it also embraced the principles of science, including scientific determinism, and hence, as Cornish points out, the great expositor of the Enlightenment, Condorcet, offers a variety of extrapolative predictions on the future of humanity.<sup>33</sup> By the end of the nineteenth century, when Wells began to write on the future, the idea of progress was the dominant view in Western Europe, and Wells clearly embraced this philosophy. But Wells also believed in scientific determinism and argued that humanity could develop a predictive science of the future. Thus, in his early work, Wells combined determinism and optimism in his view of the future. This philosophy, in fact, reflected the "law of progress" concept popular in the nineteenth century: there is an inevitable and deterministic direction in nature toward progress.

Then, following two world wars and the Great Depression, Cornish contends that the Western optimistic belief in progress declined and pessimistic and nihilistic philosophies became more popular. Dystopian novels (for example, *1984* and *Brave New World*) appeared and the belief of the Enlightenment crumbled. Western humanity had lost the capacity to imagine a positive future. As we saw in the last chapter, Wells' later work became increasingly pessimistic about the future of humanity, perhaps reflecting this general reversal in attitude.

Cornish believes that after World War II, a new philosophy and vision of the future began to emerge. In line with the existentialist philosophy that humans are free and create their own futures, the belief that the future was determined and could scientifically be predicted was rejected by many writers and thinkers. According to Cornish, there were many possible futures rather than one inevitable future. These different futures could be evaluated for desirability ("preferable future"), and which future was actually realized would depend on the choices and actions of humans. Hence, a philosophy of uncertainty and choice, based on human values and decisions, replaced the earlier beliefs that progress was inevitable, or that decline was inevitable.<sup>34</sup>

Although interesting, the historical stages in thinking described by Cornish above are not so clearly distinct. Though Wells believed in determinism, as did other nineteenth century writers on progress and the future, Wells (as well as others like Marx) wrote as if human choice made a difference. And, although

post-World War II futurist thinking began to emphasize possibilities, uncertainties, and human choice, a great deal of forecasting, trend extrapolation, and probabilistic prediction also went on and continues to occur in future studies. Perhaps, it might be more accurate to say that the history of futurist thinking, running back at least a couple of centuries, reveals the apparently contradictory themes that (1) the future is determined and can be predicted, and (2) that the future is uncertain and open to choice. There may be shifts of emphasis and many writers attempt to combine the two ideas, in some manner or form, but both views have been popular in modern times.

Within the first couple of decades after World War II, several important publications appeared, ushering in the contemporary era of future studies. All of these books contain elements of theory, ideology or values, data analysis, and prediction. One significant early work in future studies was *Toward the Year 2000: Work in Progress* edited by Daniel Bell and produced by the Commission on the Year 2000.<sup>35</sup> The Commission forecasted a national information system, biomedical advances, reduction of jobs in manufacturing, the need for continuing education, the erosion of the family, and culture becoming more hedonistic and distrustful of authority.<sup>36</sup> Generally, these predictions have come true. Other noteworthy books of this era included Hermann Kahn's (RAND Think Tank) *On Thermonuclear War*,<sup>37</sup> in which the possibility of future world wars was examined; Bertrand de Jouvenal's (Association Internationale Futuribles) *The Art of Conjecture*,<sup>38</sup> Meadows, Meadows, et al. (The Club of Rome) *The Limits to Growth*, in which a variety of environmental and resource shortages and catastrophes were predicted that, as of yet, haven't come true,<sup>39</sup> Frederik Polak's monumental work *The Image of the Future: Enlightening the Past, Orientating the Present, Forecasting the Future*,<sup>40</sup> and perhaps most well known, Alvin Toffler's *Future Shock*. In this work, Toffler dramatically describes some of the key dimensions and implications of accelerative change in the modern world.

There are also several lists of important books on the future. In Richard Slaughter's *Knowledge Base of Future Studies*, Kjell Dahle has created a list of 55 notable books in future studies, and George Kurian, as part of the *Encyclopedia of the Future*, has compiled a list of the 100 most influential futurist books. Both lists were published in 1996.<sup>41</sup> More recently, Michael Marien has put together a list, by main subject areas, of the top seventy futurist books for the years 1996 to 2000.<sup>42</sup> (Walter Anderson's *Evolution Isn't What It Used to Be* topped Marien's list.<sup>43</sup>) Even more up-to-date, see Marien's list of the top thirty books on the future published in 2005.<sup>44</sup>

It is ironic that although future studies is often distinguished from science fiction, when the editorial board of the *Encyclopedia of the Future* voted on the most influential futurists, four of the top ten individuals listed—Wells, Verne, Asimov, and Arthur C. Clarke—are notably science fiction writers.<sup>45</sup> Yet, the decision was made not to include science fiction books in the list of influential futurist books—still, two science fiction books, Huxley's *Brave New World* and Wells' *The Shape of Things to Come*, somehow made the list.

## **The Subject Matter, Goals, and Methods of Future Studies**

Turning toward the present status of future studies, and a more in-depth discussion of its defining features and characteristics, I will first review a sample of articles on the nature of future studies. The main topics I will cover will be the subject matter, goals, and methods of future studies.

A good place to begin is with Michael Marien's informative essay "*Future Studies*" in Molitor and Kurian's *Encyclopedia of the Future*.<sup>46</sup> According to Marien, future studies does not possess a consensus as to its nature or purpose. It does, however, draw heavily on the natural sciences and the social sciences and not much on science fiction. Further, future studies has yet to develop into a distinct academic discipline. Finally, Marien states that the term "futurists" is also rather nebulous, including people from all disciplines, many of whom do not even call themselves futurists.<sup>47</sup>

What do futurists think about? According to Marien, there is no real common agreement, although he states that there is a general emphasis on global topics and issues. He notes though that fourteen major categories of future studies are identified by the *Future Survey Annual*, which include:

- World Futures
- The Global Economy
- World Regions and Nations
- Defense and Disarmament
- Sustainability
- Environmental Issues
- Food and Agriculture
- Society and Politics (includes Crime)
- Economy and Cities (includes Work)
- Health
- Education
- Communication
- Science and Technology
- Methods to Shape the Future<sup>48</sup>

From a social perspective, Marien proposes that four relatively distinct "future cultures" have emerged. These cultures correspond to four main areas of study and concern in futurist thinking, and highlight two main differences in attitude and approach among futurists—optimism versus pessimism and short-term versus long-term thinking.

- Science and Technological Futurists tend to be optimistic and long-term.
- Business Futurists tend to be optimistic and short-term.
- Social Issue Futurists tend to be pessimistic and short-term.
- Green Futurists tend to be pessimistic and long-term.



As a final general point in the essay, Marien states that many futurists think that their primary function is forecasting or thinking about the most “probable” futures. However, the idea of many “possible” futures is gaining recognition due to the uncertainty of change, as is the idea about “preferable” futures, due to concern over how ethical values affect tomorrow. In his article, Marien states that future studies should look at all three—possible, probable, and preferable futures (though as noted above, Marien adds three additional “purposive categories” in a later article: examining present changes, panoramic views, and questioning).

A second way of categorizing the concerns of futurists is provided by research done by the members of the *Millennium Project* of the United Nations University. Based on a poll of futurists around the world in 1998, the Millennium Project compiled a list of main priorities for the future, which they described as “**global opportunities**.”<sup>49</sup> Although this list identifies important goals for the future, rather than areas of futurist study, it overlaps in content areas with Marien’s list. Futurists, obviously, are interested in studying those topics that are important priorities of action for the future. It also should be noted that this set of opportunities is a list of preferable futures—they are not just topics of study but valued and desirable directions or states of affairs. It is an agenda for the future. The fifteen most important “global opportunities” according to the Millennium Project survey are:

- Achieving sustainable development
- Increasing acceptance of global long-term perspectives in policy making
- Expanding potential for scientific and technological breakthroughs
- Transforming authoritarian regimes to democracies
- Encouraging diversity and shared ethical values
- Reducing the rate of population growth
- Emerging strategies for world peace and security
- Developing alternative sources of energy
- Globalizing the convergence of information and communication technologies
- Increasing advances in biotechnology
- Encouraging economic development through ethical market economies
- Increasing economic autonomy of women and other groups
- Promoting inquiry into new ideas and sometimes counter-intuitive ideas
- Pursuing promising space projects
- Improving institutions—evolving from hierarchy to network organizations—centralization to uncentralization

More recently, the list of opportunities was integrated with an earlier list of “**global issues**”<sup>50</sup> to form a list of central “**global challenges**.”<sup>51</sup> Many of the basic themes in this newer list are similar to or the same as those in the earlier list of opportunities, but there some items that are different in content or emphasis. These challenges are presented as questions rather than goals, but the questions still assume certain preferable futures.

- How can sustainable development be achieved for all?
- How can everyone have sufficient clean water without conflict?
- How can population growth and resources be brought into balance?
- How can genuine democracy emerge from authoritarian regimes?
- How can policymaking be made more sensitive to global long-term perspectives?
- How can the global convergence of information and communications technologies work for everyone?
- How can ethical market economies be encouraged to help reduce the gap between the rich and the poor?
- How can the threat of new and reemerging diseases and immune microorganisms be reduced?
- How can the capacity to decide be improved as the nature of work and institutions change?
- How can shared values and new security strategies reduce ethnic conflicts, terrorism, and the use of weapons of mass destruction?
- How can the changing status of women help improve the human condition?
- How can transnational organized crime networks be stopped from becoming more powerful and sophisticated global enterprises?
- How can growing energy demands be met safely and efficiently?
- How can scientific and technological breakthroughs be accelerated to improve the human condition?
- How can ethical considerations become more routinely incorporated into global decisions?

Synthesizing the above lists from Marien and *The Millennium Project*, it appears that the main concerns of future studies include the general categories of:

- Sustainable Development
- Science and Technology
- Energy
- Business and Economic Development
- Globalization and Global Issues
- Social and Political Issues
- Human Diversity, Democracy, Equality, and Human Rights
- Ecology, Environment, and Resources
- Human Health and Welfare
- Education and Communication
- Ethics and Values
- Work
- Religion<sup>52</sup>
- Urbanization and Regional Issues
- War and Crime

- Peace and Security
- Human Institutions
- Future Consciousness—Creativity, Decision Making, and Influencing the Future

This synthesized list is not intended to be definitive. In fact, it should be noted that there is no mention of human psychology, art, or the humanities in the list, which are glaring omissions. Many futurists have extensively studied and written on these topics. Nonetheless, the list provides a general map of the conceptual territory that futurists identify as most important within future studies.

It is interesting to compare this list with the list of areas of the future explored in science fiction. Although there is overlap, some noticeable differences can be seen: the science fiction list is more cosmic, highlights in more detail various technological possibilities, and addresses the topics of mental and spiritual evolution. The futurist list seems more earth-bound, highlights more economic, political, and organizational issues, and emphasizes a variety of human welfare concerns and priorities. Yet, these differences are more a question of emphasis than absolute distinctions, for futurists discuss all the topics on the science fiction list and science fiction writers address all the areas on the futurist list.

Turning from the subject matter of future studies to its methods, Alvin and Heidi Toffler in *“Five Billion Futurists”* contend that everyone is a futurist. We all think about and have assumptions about the future.<sup>53</sup> In support of this claim, such basic future focused processes as planning, goal setting, and foresight are integral to normal human psychology.<sup>54</sup> The Tofflers also argue that all civilizations have characteristic approaches to the future. Different modes of future consciousness, such as the rational, scientific, mystical, and narrative, have evolved throughout human history and different cultures and societies have created different belief systems, theories, archetypes, myths, visions, and values in conceptualizing the future.<sup>55</sup> According to the Tofflers, modern civilization, building on basic human psychology and traditions of history, has developed a new set of approaches or methods, which are fundamentally secular in nature. Note that the Tofflers include science fiction in their list.

