Futures Research Methodologies: Linking Today’s Decisions With Tomorrow’s Possibilities

Darlene E. Weingand
Professor and Director, Continuing Education Services
School of Library and Information Studies
University of Wisconsin-Madison
Madison, Wisconsin, USA

ABSTRACT

The intent of this paper is to suggest that the use of futures research methodologies can inform today’s decision-making. While not claiming to be predictive, futures research can develop intelligent forecasts concerning what is possible while indicating strategies for working toward desired goals. In a time of accelerating change, these methodologies can help library managers to cope successfully with uncertainty and move confidently into tomorrow.

PAPER

Introduction

The future is an abstract concept through which human beings bring symbolic order to the present and meaning to past endeavors. Speculative pondering of what “might be” appears to be a key attribute of what it means to be human. Human coping strategies are often centered on the organization of present activities in the context of both past experiences and future goals. Yet, it is not until the last part of the twentieth century that research in the academic sense has been formalized, moving this intense interest in the future beyond the role of the Delphic oracle or the religious prophet.

Today’s speculations on the future have moved from the realm of fantasy or literary allusion into the pragmatic world of societal and institutional need to explore tomorrow in order to more fully understand the demands of today and the critical decisions that must be made. It is no longer enough to wonder what the future might bring; it is necessary to critically assess potential future scenarios and incorporate well-considered forecasts into today’s planning.

The intent of this paper is to examine the evolution of futures research over time, with special attention to its emergence as a serious research approach. Specific methodologies are targeted which, while not an inclusive list of techniques, do represent a variety of approaches. Finally, the benefits of incorporating futures research into library long-range planning are explored in an attempt to provide an additional managerial tool that will enabling libraries to more effectively serve their communities.

Historical Development

The path between the past and the future has historically been perceived as a linear progression; in many cultures, the possibility of human intervention was not acknowledged and the path was viewed as cyclical, recurrent, and pre-destined. For example, the Greek and Middle Eastern prophetic traditions set the stage for a vision of an unfolding future in which human actions became a significant factor in social improvement.

Individual ethical responsibility displaced magic as dominant in the dynamic of change. [1]

Two key historical periods proved to be pivotal in the development of Western futures tradition: the Renaissance and the Reformation. The Renaissance produced the idea of scientific control over the environment through logic derived from observation and measurement of natural processes [e.g., experimental evidence]. In the Reformation, the idea of redemptive moral and social progress was organized in terms of materially evident grace and the deferment of more immediate gratifications for long-term future gains. These shifts were most clearly observable during the Enlightenment when rational speculation upon the future of the human condition became the prime vocation of the eighteenth-century philosophers. Utopian writers such as Mercier, Condorcet, Turgot, and others mark the beginning of “futures research.” [2]

The growth of industrial society produced a new generation of “futures” prophets--such as Saint Simon, Fourier, Comte and Marx [3] -- who commented on both social disruption and its potential for reordering society. However, although the nineteen century can be described by a sense of material optimism regarding the future, it also became the beginning of a process of disenchantment -- a perception that society might be approaching the boundaries of human capacity for change. The late nineteenth century and early twentieth century also heralded the emergence of the utopian novel, notably in the work of Jules Verne and H. G. Wells. [4]
An example of large-scale direct linkage of futures thinking to long-range planning can be found in the Soviet Five and Ten Year Plans of the 1920s and 1930s. In addition, between the world wars, several new names [e.g. Arthur C. Clarke, Buckminster Fuller, et al] took center stage. Additional impetus occurred through social shocks such as Auschwitz and Hiroshima. Concern with the future turned quickly into an attitude of social imperative. The launching of Sputnik in 1957 sent futures thinking beyond the scope of this planet and a new reality was born. [5]

The roots of the modern “futures movement” can be traced to Europe in the 1950s where Bertrand de Jouvenel and Dennis Gabor emerged as early futurists. De Jouvenel was a well-known writer in the fields of economics and political science; his 1967 book The Art of Conjecture [6] is regarded as a classic in the field. In the 1960s, de Jouvenel gathered together an informal group of scholars, known as “Futuribles,” which met occasionally and published numerous articles on future political, social and economic developments. Gabor received the Nobel prize for his invention of holography and first examined the subject of the future in his 1963 book, Inventing the Future. [7] Some of Gabor’s early writings were intended as warning of possible catastrophes that might occur unless timely intervention occurred. In the early 1970s, the Club of Rome published Limits to Growth [8], which followed in this line of reasoning.