- Utopian and Dystopian Political Literature
- Science Fiction
- Technological Forecasting
- Military Gaming
- Trend Extrapolations
- Corporate Strategic Analysis
- Central Planning in Governments

They also present the three-fold distinction of possible, probable and preferable futures and connect these three types of futures to different methods. Recall how Alvin Toffler described the way we approach each of these kinds of futures: "Visionary explorations of the possible, systematic investigation of the

probable, and moral evaluation of the preferable."<sup>56</sup> They note, however, that the three forms overlap. Imagination, critical and rational thinking, and value judgments are not distinct psychological processes for they are interactive. According to the Tofflers, possible futures include science fiction, which they believe is an important contributing influence to future studies; probable futures are often quite systematic and scientific and frequently developed in government and business studies; and preferable futures often paint negative pictures of today and then offer solutions. However, preferable futures are often intended to be inspirational and psychologically uplifting, such as in Barbara Marx Hubbard's *Evolve: A Global Community Center for Conscious Evolution*.<sup>57</sup> Interestingly, the Tofflers contend that all types of futuristic approaches are art forms, involving subjective and assumptive elements and values, as well as scientific ideas and methods.

Contrary to Marien, the Tofflers do see some common areas of agreement among futurists, namely that most serious futurists agree that no one can predict the future, future consciousness is an essential survival trait, and we are in the midst of a fundamental transformation within our contemporary world.

Yet, as stated earlier, there is some clear disagreement on the issue of predictability of the future among futurists. Although Ed Cornish emphasizes possibilities and freedom of choice in thinking about the future, many futurists do make predictions. In identifying probable futures, futurists assume a degree of predictability regarding the future—it is simply that some range or set of different futures are being predicted. “Trend extrapolation”—a commonly listed method of futurists—is a form of prediction. It is simply probabilistic prediction. Cornish, in fact, acknowledges a limited degree of predictability to the future and the value of efforts to predict the future.<sup>58</sup>

In his article “Thinking about the Future,” the science fiction writer Frederick Pohl adds some interesting twists to the “possible, probable, and preferable” conceptual scheme. He states that all along futurists have attempted to predict the future and have developed various methods for accomplishing this general goal. But he thinks that futurists should focus on the imaginative process of envisioning as many possible futures as they can and then distinguishing the most desirable possibilities and working toward realizing these highly positive possibilities. In fact, he suggests that futurists should be particularly concerned with low probability-high desirability futures and how they could be achieved. In general, Pohl highlights the process of “**normative forecasting**,” as he refers to it—identifying ideal futures and then attempting to “invent” or create these futures.<sup>59</sup> Although Pohl does not think that science fiction attempts to predict the future, his emphasis on imagining many possible futures aligns with one main function of science fiction.

Returning to his article on “Futurism,” W. Warren Wagar believes that the methods of futurists range from the highly mathematical to the intuitive and speculative.<sup>60</sup> He does, however, list five popular methodologies presently used by futurists.<sup>61</sup>

- Trend Extrapolation

- Mathematical Modeling
- Delphi Technique (involving the polling experts on the future)
- Scenario Building (may include science fiction)
- Probabilistic Techniques

Wagar also notes that some futurists find inspiration in Marxist philosophy and ecological and spiritual thinking. Given his inclusion of science fiction, and intuitive and spiritual approaches in his list, Wagar clearly goes beyond defining futurist methods exclusively in terms of scientific and rationalist activities.

Michael Marien also takes a more liberal view on the methods of future studies. Aside from his list of six “purposive categories of futures-thinking,” he also offers a twelve-category “continua for analyzing futures-thinkers.” Each category includes opposing pairs of qualities, such as the category of disposition, which runs from optimistic to pessimistic and the category of breadth, which runs from generalist to specialist. Some of the other categories are style, rigor, culture, timeframe, and ideology. Given this list, Marien would include science fiction writers and “imaginative idealists” as futures thinkers.<sup>62</sup>

In the “*Art of Forecasting*,” the World Futurist Society presents a list of the main methods used by modern futurists in thinking about the future.<sup>63</sup> This list of methods shows a strong emphasis on scientific research, data collection, empirical prediction, logical reasoning, and the use of technology. The list includes:

- Trend Projection
- Scenarios
- Consulting Others
- Models
- Simulations
- Computer Simulations

In his essay, “Futurists,” Cornish also highlights scientific and rational methods.<sup>64</sup> He states that futurists use scientific and rational methods to understand the future and, generally, don’t use mystical or supernatural means. He believes that futurists think the future is something that can be controlled, rather than being a matter of fate. Cornish connects the idea of fate with the mystical approaches to the future—he thinks that if someone is mystical then he or she believes in fate or destiny. Thus, Cornish supports the Enlightenment position that self-empowerment and social improvement is achieved through scientific and rational methods and, contrary to Wagar and Toffler, he wishes to restrict the discipline of future studies to scientific methodologies.

In his recent book, *Futuring*, Cornish continues to emphasize the rational and scientific qualities of futurist methods. He provides a synoptic list of the most common methods used:

- Scanning
- Trend Analysis

- Trend Monitoring
- Trend Projection
- Scenarios
- Polling
- Brainstorming
- Modeling and Simulations
- Gaming
- Historical Analysis
- Visioning

Furthermore, he provides extensive and very helpful descriptions with illustrative examples of all these methods, which, although “rational, empirical, and scientific,” are usually refinements of common sense approaches to the future.<sup>65</sup>

What becomes clear through examining Cornish’s description of futurist methods is that many of the methods are ways to make tentative predictions about the future. Cornish believes that we need to be cautious about predictions and often the best we can do is make probabilistic predictions, but he does not reject the role of prediction in future studies. In fact, although Cornish repeatedly states that the goal of future studies is not to predict the future but rather to create a positive future, he actually connects the goals of prediction and creation together. By thoughtfully considering what probable events may occur in the future, we can prepare for the future and consider whether such potential future events are desirable or undesirable. If we know what might happen, we can perhaps do something to improve the chances of positive futures and reduce the chances of negative futures. Cornish thinks, in the spirit of the Enlightenment, that knowledge is power. If we can understand nature, we can influence it.

The above lists of methods notwithstanding, Daniel Bell, in his “Reflections at the End of an Age,” provides some necessary caution and balance on the rhetoric of future studies and its presumed scientific methods.<sup>66</sup> Bell believes that futurists are prone to hype and exaggeration in their views of the future. They often over generalize and oversimplify. For Bell, human society is too complex to reduce to some simple set of descriptive concepts. The futurists’ use of scientific and mathematical concepts and tools is sometimes questionable. They may sound very objective and factual in their formulations, but it is often unclear exactly what is being measured. Further, futurists often make claims that cannot be measured or quantified.

Robert Nisbet, the historian, provides another balancing counter-point on futurist methodologies. Although not a futurist, he argues that futurism hasn’t really changed much since its beginnings in the last century. In spite of all the apparent sophistications introduced into futurist methodology, futurists just identify trends and extrapolate on these trends into the future. Nisbet states that futurism also hasn’t changed much because there continue to be, as there was a century ago, two basic groups of futurists—those that are optimistic and believe in progress and those that are pessimists and prophesize “doom and gloom.”<sup>67</sup> Perhaps these two basic attitudes haven’t changed much since ancient humans began thinking about the future.

A good way to conclude this section is to review a recent debate between Michael Marien and Wendell Bell on the nature of future studies. The debate illustrates some of major points of disagreement among futurists regarding the nature of the field and its methods. In general, Marien argues that future studies is not a coherent and clearly defined field of study, and is becoming increasingly more so—it is faltering and floundering. On the other hand, Bell believes the field is alive, thriving, relatively integrated, and its practitioners are in general agreement on a set of principles and beliefs. However, Bell does acknowledge that futurists are a “disputatious community,” which is evidently illustrated through the debate between him and Marien.

Below is a list of seven myths about future studies identified by Marien followed by Marien and Bell’s reaction to each:

1. *Future studies is a distinctive field or discipline.* Marien argues instead that at best it is a fragmented “very fuzzy multi-field” that blurs into other fields. Although Bell acknowledges that there is a degree of fragmentation and specialization in future studies, there is no more so than in other disciplines—in fact, perhaps less.
2. *Futurists are generalists.* Marien asserts that most futurists are specialists focusing on some relatively narrow area of study or consulting. Bell argues that futurists generally try to adopt a holistic perspective in their research and thinking.
3. *Most people involved in the study of the future see themselves primarily as futurists.* Instead, Marien contends that there are very few self-identified full-time futurists, and most people who write and do research on the future are “secondary futurists.” Bell acknowledges that most professionals have multiple professional identities.
4. *Future studies is a unique and distinctive field.* Marien argues that a lot of futures thinking occurs outside the discipline. Bell points out that no professional group has a distinct monopoly on making contributions to its area of study.
5. *Future studies is understood and appreciated by outsiders.* According to Marien, to the contrary, futurists are often criticized, misunderstood, and rarely consulted by mainstream publications on questions of the future. Bell points out that most academic and professional groups have problems with their public image and are misunderstood by the general public. Future studies is not unique in this regard.
6. *Future studies has a relatively stable identity.* Marien contends that futures thinking has gone through frequent and significant changes in its focus. Bell acknowledges that future studies has grown and changed throughout its history, but so what? Isn’t this a good thing? Further, Bell counters that there are at least some central and enduring features to future studies.
7. *Future studies is a community.* Instead, Marien states that future studies is a plurality of communities that overlap with each other to some degree and communicate. It is a fragmented social reality rather

than a unified one. Again, although Bell acknowledges that there is some level of fragmentation to the futurist community, it may be no more so than other academic communities, and there is clearly some level of connectivity and communication (both argumentative and mutually validating) among many of the major futurist individuals and organizations.<sup>68</sup>

Marien and Bell can be seen as representing pessimistic and optimistic viewpoints of future studies. They each acknowledge as much. Marien, the pessimist, uses a variety of statistical and factual indicators to illustrate his points and describes his view as “reality-based.” Bell, the optimist, repeatedly counters Marien by arguing that future studies is no worse (perhaps better) than other academic or professional groups. Further, Bell uses other indicators to support his opposing position. They also interpret the same facts differently. Where Marien sees differences within the field as indicative of a lack of distinctive coherence, Bell sees differences of opinion among futurists as healthy.

Finally, Marien is more liberal in what he includes in futures research, study, and publications—thus he sees future studies as more diverse and hence fragmented. Bell limits what he includes as legitimate or acceptable futures thinking, and thus finds more commonality and unity in the discipline. Yet, it could be argued that although restricting future studies to acceptable scientific methodologies brings unity to the discipline, it also limits the discipline and may ignore important aspects of human reality.

### **Theories and Ideologies within Future Studies**

At this point, let us look at how theories and ideologies of the future connect with future studies. A theory of the future is an explanation and description of the future, whereas an ideology is a set of values regarding a preferable future. A good place to begin this discussion is with Richard Slaughter’s views on future studies. Slaughter provides a rich and multi-faceted description of future studies.<sup>69</sup> He has some important ideas regarding the scientific status and rigor of future studies and how to broaden future studies beyond traditional scientific methodologies. He also discusses the impact of theory, cultural world views, and values on future studies.

Slaughter clearly believes that future studies is an academic and scientific discipline, worthy of professional status, funding, and educational departments in colleges. He thinks that future studies has developed a core set of disciplinary concepts and terminology, a wealth of research methods, and numerous pedagogical activities and principles for teaching futurist thinking. For Slaughter, there is a set of key issues, themes, and applications defining the discipline.<sup>70</sup> Yet, he is an evolutionist and sees all of elements of future studies in a constant state of growth and redefinition. (Hence, total consensus among futurists is unrealistic and undesirable.)

In line with his evolutionary view of future studies, Slaughter traces four developmental phases in future studies: The American driven scientific and



empiricist tradition (much of what was discussed in the previous section falls into this tradition); the European driven culturally oriented tradition (with more an emphasis on cultural values and how they impact futures research); the international and multicultural tradition, bringing in the ideas of non-Western thinkers; and finally, the Integral Futures movement, of which Slaughter is a principal advocate.<sup>71</sup>

Slaughter's conception of Integral Futures is based upon Ken Wilber's Integral Philosophy.<sup>72</sup> One key idea in Wilber's philosophy is the Four-Quadrant conceptual framework for describing the full breadth of reality and modes of understanding reality. Basically, the four quadrants consist of the inner singular consciousness perspective, the outer singular behavioral perspective, the inner plural cultural perspective, and the outer plural social and material perspective. The two inner perspectives are subjective ways of looking at reality, and the two outer perspectives are objective ways of looking at reality. In each case, we can focus on the individual or focus on the plurality of things. Wilber's contention is that a comprehensive view of reality and modes of human understanding must include all four quadrants. Slaughter takes this idea and applies it to future studies, arguing that a comprehensive understanding of the future must also look at all four quadrants. For example, we cannot simply focus on the collection of external objective facts as the sole basis for thinking about the future, but we must also look at the inner experiences of individuals and cultures and the sense they make out of understanding the future. In essence, reality, which includes the future, is more than the external physical world—it also includes the inner subjective experiences of people. Future studies must acknowledge the full breadth of human reality—both the inner conscious reality and the outer physical reality—and “integrate” both the subjective and the objective into its theoretical framework for understanding the future. Also, in line with the evolutionary perspective of both Slaughter and Wilber, all four quadrants of reality are seen as dynamical and developmental. Individual minds grow; cultures grow; the material world evolves, and these realities go through various stages in their growth and development.<sup>73</sup>

Based on this integral philosophy of the future, Richard Slaughter has extensively critiqued the Western bias toward scientism, rationalism, materialism, and objectivism and how these biases severely constrict the approaches to the future within future studies. For Slaughter, the methods of futurists pre-suppose theories or paradigms regarding the nature of reality, which are often influenced by cultural beliefs and values. The Western theory of reality, as defined and described through science, emphasizes materialism and the “outer reality” of the external physical world. Also, Western science focuses on rationality and empirical observations of the external world. Following Wilber, Slaughter argues that there are different standards of evaluation and different modes of inquiry and discovery associated with each of the four quadrants and that futures research shouldn't be limited to the methods of science which focus on the objective outer world. In general, Western science minimizes the importance of intuitive and a-rational methods and the “inner reality” of people. Further, the Western approach does not encourage or stimulate self-reflection and self-critique on its own

assumptions and theories regarding reality.<sup>74</sup> In Slaughter's mind, we should broaden our approaches to the future to include the insights and methods of spiritual, mystical, introspective, and inner-directed traditions and philosophies.<sup>75</sup> Hence, Slaughter does not narrowly limit futurist methods to scientific methodologies, since he sees important roles for inspiration, heart, personal meaning, and "transcendent realities" in thinking about the future. Slaughter's vision is Apollonian and Dionysian; it is both empirical and observation based, as well as metaphysical and introspective.

It is Slaughter's contention that the Western scientific view of the future basically generates only two visions of the future: Techno-optimism and the pessimistic "Terminator 2" scenario. Technology will save us or technology will destroy us. The Western view sees the main drivers of change as science, technology, materialism, commercialism and greed; and these factors could either lead to more and more of the same thing or backfire and produce disaster. He even argues that much of modern science fiction buys into this either-or thinking. By not including other perspectives on reality or views of the future, our speculative imagination is severely restricted. As one example, he proposes that the pursuit of wisdom—of a wise society or culture, which brings into consideration the evolution of consciousness, inner meaning, and values—should be seriously considered as an alternative vision of the future to the Western obsession with technological power.<sup>76</sup>

It is important to see that Slaughter's main argument is for a comprehensive and balanced approach to future studies. Future studies should not be attached to any single perspective regarding reality and the future, but should be open to different cultural points of view, different theories of reality, and different methodologies. Yet there is a system, or as Slaughter puts it a "meta-paradigm," behind his "liberalism." Future studies should seek the broadest, most encompassing framework for understanding the future.<sup>77</sup> He believes that Wilber's four quadrants cover all of the basic perspectives one can take on reality and thus provides a framework for aligning and comparing different points of view; Wilber even claims he has provided a "theory of everything."

Slaughter believes that present Western culture, besides being excessively rational and materialistic, is too "present-focused" and that many of the problems of the modern world are due to this shortsightedness. For Slaughter, the secular philosophy and way of life is focused on the present without much concern for tomorrow. On this point, he concurs with other writers such as Howard Didsbury and Stephen Bertman, who also believe that modern life is focused too much on the present.<sup>78</sup> If we are to successfully address the problems and challenges of today, Slaughter thinks that future studies and the capacity of "foresight" must become more important and more evolved in human society. We need to become more future-focused. We also must transform our values and approach to life. He sees many purposes and values to future studies, including stimulating global dialogue on contemporary issues, providing essential ideas and methods for the further development of humanity, and in general, heightening future consciousness in all of us.

It is important to see that Slaughter's conception of future studies as an academic discipline has a value system and theory of the future behind it. He includes non-scientific methods in his description of future studies because of the theory of human reality, and the value system that he supports. He sees the contemporary world beset with a variety of problems, including the depletion of resources, ecological deterioration and pollution, and social conflicts, all problems he attributes to the materialistic and industrial way of life that emerged out of the Western philosophy of secular progress. For Slaughter, futurist thinking should involve seriously considering the limits of resources, the importance of sustainability of systems into the future, global and multi-cultural input into the creation of tomorrow, and a broadening of human values beyond technology and economic growth. He sees the value of humanistic, spiritual, and intuitive approaches in future studies because he believes that contemporary Western thinking has been too limited to materialistic, scientific, technological, and rational approaches to life. According to Slaughter, the secular approach is imbalanced and non-integral. He does not wish to exclude the humanistic and the intuitive in futurist thinking; rather, he thinks we need to broaden and deepen our understanding of life and the future to solve the problems of today and create a better tomorrow.

Futurists tend to develop both theories of the future (where we are, how we got here, and where we are going) and ideologies of the future (what we may be doing wrong and what we should do differently).<sup>79</sup> Futurists tend to develop theories that are descriptive and prescriptive—treating issues of both fact and value; theory and fact, and ideology and value are connected together. Slaughter's theory of human reality is that the modern West has an excessive (or lop-sided) industrial and materialistic culture and has created a "crisis" point in human history—potential disasters are imminent, due to our imbalanced mindset and manner in which we live. Therefore, (the ideology) we should expand our modes of thinking and values beyond this culture and limited mindset if we are to move successfully beyond this critical point in human history.

Numerous other theories of the future and ideologies or value systems of the future exist. For example, there are a significant number of mythological and religious theories of the future, and there are many theories of the future connected with the idea of secular progress.<sup>80</sup> Although I review an extensive set of theories of the future in the last chapter of this book, the following are some of the most influential and popular contemporary theories and ideologies:

- Globalization: The world is evolving into a global society along economic, political, and cultural dimensions. This is a good thing and we should embrace it.
- Accelerative Change: Change in almost all facets of human life is accelerating and will continue to do so in the future. We need to find ways to accommodate and thrive in this reality.
- The Technological Transformation of Humanity: Humanity and technology are integrating. Computer and communication technologies are becoming increasingly embedded into our lives and our society.

Biotechnology will transform humanity. All these developments are leading to increased self-empowerment and we should pursue them.

- The Adventure into Outer Space: Humanity will travel into and colonize outer space. This adventure is a positive expression of human curiosity and human evolution. We should support and embrace the adventure.
- Armageddon: We are heading toward the Apocalypse and Judgment Day. We should prepare ourselves for these events and the end of the world.

At times, a theory of the future is clearly stated,<sup>81</sup> while at other times it is implicit within the writings of the author. As a basic explanation and set of predictions for the future, a theory of the future provides a general and integrative overview of the future, often including a description and analysis of the present as well. Trends in the present are often connected with future events. Usually there is a dominant theme (e.g., the potential of technology, the emergence of a global society, or the transformation of humanity). The author of the theory invariably presents a variety of reasons, facts, and arguments to support the validity of the theory. In general, a theory of the future provides a guiding set of ideas, principles, or images for generating predictions and making sense out of the future.

Understanding the nature of future studies involves understanding the different key theories and ideologies within its domain. The discipline is not independent of theory and value. Many of the basic themes and concepts of futurist thinking derive from ideas in futurist theories and ideologies, e.g., "future shock," "progress," and "sustainable future." Further, competition and disagreement among the theories and ideologies create the central issues and debates of future studies. People get into arguments and conflicts over methods, subject matter, and courses of future action, to a great degree because they have different theories and value systems. Understanding a futurist's view of future studies (the nature of the discipline and its values) invariably involves exploring what theory and ideology of the future he or she supports. For example, Slaughter sees great potential for futurist thinking, futures education, and future studies in human society because of how he interprets the contemporary problems of the world and the remedies he believes are needed to set us on a better path. Other futurists might exclude non-scientific methods because of a different theory of the future; they may believe that superstition and irrational mindsets are excessive in our world and create rather than solve problems.

A good example of a theory and ideology of the future is contained in the writings of Alvin Toffler. Toffler has written three extremely popular books in which he has been progressively developing a particular view of the future. These books are *Future Shock*, *The Third Wave*, and *Power Shift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*.<sup>82</sup> In essence, Toffler's theory is that modern human society is in a period of great transition, moving from an industrial, hierarchically organized, and standardized world to a global information society of network organizations, customization, and heightened

individualism. Change is accelerating; diversity and complexity are magnifying; and flexibility and creativity are becoming central values. More recently, Toffler has collaborated with his wife, Heidi, on a series of additional publications that further develop themes in his earlier books.<sup>83</sup> Throughout these writings, Toffler and Toffler provide a detailed analysis of present trends, extrapolations into the future, and prescriptive value statements regarding how to guide and direct the future.

A theory of the future can be presented in a non-fictional format, such as in Toffler's books, Slaughter's publications, or H.G. Wells' visions of a better world. Theories can also be embodied within a fictional or novel form, such as Olaf Stapledon's *The Star Maker*, Arthur C. Clarke's *Childhood's End*, or Stephen Baxter's *Vacuum Diagrams*. Each of these novels tells a story, but each also contains a general theory of humanity's ultimate future and the forces directing it. At the other end of the methodological continuum, a book on the future may highlight statistical information on present trends and present a variety of mathematical and interpretive extrapolations on the future, such as in Meadow's *The Limits to Growth* and *Beyond the Limits*, Naisbitt's *Megatrends* and *Megatrends 2000*, and Moore and Simon's *It's Getting Better All the Time*. Although the statistics, numbers, tables, and graphs may create the appearance of pure scientific and factual objectivity, such books also contain both general theories and value systems. General explanations of the meaning of all the quantitative data are offered and proposals are made regarding values and desirable futures.<sup>84</sup>

Mixing fictional, metaphorical, mythological, theoretical, statistical, and even artistic methods are some of the ways to present a theory about the future. Two books on humanity's future, Dougall Dixon's *Man After Man: An Anthropology of the Future* and Peter Lorie and Sidd Murray-Clark's *History of the Future: A Chronology*, use art and visual graphics as a central mode of representation in communicating their ideas.<sup>85</sup> In fact, Kurian lists both these books among the hundred most influential books on the future in his *Encyclopedia of the Future*.<sup>86</sup> *Wired* magazine, one of the most popular publications on the future, also highlights visual imagery and graphics in communicating its ideas on the future.<sup>87</sup> Ian Pearson's *Atlas of the Future* combines maps, graphics, and statistics in a very readable and informative format.<sup>88</sup> Ancient mythological views of the future often contained key symbols, icons, images, and other visualizations integral to their understanding of the future.

Of contemporary significance is the fast growing use of computers, computer simulations and graphics, and virtual reality in visualizing possible futures; for example, *The Mind's Eye* video series of computer animation presents a mesmerizing array of futuristic scenes and scenarios.<sup>89</sup> The explosive growth of the World Wide Web (WWW) is supporting numerous efforts to create visual and multi-media images of the future; futuristic cities such as *Cybertown* on the WWW can be explored giving the viewer a dynamical and perceptually compelling sense of the future.<sup>90</sup>

The earliest theories and ideologies of the future were embodied in written histories, oral traditions, and mythological tales. Theories were conveyed mostly through stories, though perhaps we should also acknowledge the “mythograms” (cave paintings) of prehistoric humans as actually the first visions of the future.<sup>91</sup> With the emergence of the modern era, secular and scientific theories and value systems appeared; theories became abstractions and rational arguments. In the following century, science fiction literature—more visionary, concrete, and graphic than philosophical essays—came into being, and theories and ideologies of the future evolved that synthesized the dramatic and the scientific. Future studies continued the traditions of science and secular philosophy, combining reason and mathematics, in creating its theories of the future. Following Slaughter’s ideas, future studies should also incorporate inner realities and a-rational methods.

With the advent of the modern media and computer technology, the future is being visualized like never before—both dynamically and interactively. The image is becoming as important as the word.<sup>92</sup> Numbers can be easily transformed into visualizations. As our capacities for representing the future have evolved, our theories and ideas about the future have found new media for their expression. Although it may not be completely true that the “medium is the message,” our cognitive and theoretical understanding of the future is clearly dependent on the medium and perceptual modes of consciousness for representing the future. Resonant with Slaughter’s developmental understanding of future studies, futurist thinking and futurist imagination have evolved and will continue to evolve in conjunction with the evolution of media and modes of representation for human understanding.

### **Bell’s Comprehensive Overview of Future Studies**

Having reviewed the history, methods, subject matter, and role of theories and values in future studies, it is worth looking at the ideas of Wendell Bell in some depth. Bell, in his two-volume *Foundations of Future Studies*, provides a relatively comprehensive and systematic overview of the discipline and, in particular, addresses how prediction, fact, value, and action can be integrated within the discipline. A good starting point is Bell’s list of nine fundamental purposes of future studies and his list of basic assumptions in future studies. According to Bell, these assumptions give future studies a clear sense of focus and identity.<sup>93</sup>

#### **Purposes of Future Studies**

- Studies possible futures
- Studies probable futures
- Studies past images of the future—their causes and consequences
- Knowledge foundations—investigates in what sense can we have knowledge about the future

- Ethical foundations of future thinking—investigates the role and significance of values in futurist thinking
- Provides a basis for interpreting the past and present, or orienting to the present
- Integrates knowledge and values for designing social action
- Increases democratic participation in imagining and designing the future
- Communicates and advocates images of future—proposes actions, suggests possibilities and evaluates and advocates social actions

### **Assumptions of Future Studies**

- Time is continuous, linear, unidirectional, and irreversible.
- The future contains novelty.
- Futures thinking is essential for “conscious or decisional” human action.
- Futures knowledge is the most useful knowledge.
- There are no future facts—there are future possibilities.
- The future is open—there are opportunities and freedom in directing the future.
- Humans make themselves.
- There is holism and interdependence within the world, which implies an interdisciplinary approach in the organization of knowledge for decision making and social action.
- There are better and worse futures.
- People are purposive and creative project pursuers.
- Society is a system of purposive beings and social results come from such purposive beings.
- There is an independent and objective external world.

To summarize Bell's general position on future studies, he clearly believes that thinking about the future and knowledge of the future has great value—it is essential for making decisions and engaging in purposeful action. He also thinks that the future is possibilities, probabilities, and even novelties rather than certainties, though he does believe that we can develop knowledge and understanding of these possibilities and probabilities. He sees future studies as interdisciplinary and involving the integration of fact and value. Contrary to Marien, he contends that future studies is a distinctive discipline with defining features and goals. In particular, Bell thinks that future studies is an “action science,” where futurists attempt to predict or extrapolate possible futures based on present trends and other scientific data, consider these possibilities in light of human values, and propose plans and policies to realize those most desirable possibilities. One can see in the above list many items that revolve around the ideas that the future is possibilities, that we can evaluate these possibilities and make decisions regarding which are the most preferable, and that carried forth

into plans and actions, our decisions create our future. Future studies empowers humans to determine their future.

It is important to see in Bell's views the integration of knowledge, value, and action. We make value judgments on informed predictive possibilities and guide our future actions toward the most desirable ends. According to Bell, futurists do attempt to predict the future (with degrees of possibility, probability, and the unavoidable contingency inherent in all human knowledge) based on whatever relevant factual evidence can be gathered. They make "presumptively true" predictions, e.g., if the following conditions and trends persist, the following future events will occur. These predictions constitute the scientific aspect of future studies and its knowledge base. But futurists don't simply make predictions; they evaluate (for desirability) the possibilities. To quote from Bell, "There are better or worse futures." Further, futurists don't simply think about these preferred directions; they attempt to encourage planning, policy, and action based on their predictions and value judgments.

Bell also thinks that values can be scientifically, objectively, and rationally assessed—contrary to the traditional distinction of value and fact that has developed in modern times. The factual consequences of adopting a value in the future can be (probabilistically) predicted and assessed. We can consider where a particular value will lead us.<sup>94</sup> Futurist thinking gives us a way to assess our values, as we attempt to ascertain the future consequences of our values.

Bell's integrative (or holistic) philosophy of future studies aligns with the contemporary scientist E.O. Wilson's ideas on the importance of inter-disciplinary thinking and his principle of consilience. Wilson believes that all the significant problems of our time require the input and integration of multiple disciplines, in particular, a pulling together and "consilience" of the sciences and the humanities.<sup>95</sup> Bell sees the future as a multi-faceted reality, involving technological, economic, social, and ethical issues. When we make predictions about the future, we need to consider all these dimensions of human reality and their interaction. Although there are differences between Slaughter's Integral Futures Studies and Bell's philosophy, there is a common agreement on the need for integration of different dimensions of human life in future studies.

Bell's integrative concept of future studies and his synthesis of knowledge, values, and action can be applied to our understanding of future consciousness. Future consciousness does not simply anticipate, but it judges or evaluates its creations and imaginative scenarios, which in turn fuels emotion and directs motivation toward action. Thought, imagination, motivation, emotion, and action are interactive and interdependent in future. Not only does Bell think that futurist thinking is essential for decision based action, but he also thinks that future knowledge (in the sense of probabilistic predictions) is the most useful form of knowledge. These points underscore the cognitive and practical values of thinking about the future. Finally, Bell believes that the various capacities and skills associated with futurist thinking can be further developed through education. I discuss all these points in depth in *The Evolution of Future Consciousness*.<sup>96</sup>



Another important idea to highlight from Bell's list of purposes and assumptions of futures studies is his belief that humans create their future. Bell's scheme of "thinking and action" is a framework for creating the future in an informed, methodical, and rational way. Basically, Bell concurs with Enlightenment philosophy. He believes that humans are responsible for their future, although humans often find ways to shirk their responsibility by blaming external forces, such as fate, destiny, or powers beyond their control.<sup>97</sup> His "action science" approach is a way to emphasize our responsibility for the creation of the future. Further, the general scheme of assessing facts and possibilities, evaluating the possibilities, and formulating and enacting plans to realize the most desirable possibilities provides a general outline for how to create the future.

Bell definitely believes that future studies is a science—in particular, an action science, for the scientific data collected is used as a basis for proposing and implementing informed action. He thinks future studies is scientific because it collects data and makes predictions based on data collection. Also, it studies facts, such as trends, patterns of change, and people's belief systems and values, and fundamentally strives for an understanding of the truth. I would add that future studies also contains various competing explanatory theories, and futurists often debate these theories using scientific and empirical data and evidence. Bell examines in significant depth the nature of science and scientific methodology, and attempts to demonstrate these scientific features in future studies thinking and research. For Bell, it is clearly important that our understanding of the future include relevant scientific principles and information—future studies and future consciousness must be factually informed as much as possible.

Yet, in attempting to demonstrate clearly the scientific quality of future studies, Bell excludes non-scientific aspects of future consciousness from his definition of future studies. Although Bell is critical of the idea that futures studies is more of an art than a science, he does acknowledge "artistic" elements in future studies. However, he is a purist in that, although he supports "methodological diversity" in future studies, he excludes science fiction and religious-metaphysical approaches from future studies. Marien and Slaughter's views of the discipline clearly seem broader. To exclude science fiction because it is more art and literature than science ignores the basic fact that science fiction has significantly contributed to futurist thinking and fuels the imagination of possibility thinking. Similarly, the basic archetypal concepts of ancient mythology and religion influenced modern thinking about the future and addressed the emotive and personal dimensions of future consciousness. Finally, it could be argued that introspective, intuitive, and mystical approaches to the future are excluded in Bell's system, yet all of these perspectives have value and provide a more complete view of human reality than objective science alone.

Also, Bell sees future studies as fundamentally a social science—its basic domain of study is the future of human society—but this definition also seems too narrow, for the study of the future also includes ecology, the environment, and the cosmos. Future studies must study the future of everything because

humanity and society are contextually embedded within this reality; that is, the future of nature and the cosmos is relevant to the future of humanity.

Aside from his excessive and exclusionary emphasis on science in his depiction of future studies, Bell also presents a decidedly rational theory of future consciousness. He describes decision making about the future as a logical process. Facts are gathered and tentative conclusions and extrapolations into the future are derived. Values and consequently goals for the future are identified by considering the potential effects or results of following these values and goals. Plans are formulated and actions are initiated based on the thoughtful consideration of values and goals.

But future consciousness involves more than just scientific understanding and logical reasoning. In the creation of the future, people are influenced by inspirational visions and ideas. Images drive us as much as reasons. People are emotional and intuitive about the future as well as rational and factual. There is always an unavoidable element of faith in our beliefs and behaviors. Often, our purposeful actions feel more impulsive than methodical. The unfolding of our lives cannot be reduced to a set of calculations. Human life is personalized—it is more than just abstractions and impersonal facts. Humans live dramas and stories. Life is an adventure as much as a strategic plan. All these points were made by the Romanticists in their criticisms of Enlightenment philosophy.<sup>98</sup> The rationalist could respond that reason and evidence provide a better approach to the future than emotion, impulse, superstition, and faith, but the basic fact is that humans are psychologically multi-faceted and richer in their mental reality than the rational theories of consciousness admit. Reason and evidence are critical and cannot be discarded in approaching the future, but one-sided rationalist theories of consciousness and action are too limiting.

On the positive side, Bell's concept of future studies as an action science does integrate two important dimensions of human reality. Science could be defined as the systematic search for factual knowledge and theoretical understanding about nature; i.e., it could be characterized as a descriptive discipline. Yet this view of science reflects the value-fact split of modern times. Our modern view of science states that science attempts to describe and understand the facts, and not to evaluate them or search for values. Within this view, science cannot make value judgments. But, the initial spirit of the Enlightenment was to integrate fact and value—to find a way for secular understanding to serve the ideals and goals of human society. Further, Enlightenment philosophy did support various values, such as freedom, wealth, and human happiness. Within Bell's scheme of future studies, he articulates a method for uniting fact and value. In thinking about the future, we should identify our basic values for tomorrow (our preferable futures), and through scientific data collection and theoretical understanding, we should assess the possible directions that our world is taking. We can then ascertain whether the world is moving in directions we think (evaluate) as desirable, i.e., aligning with our values. If trends are leading away from identified values, we can ask, "What can we do to redirect the process of change?" In comparing our predictions with our values, we can inform our decisions about what actions to take. Further, as noted

earlier, for Bell, we can always subject our values to a futurist empirical test. We can make hypothetical predictions of the future factual consequences of our values. We can see if we really want to follow those values. To some degree, what Bell is describing here coincides with what humans normally do in developing goals and plans, though probably not with such systematic rigor.

### **Predicting the Future**

*"It is difficult to say what is impossible,  
for yesterday's dream is today's hope and tomorrow's reality."*

*Robert Goddard*

*"In 1901, I said to my brother Orville that man would not fly for fifty years.  
Ever since I have distrusted myself and avoided all predictions."*

*Wilbur Wright*

Let's examine in more depth, two of the central issues in future studies and futurist thinking, the prediction and control of the future. Many religious and mythological views, as well as secular and scientific philosophies, assumed that the future could be predicted; however, the reasons for these convictions differed. Myth and religion often subscribed to destiny and fate; science supported causal determinism. The secular view of progress also assumed that the future could be controlled by humans, something that religious and mythical views often did not accept; for them deities and fate dictated the future. Following the scientific spirit of the secular view, Wendell Bell and other contemporary futurists have argued that, through scientific principles and empirical data collection, predictions about the future can be made with some degree of probability, and this information can be used to facilitate the control of the future.

We should recall that not all futurists state that they believe in the feasibility or desirability of predicting the future. Daniel Bell has questioned both the scientific rigor and actual validity of futurist predictions. Peter Russell argues that most of the significant changes in the last 100 years have been unanticipated because the changes went beyond the imagination of earlier forecasters.<sup>99</sup> Walter Anderson simply asserts that the future can't be predicted, yet he apparently does believe that certain general trends in our world, such as technological growth and globalization will continue, which are, in fact, general predictions.<sup>100</sup> Both Laura Lee and Graham May point out that futurists have made numerous mistakes in predicting the future.<sup>101</sup> May also states that talk about possible and probable futures could be seen as an excuse for incompetence. Pohl notes that futurists are good at predicting what "might" happen but not what will happen.<sup>102</sup>

Many futurists contend that future studies doesn't attempt to predict the future, but rather it presents alternative or possible futures.<sup>103</sup> Peter Bishop argues that it is better to think of the future as multiple possibilities rather than one clearly predictable eventuality.<sup>104</sup> Cornish, in *The 1990's and Beyond* and *Futuring*, contends that futurists don't try to predict the future.<sup>105</sup> Rather, futurists present different possibilities in order to lay out before us our choices for tomorrow. For Cornish, if the future could be predicted it would be determined (or predetermined) and, consequently, there would be no choices to make and no practical reason to think about the future. What would be the point, since our future actions would be determined as well? If the future is possibilities, including our own personal lives, then we have some options to consider, evaluate, and act upon. Hence, a very predictable future seems to preclude the possibility of choice—there is an apparent incompatibility between determinism and freedom of choice. But we have also seen that Cornish does support the idea that futurists engage in cautionary and probabilistic prediction, and in fact, many of the futurist methods he lists are of this type. Furthermore, it is only because we can thoughtfully anticipate the probable consequences of present trends and conditions that we can make informed choices about the future.

Ziauddin Sardar presents the argument that predicting the future is a way of controlling the future, to the point of destroying different possible futures that could have been realized. When futurists provide predictions they constrain the mindsets of individuals—they create anticipations and expectations that narrow our imagination and our actions. Predictions can become self-fulfilling prophecies; at the very least, they influence individuals to perceive and behave in certain ways. Predictions close the human mind. Hence, Sardar's argument is not that the future can't be predicted or that futurists don't attempt to predict—he believes that futurists do make many predictions—rather he believes that prediction destroys freedom and openness to the future.<sup>106</sup> If an individual firmly and unwaveringly believes in just one definite future, the person has closed his or her mind and stifled his or her imagination. In essence, the person becomes mentally rigid and blind to other avenues and possibilities for the future. Sardar's argument is that futurists, in making predictions, inhibit the minds of others and destroy their imagination and freedom.

Peter Russell makes an analogous argument. Uncertainty about the future has a positive effect. Uncertainty frees us from constraining expectations. If we are certain about the future, our mindsets are rigid; with uncertainty comes increasing flexibility.<sup>107</sup> Interestingly, Russell makes the general prediction, (based on the observable trend that change has been occurring faster and faster) that this accelerative trend will continue into the future, making it increasingly difficult to predict the future. We are approaching an "information" and "prediction horizon," in which the world will be so different from today that it will be next to impossible to understand it from our present mindset. In essence, Russell's prediction is that increasingly in the future we won't be able to predict the future at all.

On the other hand, as noted in the last section, Wendell Bell argues that even if futurists present a range of possibilities, they do engage in predicting the

future. Predictions of the future are simply probabilistic rather than absolute. For Bell, predictions can be made with various degrees of certainty and precision, depending upon the complexity of the variables being examined and our scientific understanding of the variables—we can have degrees of **"warranted assertibility."**<sup>108</sup> Even if futurists predict a range of possibilities and their scientific rigor and evidence to warrant these predictions varies, they do anticipate and predict, and these informed predictions help us in thoughtfully directing the future.

Aside from the use of scientific inference based on empirical data, other futurists argue that history provides a foundation for predicting the future. Another well-known futurist, Graham Molitor, thinks that justifiable and accurate general predictions, based on past trends and historical developments, can be made far into the future. For Molitor, the future is part of a "seamless continuum," and "broadly speaking, there is nothing new under the sun."<sup>109</sup> Trend extrapolation is the best method for predicting the future, and according to Molitor, most discontinuities and surprises in the past could have been foreseen. Freeman Dyson also believes that the best way to predict the future is to study history.<sup>110</sup> Even Cornish acknowledges that one can predict the future from the past—in fact, the most reliable prediction for the future is that it "will be like today." Cornish identifies a set of "continuities of past and future," including continuities of existence, pattern, change, and causation, which can serve as a basis for extrapolating from the past to the future.<sup>111</sup>

The historian Robert Nisbet makes the important point that having a sense of the past is necessary for extrapolation into the future. He notes that in contemporary times, due largely to the influences of both Modernism and Postmodernism, the past has been disowned, rejected, and jettisoned. The faith of modernism that the future will be different and better than the past makes history seem either unimportant or negative. The fast pace of change leaves history in the dust—forgotten and abandoned. The Postmodern rejection of the Western ideal of some absolute and singular history of humankind opens the door to multiple versions of the past with no common foundation for interpreting the direction of time. Yet, if we reject the past, we have no way to identify patterns, directions, and continuities in time, and thus no basis for anticipating tomorrow.<sup>112</sup> If we destroy historical consciousness, cutting off one end of our extended temporal consciousness, we destroy the other end, eliminating our sense of the future. History and memory are clearly essential in anticipating and predicting the future.

As Toffler and Toffler state, there are various criticisms regarding the value and validity of predicting the future, including it is against the will of God; the future is governed by chance; predictions take the spontaneity out of life; and, historically, we have been mistaken in many of our predictions. The Tofflers believe though that humans have done a good job of forecasting and controlling the future as a survival and cognitive trait for a long time.<sup>113</sup> The capacity to anticipate the future—to extend our temporal horizons with some degree of accuracy—is an evolutionary development that has been going on throughout the history of humankind.<sup>114</sup>

If the future were simply chance, how could humans make relatively accurate predictions about the immediate future in everyday planning and behavior? In innumerable ways, even without the benefits of science or academic historical research, we correctly anticipate the future. The world around us possesses a great deal of order, continuity, and repeating pattern, as Cornish and Molitor note. It is not simply chaotic and unpredictable; our minds learn and absorb these regularities. Through the accumulation of memories, we develop cognitive schemes for dealing with the future. In normal human consciousness, a sense of the future based on memories of the past seems to be absolutely essential for basic psychological functioning. If the future were entirely due to chance, then our efforts to guide or control our lives would be pointless—a world of chance precludes control as much as a world of absolute determinism.

Futurists who provide possibilities rather than certainties are still constraining or limiting their visions of the future based on their assessment of reality. They do not believe in pure chance, or else why would they identify certain possibilities rather than the potentially infinite set of all possibilities of a universe of chance?

Reality seems to contain both: some degree of predictable order and some degree of openness and indeterminism. Within futurist writings, we find predictions and arguments for the value and validity of predictions, as well as arguments highlighting the openness and possibilities of the future. Sometimes, such as in Bell, we find both perspectives combined—futurists do make predictions but these predictions are of different possibilities or probabilities, rather than singular absolute eventualities. Even futurists who argue that the future can't be predicted, such as Cornish, often do make general predictions, albeit with cautionary notes about the contingency or probabilistic quality of their predictions.

\* \* \* \* \*

Let us consider in more detail the relative elements of predictability and unpredictability regarding the future. A good place to begin our discussion is with the well known book *The Limits to Growth*, produced and published by the Club of Rome in the 1970s.<sup>115</sup> The book is a prime example of how mathematics, science, and computer simulations can be applied to the study of the future, yielding a variety of quantitative predictions about the future. The methods employed in *The Limits to Growth* were modeled on scientific principles of statistical and experimental research. *The Limits to Growth* was based on Jay Forrester's "World Dynamics" model of global society, economy, and ecology. Within the study, lists of key global variables (e.g., population resources, energy use, and environmental factors) were identified and quantified. Yearly statistics on these variables were collected, the rates of change were computed, and computer simulations were run, predicting future statistics on the different variables. It should be noted that the variables interacted with each other; hence, if industrial production went up, so would pollution, which in turn would affect climate and weather. The study predicted a variety of interaction effects among

the different variables. Also within the study, aside from simply making predictions based on present trends, variables were hypothetically manipulated to see, for example, if world population growth were controlled, how that would affect future energy reserves.

The predictions in *The Limits to Growth* were highly pessimistic. Unless population and industrial growth are very quickly brought to zero, it was predicted that the world economy would collapse within a hundred years due to pollution and the exhaustion of essential resources. Although the study employed mathematical and scientific techniques, and its predictions were presented in quantitative form, the credibility and validity of its conclusions were hotly debated. The study has been criticized or questioned by other futurists and scientists and many of its short-term predictions have turned out to be in error.<sup>116</sup> What went wrong? Or should we say “What went right?” since many of the pessimistic predictions have—as of yet—not happened.

*The Limits to Growth* looks at statistical trends and makes predictions based on the observed trends. As noted, this is a common practice within future studies. Many other futurists also monitor and measure trends as a basis for predictions. This approach, in particular, has also been employed by John Naisbitt in his popular books *Megatrends* and *Megatrends 2000* and by Pearson in his *Atlas of the Future*.<sup>117</sup> Both of Naisbitt's books are full of statistics and facts concerning what variables are increasing or decreasing in economy, government, business, technology, and social life. Naisbitt makes predictions based on these trends and his predictions have had a considerable popular influence.<sup>118</sup>

**Trend extrapolation** is limited though in validity and applicability for a variety of reasons. First, change is not always linear. The term “linear” means moving in a straight line or single direction—it also means constant as opposed to wavering or fluctuating. Of course, many scientific laws of nature describe regular patterns of change that stay constant across time and place, but not all change is linear or constant. A trend may continue for many years and then either reverse or accelerate. Linear thinking and trend extrapolation assumes a steady rate of change. Natural history and the scientific study of change demonstrate that change is not always smooth and steady but sometimes sudden and dramatic.<sup>119</sup> Change can accelerate and can decelerate. Many phenomena in nature seem to show non-linear change.

Aside from the fact that natural change is not always constant, a second factor that undercuts linear extrapolation is “**wild cards**.” For example, global trends and variables are often significantly affected by individual and local events (e.g., an assassination, natural disaster, or technological discovery). History is filled with unique, unexpected singular occurrences that have global and holistic effects. It is a challenge to predict such individual events and how they will affect the total scheme of things. The futurist John Peterson describes “wild cards” as high impact/low probability events that may trigger consequences that are much more intense and pervasive than the original event—input does not equal output. Peterson thinks that most wild cards are presently being ignored, though there are usually indicators that point to them.<sup>120</sup> In his mind, it is possible, as well as desirable, to attempt to prepare for such events. To whatever degree we can

prepare for such surprises, the fact remains that such “wild cards” contradict the simple linear model of change. An unexpected surprise can unsettle the whole system.

Russ Ray believes that humans can do better than chance in predicting wild card type events. In his article, “Catastrophe Futures,” Ray contends that nobody can predict, except by random chance, the occurrence of catastrophes.<sup>121</sup> Yet, “futures contracts” are very good predictors of the future since people are investing money in expected prices, and, when money is on the line, people make excellent predictions. **Catastrophe futures** have developed as a new investment item where people invest money in the seasonal probabilities of catastrophes in different regions of the country. When investors collectively anticipate catastrophes, they do better than chance. Yet “catastrophes” are clear examples of “wild card” events that trigger non-linear change. Ray thinks that catastrophe futures could turn out to be the best predictor of catastrophes ever, since the investment of money and collective input seems to bring out the best in us as forecasters of the future.

Still another important factor relevant to the non-linearity of change is creativity and novelty in the future. Richard Fobes argues that we can use creativity to glimpse the future in a way that would be superior to the methods of trend analysis.<sup>122</sup> One simple way to see the connection of creativity and forecasting is to note that in the past new developments came through creative solutions to present problems. A negative trend is slowed, eliminated, or reversed by creative human problem solving. Change in human society is often nonlinear involving creative jumps in human ingenuity and invention. Hence, we could predict that the future will sometimes involve creative solutions to present problems, such as the global problems identified in *The Limits to Growth*.

The creative approach to the future assumes that problems will be solved and negative trends will not continue along the same path. Humans will not just sit idly by while the ship slowly sinks; they will do something, often with creativity.<sup>123</sup> Trend analysis is, therefore, too shortsighted and uncreative. I should note that there is some clear disagreement on this issue—humans do not always come up with ingenious solutions to negative trends, and thus, we should seriously consider the apparent long-term consequences of present trends and not just hope for some creative miracle.<sup>124</sup>

Over the last couple of decades, a new set of principles and techniques has emerged in science for understanding and predicting the nonlinear and fluctuating aspects of change. This new approach goes under different names including “**chaos theory**,” “**open systems theory**,” and “**complexity theory**.”<sup>125</sup> As introductory definitions, “chaos” means randomness and the lack of apparent pattern and order; “open systems” refers to the fact that systems in nature are open to each other (rather than closed) and mutually interact and influence each other; and “complexity” means degrees and levels of structure and differentiation within a system—the opposite of simplicity.<sup>126</sup> As it turns out, chaos, openness, and complexity are connected together within nature. The structure of open systems is described in terms of complexity theory. The interaction of open systems generates varying degrees of chaos and can produce non-linear effects



and increasing complexity. Many of the ideas of these new scientific perspectives have been applied to future studies, futurist predictions, and computer simulations of the future.<sup>127</sup> These new ideas are helping to broaden our perspective on change and the prediction of the future—they take the prediction of the future beyond a simple linear model.

In his book, *Out of Control*, Kevin Kelly provides a good example of the newer ideas emerging in future studies that derive their inspiration from chaos and open systems thinking.<sup>128</sup> Kelly is particularly critical of the approach taken in *Limits to Growth*. The *Limits to Growth* model, Kelly argues, does not allow for the introduction of new significant variables that would alter the flow of events (e.g., a different energy source or innovative technology or industry). For Kelly, the linear model simply extrapolates on present conditions. Because the model adds nothing new, the world system in this model is not flexible or creative. But Kelly illustrates throughout his book that nature has often been quite creative and inventive in its evolutionary history. Numerous other scientists and philosophers of nature, such as Paul Davies and Ilya Prigogine have made similar arguments. Nature exhibits novelty and transcendence across time—it adds new structures and complexity to its organization.<sup>129</sup> Humans are part of this ongoing creative process. As Fobes has also noted, history demonstrates that the human species has repeatedly created new capacities, modes of behavior, physical structures and instruments, and novel ideas throughout its development.<sup>130</sup>

The model in *The Limits to Growth* does not acknowledge the central significance of learning. It portrays humans as incapable, if the need arises, of altering the direction of change. However, humans do learn and adapt, and they often come up with solutions to challenges and problems. Thus, the linear model of change is fundamentally stupid—it implies that humans will simply walk off the edge of the cliff rather than learn and avoid walking off into the abyss. Humans build bridges. In fact, the ultimate point in *The Limits to Growth* is that humans need to thoughtfully assess present trends and alter the direction of change or face social catastrophe. This is what humans have done throughout history. Humans can and do affect the direction of trends; they learn, adapt, and change.

Kelly also thinks that the linear model fails due to the unpredictable effects of multiple interacting variables. Although efforts were made in *The Limits of Growth* to connect and compute the interaction effects of trends, Kelly notes, following research in open systems theory, that when many variables are interacting, there can be significant fluctuations, chaos, and wild escalations. Similarly, Sally Goerner, who defines linear thinking as the belief that the effect (output) is proportional to the cause (input), points out that due to the complex interaction effects in natural systems, small changes in input can produce disproportional changes in output.<sup>131</sup> Recall Peterson's idea of wild cards. Goerner makes the general point that the combination of non-linear and interactive effects, which applies to most phenomena in nature, renders the linear model of change completely inadequate as a model for predicting the future.

Interactive effects within nature produce the phenomenon of “**unintended consequences.**” Because reality consists of open systems that interact with each other, any single event can produce effects that ripple out through the entire

network of nature. Nature is an interactive whole, rather than a set of separate and localized realities. If, for example, some new technological device is introduced into modern society and this new device has a specific effect on human life, there could be a host of other effects produced that were not anticipated. The automobile was going to increase the speed of transportation, which it did; however, it also generated or stimulated the growth of congestion, pollution, suburbs, and a whole subculture of car enthusiasts. Because the effects of any new device or invention permeate through the whole network of human society and nature as well, its effects will not be localized but holistic. How can one predict all the possible consequences of an innovation throughout the whole system?

Steven Gillon, in his article, "Unintended Consequences: Why Our Plans Don't Go According to Plan," discusses some of the reasons why humans seem blind to the various consequences of their actions. He notes that complexity theory does imply a degree of unpredictability in the holistic effects of singular events, but he also points out that the normal human desire to achieve the planned results of our actions (the desire for control) will make us either oblivious or defensive to the possible ways something can go wrong with our plans.<sup>132</sup>

Edward Tenner has written an entire book on unintended consequences in technological innovation, aptly titled *Why Things Bite Back*. Tenner believes it is the human desire to control and subdue nature that causes all the problems. Instead of attempting to live with nature, humans try to dominate it, and nature reacts, so to speak, with a mind of its own. He even uses the expression "revenge effects" in referring to the counter-reactions of reality to our efforts to control it.<sup>133</sup> In using such an expression, Tenner may be anthropomorphizing both nature and technology, but nature clearly does react to our actions and these reactions can be holistic and very difficult to predict.

Gillon, in reviewing Tenner's book, does not think that we should give up in our efforts to improve our lives or control our reality. We should not despair but rather acquire humility. Humanity should be learning through the lessons of complexity theory a more realistic and valid sense of predictability and control.

Yet based on his understanding of interaction effects, Kelly is rather pessimistic regarding how far into the future we can predict. According to Kelly, chaos theory seems to imply that, in the short run, predictions have some level of accuracy, but for nonlinear systems, which include most systems in nature, predictions in the long-run drop to chance. Kelly believes that humans do very poorly with long range predictions. He argues that although there are times when long-term predictions are accurate, almost all long-range predictions are off the mark.<sup>134</sup>

At the other end of the continuum, the futurist Adrian Berry argues that predictions of the future get increasingly accurate as we move into the more distant future.<sup>135</sup> Berry's logic is simple: Whatever we may predict, eventually will happen given enough time. A variation on this idea would be that if in the future all things are possible, then eventually all possibilities are realized. Also, both Molitor and Wright have argued that long-term general trends in human history are not only quite apparent, but provide a basis for making general predictions

into the future.<sup>136</sup> We might not be able to anticipate the specifics but the overall flow of history is predictable.

Further, I would add that chaos and open systems thinking actually provide new scientific ideas for increasing the sophistication and accuracy of our predictions. The linear model of change is too simple and consequently often inaccurate. Non-linear concepts enrich our scientific understanding of change and provide a more accurate depiction of reality. Within an open systems perspective of reality there is more fluctuation, novelty, and chaotic behavior, but these phenomena turn out to be real facts of nature that need to be acknowledged and incorporated into a theory of change. We can predict that there will be jumps in complexity, interaction effects, and a host of other types of change that would go unrecognized and unanticipated in linear predictions. We may not get the presumed (though mistaken) degree of accuracy of linear predictions with non-linear thinking, but we get a better (and more valid) idea of the general patterns of change that occur in nature.

To illustrate this point, a strong counterexample to Kelly's position, that is both contemporary and incorporates elements of chaos and open systems thinking, is the work of Theodore Modis, including "Life Cycles: Forecasting the Rise and Fall of Almost Anything," his book *Conquering Uncertainty*, and various publications that can be accessed on the WWW.<sup>137</sup> Modis contends that there is a general pattern to the growth and decline of natural systems. This pattern of the life cycle of systems in nature is nonlinear, but it is regular, showing the form of an **S-curve**. The growth of a system starts slowly, but goes through a process of positive acceleration and reaches a peak rate of growth halfway through its life cycle. Its rate of growth then begins to negatively accelerate and slow down, eventually coming to a halt. According to Modis, chaos within the system is at a maximum early in the system's history and late within its history. The beginning and the end are the times of greatest innovation, mutation, and risk taking. In its maximum growth period, during its middle age, the system is highly conservative, linear, and orderly. Modis, in fact, draws an analogy between the pattern of change in a system and the four seasons—a cyclical phenomenon. Spring is initial slow growth, summer is achieving maximum growth and extension, fall is a conservative streamlining and slowing down, and winter is decay, possible death, or conversely possible transformation into something creatively different.

Modis has applied this model to business companies, commercial products, industries, countries, and ecosystems, and he contends that his model fits all of these different phenomena very well. He proposes that through using this model, we can make more informed and successful decisions about guiding our future. A constant growth rate and proportionality of input and output are unrealistic ideas because most systems are non-linear;<sup>138</sup> they have a life cycle and they eventually fail, but for Modis, there is a pattern to non-linear change and consequently some basic features about the future can be predicted.

Another scientific theory that adds to our understanding of the predictability of nature is **quantum theory**. Quantum theory was developed in the early twentieth century, as a new way to understand the micro-structure of the physical world (atoms and sub-atomic particles and forces). It contradicted

Newton's strict deterministic physics. Within quantum theory, the behavior of sub-atomic reality is probabilistic rather than completely determined. One can predict a range of possibilities for states of sub-atomic particles very precisely, but not definite singular states.<sup>139</sup> Since the sub-atomic realm is the foundation of all physical reality, quantum theory seems to imply that there is an irreducible dimension of probability and uncertainty in the behavior of physical objects. Consequently, futurist predictions may be inherently limited to presenting a range of possibilities (or probabilities) due to the fundamental probabilistic nature of physical reality. Reality is not completely deterministic—the future is a set of forking paths.

The biologist Kenneth Miller contends that the indeterminism within quantum reality implies that the behavior of physical objects at the macro-level, which would include humans and all the familiar objects and systems of our world, contain a degree of indeterminism as well. The effects of indeterminism at the sub-atomic level generate indeterminism at the macro-level. For Miller quantum theory implies that the future is inherently uncertain. Miller carries this idea one step further: because reality is not entirely determined, humans can have freedom of choice. There would be no possibility of freedom in a totally determined world. We saw a similar argument made earlier by Cornish. If there are no real possibilities, there is no freedom.<sup>140</sup>

It is not clear though how indeterminism at the quantum level supports freedom of choice at the human level. Does quantum reality produce indeterminist effects at the human level? If so, wouldn't this produce a degree of chaos in the sequence of our thoughts and the consequences of our behavior, and how would this support freedom of choice? Freedom of choice is not the same thing as chaos.

As a general thesis, Miller emphasizes the element of chance or luck in the processes of nature. For Miller, quantum theory implies an element of chance at the sub-atomic level. But also, following the ideas of the evolutionary biologist Stephen J. Gould, Miller argues that chance has played a significant role at the macro-level in the evolution of life. Miller supports Gould's contention that history is contingent rather than deterministic, and if the history of life were replayed, it would not necessarily come out the same way. Luck or chance has played an important role in determining which species or ecosystems have survived and which have perished.<sup>141</sup> For example, dinosaurs, which were highly adapted and successful life forms, were victims of bad luck when a huge asteroid collided with the earth. This illustration, it should be noted, is an example of Peterson's wild card effect. One piece of rock, though rather large and moving very fast, changed the whole course of life on earth.

As with other theorists who espouse a belief in indeterminism and the uncertainty of the future, Miller does not always consistently follow his professed indeterminist philosophy. At times, he states that the present is a consequence of the past, which is clearly a deterministic viewpoint. Though he acknowledges the role of chance in evolution, he also invokes the Darwinian principle of natural selection—which is a law of nature—to explain the general pattern of increasing biological complexity through time.

As a general point, all futurists and scientists who argue that the future is not predictable will inevitably also present hypotheses and speculations regarding general patterns of change and general directions for the future. No one seems to be a pure indeterminist. No one believes that the universe is totally indeterminate through time. This is quite understandable since a purely chaotic vision of reality would be unintelligible. Everyone sees some degree of order or pattern across time in the universe.

To add some further support to the idea that the future, to some degree, can be predicted, *The Futurist* contains an interesting article on this topic, "What May Happen in the Next Hundred Years" by J. Watkins, reprinted from *The Ladies Home Journal*, December 1900.<sup>142</sup> Although many of Watkins' predictions are off the mark (e.g., he predicted that the letters C, X and Q would disappear from the alphabet), many hit the target. Almost one hundred years ago he predicted that telephones would circle the globe, autos would take the place of horses, kitchen appliances would become electric, photos could be telegraphed around the world, and planes, tanks, and submarines would be used in warfare. Such predictions do not encompass the totality of our present reality—many things have been surprises—but many specific yet important elements of the future were foreseen.

It can be argued that with so many people always trying to predict the future, some are bound to get predictions right just by chance. Yet, there seems to be more involved than simply chance. As noted earlier, H.G. Wells, who thought extensively about the future, made numerous, quite imaginative and accurate predictions. Recall that science fiction writers have made an incredible variety of accurate predictions. The great scientist, artist, and inventor, Leonardo da Vinci, also anticipated a number of modern technological developments. The list could go on. For example, see the predictions of the *Commission on the Year 2000* noted above, and also how Daniel Bell, the editor of the Commission report, in his later book, *The Coming of Post-Industrial Society*, accurately predicted the contemporary growing separation between the technological elite and the lower service class.<sup>143</sup> As Snyder notes, many futurists in the 1960s foretold the present traumatic changes of the Information Age.<sup>144</sup> It seems that people who are informed, think about the future, and possess high levels of imagination, creativity, and intuition are often quite successful in their predictions. Their capacity for foresight is enhanced. A key point to note, following Fobes, is that creativity or the ability to see beyond the constraints of simple linear change increases the power of human prediction.<sup>145</sup> Since the future is creative, it makes sense that thinking creatively will enhance one's foresight.

Although Laura Lee is one writer among many who points out the numerous examples of bad predictions by experts, she does not think predicting the future is a hopeless endeavor. She lists a number of considerations to keep in mind when making predictions. Lee argues that it is better to be bold and risky in one's predictions than cautious. The fear of being wrong inhibits making interesting predictions.<sup>146</sup>

If there are methods and ways to improve the quality of predictions, then not all predictions are equal, and there are ways to evaluate them. The following

criteria proposed by the futurist Andy Hines are intended to provide some guidance (no guarantees) in evaluating predictions.<sup>147</sup> I have added comments in *italics* to further elaborate and explain Hines' points. He notes:

- Japanese forecasts tend to have high levels of accuracy because they are normative or prescriptive. The forecasts are actually plans to achieve something and become self-fulfilling prophecies. *This is a fitting example of the idea that the best way to predict the future is to create it. Normative predictions set goals that people attempt to achieve and thus fulfill the prediction.*
- We should check to see if the forecaster has an agenda. Hines says that having an agenda is fine if the writer is up front about it. Hidden agendas tend to work against predictions coming true. *This point notes that futurists have theories and ideologies, which clearly influence their predictions. As Wendell Bell points out, futurists often confuse their wishes for the future with predictions.*
- Methods for making predictions may be formal or informal. If the method is formal, though, it doesn't follow that the predictions are better; science fiction and intuitive hunches can be more accurate than statistical extrapolations. *The question is whether science fiction and other approaches, besides abstract and mathematical reasoning, should be included in the study of the future. Science fiction, intuition, and even mystical visioning may do more than inspire; these approaches may also inform.*
- Experts in an area are not necessarily better than non-experts. *This point highlights the importance of humility and contingency in making predictions.*
- Forecasts have underlying assumptions—technological and social. Forecasts often go wrong if assumptions are not clarified. *Again, it is important to understand and clarify the theoretical framework behind the predictions.*
- Putting specific time lines on forecasts makes them more exact, precise, and thoughtful. *Analytical and detailed thinking is important in futurist predictions.*
- We should ask what the trigger events are in a forecast—those events thought necessary to occur to lead to the forecast. *This point notes the importance of singular events in determining the direction of change.*

- We should ask what is missing in the forecast. Often it is the unique events, wild cards, and discontinuities that are missing. *These are all non-linear aspects to change.*
- Another common oversight is not taking into account the necessary resources for the predicted development. Who is going to pay for the innovation? (Resources can be psychological as well as physical, and the costs of a new development are often emotional and mental, as well as financial.) *Change requires energy and effort.*
- We should ask what the forecast means to us personally. What are the implications? Hines contends that there are not enough of the personal implications presented in forecasts. *Meaning and value are important in thinking about the future. Generally, it is the motivational, emotional, and personal-meaning features associated with a potential change that will drive it to realization. Following Slaughter, we should look at the subjective dimension of the future, as well as the objective.*
- In evaluating forecasts, two of the most common errors regarding technology are the overestimation of speed of deployment and the underestimation of the magnitude of impact. *The second point highlights how significant technology is in understanding and predicting the future.*
- We shouldn't focus too much on what may be wrong or methodologically unsound in a forecast, but we should look for interesting ideas and possibilities. *This point again reasserts the importance of a balance of logical reasoning and evidence, and creativity and imagination in thinking about the future.*

Given Hines' comments on science fiction, intuition, and informal methods, let us compare future studies with science fiction regarding predicting the future. In his article, "A Funny Thing Happened on My Way to the Future, or The Hazards of Prophecy," W. Warren Wagar argues that instead of attempting to make one set of general statistical predictions on the future, the futurist should attempt to develop various alternative futures that are more concrete and specific in details.<sup>148</sup> The chances of being correct on any one detailed scenario are rather slim (the target has been narrowed), but the futurist creates many different possibilities rather than one. Also, it should be noted that it is the unique and colorful events in history that are often highly significant and interesting; general trends or conditions do not convey a complete picture of everything important. Creating detailed visions rather than general schemes captures this essential element of realism in predictions. Following Wagar's suggestions, science fiction writers who create various detailed and concrete stories of the future are on the right track. For Wagar, the predictive value of science fiction lies in its specificity of details and focus on the unique elements within any future.

A statistical or mathematical study on the future is clearly different in method and content from a science fiction novel on the future, but in both cases, a vision of the future is being created. Both forms of thinking present possible developments in the future, e.g., a generalized projection could be made regarding the future of weapons or warfare, or a science fiction story could be told involving various possible new weapons set in a hypothetical war. The science fiction novel may depend more on imagination, while the scientific study may depend more on analysis and computation. However, this difference at best is a matter of degree.

Both science fiction and future studies attempt to be realistic. Science fiction stories create more of an element of concrete realism. The realism in science fiction derives from the literary realism of detailed and plausible descriptions of characters, actions, and settings. Future studies attempts to present valid predictions and descriptions of the future, but its results are usually not framed within a personalized perspective with individual characters or specific scenes and settings. The resulting predictions are general conditions or facts, although specific examples of the projected future may be used to illustrate the general hypotheses. The realism of future studies derives from arguments, facts, evidence, scientific rigor, and logic. It is the type of realism and empirical validity created in support of a theory or hypothesis in science.

In actual practice and to their mutual benefit, the two forms of thinking and disciplines borrow greatly from each other. Futurists get ideas from science fiction stories and, conversely, science fiction writers get ideas for new stories by reading theories and projections about the future. Further, science fiction writers often do try to convince the reader through scientific or philosophical argument that the future described is plausible or possible. In general, our predictive capacities are enhanced through the combined strengths of scientific methods in future studies and the creative concrete imagining of science fiction. Relating back to the earlier debate on whether science fiction should be included within the domain of future studies, there are clearly some relative differences in approach, but the two approaches have been highly interactive and mutually enhancing activities throughout history. They have a common focus of concern: thinking about the future.

The themes of realism, prediction, and possibility thinking are also connected together when we consider the different cognitive levels of thinking that go into making predictions about the future. Predictions have degrees of cognitive complexity. A prediction can be and often is a simple straightforward extrapolation on some present trend. A prediction may simply identify some future event with a date for its occurrence. Such predictions convey a quality of certainty and provide people some level of security regarding the future. These types of predictions though often do not involve a high level of cognitive functioning. They are linear, single and, generally, not very realistic. Isolating one variable and drawing some straightforward conclusion about the future does not acknowledge the complexity of reality.

As open systems theory argues, reality is a network of interactive variables, and extrapolations into the future should consider the potential



interaction effects that could occur among these variables. If one wishes to understand the future, one should study and consider the whole system in which future events will be unfolding. One should attempt to connect and relate different factors, such as both technological and social variables. This type of holistic thinking may not offer simple answers like linear and insulated thinking, but it does reflect a higher level of cognitive functioning. Juggling a host of variables in one's mind and considering different interaction effects is much more complex and challenging to the human mind than linear insulated thinking. As we have seen, futurists often attempt to understand the big picture and the interaction of multiple variables. It also should be noted that science fiction involves the creation of holistic scenarios, where many different aspects of life are considered and integrated together into a realistic and rich story.

When one examines a variety of different factors and their interaction with each other, it is quite understandable that predictions would be probabilistic and multiple, presenting a set of different potential scenarios. This is not so much a failure of futurist thinking as a reflection of the complexity of the reality being considered and the complexity of the thought processes involved in understanding the reality. Each variable in the equation could behave in different ways and the interactive results could vary as well. As we have seen, futurists attempt to think interactively and holistically about the future, and that makes singular and absolutist predictions unrealistic. Within science fiction, a multiplicity of futures is presented as well—one at a time. Different stories of the future are offered, each reflecting a particular perspective regarding how a host of different variables will interact and evolve in the future.

Prediction is clearly connected with understanding. Understanding, in fact, is often judged on the capacity to predict. In identifying natural laws, scientists provide a basis for both making predictions about changes in nature and understanding nature as well. Since laws describe general patterns in nature, they give the world a comprehensible order, and because they are about regularities of change, they allow for the prediction of specific changes in the future. Laws both describe nature and predict its behavior.

When we come to the complex interactions of multiple variables within human society and nature as a whole, the capacity to predict the future becomes probabilistic and conditional. Also, predictions are no longer singular but sets of different possibilities. But futurists, like natural scientists, attempt to understand and describe their subject matter. Futurists attempt to identify patterns of change and draw conclusions regarding the consequences of these patterns. Prediction and understanding are connected in futurist thinking. Understanding the future entails understanding a complex and interactive reality, and predictions invariably involve a range of possibilities because of the relative uncertainty of the effects of complex interactions.

In summary, we have seen that futurists do attempt to predict the future using a range of scientific methods and principles, e.g., trend extrapolation based on statistical and empirical data, historical research, “creativity” and “catastrophe” thinking, open systems and chaos concepts, and theoretical models of change (such as Modis). Also, futurist prediction is connected with futurists' efforts to

make sense of the future—the complex array of variables and the general patterns and trends of change identified provide a basis for understanding, explaining, and predicting the future. Predictions of the future can also be made based on intuition and subjective hunches. We have seen that science fiction (futurist narrative) as a predictive tool expands the power and validity of futurist predictions. Science fiction provides multiple complex scenarios filled with specific detail and concrete realism. Some would contend that it is impossible to predict the future with any certainty or accuracy, yet the future clearly can be predicted within various ranges of accuracy and probability and all futurists engage in prediction.<sup>149</sup> Futurist predictions though, even if based on rigorous and informed scientific methods and concepts, are limited to ranges of possibility especially regarding the future of complex systems, such as human society and human technology. Yet for many futurists, this very limitation in predictability opens the door to human influence and control on the future—possibilities mean choices. Let us turn our focus more specifically to the issues of controlling the future and ways prediction and control are related.

### **The Control and Creation of the Future**

*“We are charting a land that is being created by the act of discovery...  
But to keep drawing that chart seems to be our self-appointed destiny.”*

*J. T. Fraser*

The activity of prediction (including anticipation and foresight) is intimately connected with other futurist activities and modes of consciousness, including the planning, creating, and controlling of the future. At the most general level, we develop predictions as a way to influence and control the future. Prediction is an effort to understand. We try to understand things better so we can have a greater and more effective influence on them. Knowledge is power. Foresight serves action.

From a psychological perspective, foresight is a perceptual understanding function, and planning and creating are action functions. In normal human psychology, perception and understanding, and planning and action form a complementary psychological pair—each process influences and guides the other. “Knowing that” and “knowing how” (to use a popular psychological expression), are coupled. We are continually guiding our behavior based upon our perception and understanding of what is going on around us, and our anticipations of what is to come. All choices and plans assume some level of foresight and understanding—they are based on beliefs about the effects of our actions and the behavior of the world. In turn, through feedback regarding our actions and interactions with the world, we revise and further develop our perceptual and conceptual knowledge of the world and our predictions about the future. Through feedback on our actions, our foresight grows and we learn to better anticipate the future. When futurists engage in prediction and articulate

strategies and actions for the future, they are simply building upon a basic set of interconnected psychological capacities, including anticipation, perception, conceptual understanding, planning, and purposeful behavior.<sup>150</sup>

Clearly, the goals of futuristic thinking go beyond prediction and understanding, but also include the direction and control of the future.<sup>151</sup> This is a clear extension of normal human psychology and future consciousness. All humans attempt to control the future whenever they act purposefully. Humans develop plans based on their understanding and anticipations of the future and use these plans to guide their behavior and influence events.

The control and purposeful direction of the future is one central goal behind thinking about the future and one critical survival feature of future consciousness. Controlling the future is highly beneficial for survival. We need to anticipate change with some level of success if we are to survive, for reality doesn't stay put, and tomorrow is never exactly the same as today.<sup>152</sup>

Humans have always tried to see into tomorrow as a means to direct the future. What humans have been doing throughout history, from divination and revelation to reasoning, statistical extrapolation, computer simulations, and scientific thinking, is simply to build upon an existing adaptive ability in their biological make-up. We are always trying to get better at these abilities: understanding, prediction, and control. We think; we anticipate; we plan; we attempt to guide and direct events.

Specifically, what is the relationship of planning and prediction? Futuristic planning and predicting are not separate activities. With good planning, we take into account and anticipate (a predictive capacity) the challenges ahead of us; basically, a plan assumes an anticipated or predicted scenario in which it will be acted upon. We can anticipate with lesser or greater detail and this influences the level of planning. If we consider a range of possibilities in the future, we create flexible plans to reflect our uncertainty. The point of looking ahead is to narrow down and conceptualize the more probable scenarios as best as possible—to bring some order and focus to the chaos and ambiguity, so as to guide and inform planning and action.

What is the relation between the creation of the future and prediction? There is the hypothesis, mentioned earlier, that “the best way to predict the future is to create it.” We can turn our prediction into a self-fulfilling prophecy by attempting to create the very thing we predicted. The reciprocal hypothesis also seems true that “the best way to create the future is to predict it.” Since expectations influence not only the person who has the expectations, but also those who listen and believe, predictions can influence the future. (Recall our discussion of how science fiction has influenced human society.) Creative plans assume predictions about what will happen in the future. These reciprocal statements on creation and prediction demonstrate how prediction (a descriptive statement, “What will happen?”) and calls to action (an evaluative statement, “What we should do?”) are interconnected. Prediction informs and inspires action and creation, and we direct our actions to realize our future visions. This reciprocal relation between creation and prediction is reflective of the general complimentary relationship of understanding and action.

Prediction, planning, and control are fallible yet evolving processes. The above statements on creation and prediction assume a level of understanding and control over the course of events. Many predictions of the future have not come true, and efforts to create a particular future often fail. Obviously, if our predictions are based on inaccurate or incomplete assessments of factual evidence or patterns of change, our efforts to influence and control reality will suffer. Our predictions and efforts to influence the future must be realistic. Yet, our level of understanding is always in a process of trial and error and never complete. We are perpetually experimenting with the future. We cannot assume that somehow we will one day get it right and have it all figured out—that we will achieve omniscience or omnipotence.<sup>153</sup> But, even if our efforts at prediction and creation fail or only partially succeed, we keep trying to improve upon the process; our natural psychological inclination is to influence reality toward our envisioned and desired ends. We are purposeful beings that anticipate and desire. There are various ways in which planning and goal setting can be improved, and more generally, how futurist thinking as a skill can be developed. Humans throughout history have attempted to improve their capacities to predict and direct the future.

The expression “controlling the future” may seem too strong a phrase to describe human efforts to direct the future. “Control” may sound domineering, manipulative, and one-sided. One could argue that all human efforts to control reality involve the contribution, input, and even intrusion of external factors not within our control. At best, humans participate in the creation of the future, rather than pulling the strings from some detached position. Yet, humans clearly attempt to influence, direct, and create effects and results in the world. However we conceptualize and describe the process of control, humans are goal directed in their behavior, and continually work on developing more effective and efficient ways of achieving control over reality (and even themselves). Just as it is psychologically naïve to think that people, and especially futurists, don’t engage in prediction since all humans (barring those with significant brain damage) anticipate and have expectations, it is also naïve to think that people shouldn’t attempt to control reality since all humans show purposeful behavior directed toward affecting the world. It is just that there are different theories and interpretations of control.

Based on the psychological theory of human-environment reciprocity (or **reciprocal determinism**), I suggest that the most accurate way to describe human control and influence is as follows: Humans and the environment are interactive, each affecting the other. There is a loop of causality between human actions, environmental effects, and human reactions. Even if a series of reciprocal events begins in the environment, humans react and their actions have an effect back on the environment. That is, even in the act of adaptation or adjustment to environmental events, there is some purpose behind it and the action still produces some kind of effect within the environment. Within this context of mutual interaction, humans behave purposely, attempting to, in innumerable ways, manipulate or influence the environment. The results of human efforts will always involve an interaction effect, with both the environment

and the human contributing to the effect. If there are two or more people participating in some event, each with their own purposes and goals, the result will be a combined effect of each of their purposeful actions, and subsequent reactions to the actions of the other(s). Control is never simply one way, with a human purposeful action producing an environmental effect; control and influence is always a two-way street, with action, reaction, and further actions and reactions. The bottom line is that because humans are purposeful and their purposes involve the realization of goals in the environment (or themselves), humans are attempting to create effects and alter conditions around them, regardless of whether their efforts fail or are only partially successful.<sup>154</sup>

There is also a strong connection between futurist theory and prediction and control. Depending on how we see and interpret reality, we will create alternative descriptions, make different predictions, and attempt to control reality in different ways. The theoretical framework of a futurist influences both predictions and actions. Some futurists interpret our present reality rather negatively, while others see the present more positively. Some emphasize technology more, and some emphasize humanistic elements. Futurists have different theories of change. These varying perceptions and theories, often highlighting different aspects of our complex and multifaceted contemporary times, create different predictions and attitudes. Depending upon the theory, we focus our attention toward different aspects of reality and become motivated to alternative courses of actions; thus, to some degree, creating differences in how the future unfolds. As the philosophers of science, Paul Feyerabend and Thomas Kuhn, have pointed out, the theoretical concepts in a scientific explanation of nature clearly influence and color the descriptions and predictions that a scientist makes about the world.<sup>155</sup>

Finally, values are a necessary dimension within our efforts to control the future. In thinking about the future, we invariably consider what we value.<sup>156</sup> Different values will lead to different evaluations—positive or negative—regarding the present as well as the anticipated future. We control things in an effort to achieve desirable or preferable ends—purposeful control is value and goal driven. Values define the relative desirability of the different choices and motivate and guide our planning and actions. One great attraction of religious and spiritual thinking on the future is that values are made quite explicit. The future is often seen as realizing or fulfilling some important cosmic or ethical value or values. The future studies concept of preferable futures also embodies the idea of values—everything may be possible, but what is desirable? Upon what prescriptive criteria do we make our choices?

## **Summary and Conclusion**

Within the study of the future there is agreement and disagreement, as well as coherence and fragmentation. From the lists provided in this chapter, one can synthesize a relatively well-defined set of futurist topics of study and research. Based on the work of the Millennium Project, a consensually agreed upon list of major issues and challenges for the future can be identified. From

Marien, Bell, Toffler, and other writers, it seems clear that futurists generally deal with the three central questions of the possible, probable, and preferable. In particular, I should note that in spite of statements made by some futurists that future studies doesn't attempt to predict the future, most futurists do engage in prediction, in one form or another. Also, even though many futurists wish to emphasize the scientific quality of the field, future studies deals with values and not just facts. (Bell, in fact, would contend that value judgments can be supported through reason and fact, thus connecting together scientific fact and value.) On a related note, although futurists engage in prediction, they also talk about choices for the future. In general, futurists have both theories of the future (what is going on and why) and ideologies for the future (where we should be heading).

Because futurists have different theories and ideologies of the future, areas of disagreement and fragmentation exist among futurists. Although there are networks of communication among futurists and geographically broad organizations, such as the World Future Society and the World Futures Study Federation that draw futurists together, there is no single unified community of futurists. Futurists tend to cluster around common mindsets and distinguish each other over fundamental differences of opinion and approach. Also, different futurists more narrowly or broadly define the nature of the field, some including literary, mythic, and even spiritual approaches. For example, Slaughter wants to include in futurist thinking and methodology other approaches and perspectives on reality besides science, taking into account inner consciousness and introspective and intuitive techniques. On these differences of opinion, I argue that although it is important to have scientific and rational standards in thinking about the future, the imagining of possible futures is not simply a logical process—it is visionary, intuitive, and creative. Excluding myth, art, narration, introspection, or science fiction as important contributions to the discipline of future studies misses the basic psychological fact that all these modes of consciousness significantly contribute to the imaginative process of visioning possible futures and tap into important dimensions of human experience. One should have standards for assessing beliefs and claims of knowledge, but one should also be open to the richness of the human experience of the future.

All in all, these disagreements can be seen as positive; disagreements reflect active thinking and freedom of thought within a discipline. Future studies is a relatively new area of study. For this reason, it is understandable and valuable for there to be different points of view regarding its nature and purpose. The disagreements drive its further evolution. Following Slaughter, it is best to describe future studies as evolutionary, dynamic, and growing.

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