What Is Futures Research? Who Does It?

The simplistic answer to this question might be: Research done by futures researchers. However, such researchers do not fall into neat categories and, indeed, the question is further complicated by the following five statements:

1. There are no specific qualifications to be a futures researcher; a futurist is simply a person who either identifies as a futurist or is so identified by others.
2. Futures research is not limited by the use of certain methods.
3. Although many people are concerned with, think about or write about the future, only a portion of them call themselves futurists.
4. Futures research is generally not regarded as a field because its practitioners do not share a common academic background; indeed, it might be termed a “multi-field”.
5. Futures research is highly fragmented; it can, however, assist in dispersed intellectual fragmentation across other fields by focusing on broad, integrative work. [10]

Therefore, if futures research is difficult to label with a definition, perhaps a taxonomy of types of futurists can shed some light upon this complex question. Marien divides futurists into two main categories: Mainstream Futurists and Marginal Futurists, with a third category of Non-Futurist Futurists that encompasses pseudo-futurists and mythical futurists (confusing the public understanding of futures research). [11] For the purposes of this paper, only brief descriptions are reported.

The Mainstream Futurist typically tends to be a generalist and is identified as a futures researcher or professional futurist, attends futures conferences, and/or contributes to futures journals. Six types can be listed:

1. The Synoptic Generalist...An Ideal, encompassing the ability to have a sense of the key elements of society, a grasp of trends and discontinuities, a willingness to forecast, a sense of plausible alternatives, comfort in dealing with complexity, a sense of values held by self and others, imagination, a theory of social change, direct or indirect optimism, and a sense of history.
2. The General Forecaster...One who forecasts [not predicts] changes in operating conditions; broad in space and long in time.
3. The Normative Generalist...One who makes no attempt to forecast the probably future, but rather focuses on “alternative futures”.
4. The Pop Futurist...the “popularizer” who writes for a broad audience, introduces people to futures thinking, and attracts people to utilizing futures research or becoming futures researchers.
5. The Multi-Identify Futurist...similar to the Pop Futurist; is well-known and influential, but is also known by other labels and the futurist role may be secondary.
6. The Specialized Futurist...a specialist in a single problem area, perhaps borrowing a few general ideas.

The Marginal Futurist has three sub-sets:

7. The Futurized Specialist...only secondarily a futurist; someone who is interested in futures-relevant questions, attends futures conferences and contributes to the literature, but identifies primarily with another field such as medicine, law, physics, etc.
8. The Closet Futurist...one who seriously thinks and writes about the future, but is in no way associated with futures research or the “futures movement”.
9. The Future Futurist...one who will become a futurist at a later time; possibly students.
10. The Forgotten Futurist...a writer or thinker from the past who dealt with futures themes but was not regarded as a futurist.

Two categories of Non-Futurist Futurists can be listed:

11. The Pseudo-Futurist...one who employs the language of the future, but offers no useful insight as to what might happen or what desirable futures to pursue.
12. The Straw-Man Futurist...a non-entity that is never defined; a conceptual and rhetorical target.

It is easy to appreciate the confusion that surrounds futures research and researchers. Yet, in a world trying to maintain balance in a time of out-of-control change, the importance of creating order in the midst of definitional chaos is critical. Through sifting and winnowing, much of the chaff can be eliminated. What remains is the core kernel of need—​and a mandate to develop useful strategies that will inform today’s decision-making.

Futures Research As a Strategy for Understanding Change
On a global scale, there appears to be a shared agreement that society is experiencing a period of unprecedented change. Both the substance and pace of change are fundamentally different from what has occurred in past decades and centuries. No longer are sequences of events occurring in relative isolation, occurring over longer spans of time. No longer are discrete groups of people affected by each change; rather, there is greater simultaneity of occurrence, swifter interpenetration, and increased feedback of one set of changes upon another. [12]

Although the origins of many changes have roots in the past, there are two critical aspects that have become dramatically visible within this century: [13]

- The explosive growth in actual and potential capacities to intervene in the larger processes which govern collective survival. Global in scale, capable of affecting the physical balance of planetary life and reaching into individual human lives and societal institutions, today’s change patterns now constitute a social and ecological transformation of unprecedented magnitude.
- The severe lag in the conceptual grasp of this transformation, and in the cognitive and affective understanding of the processes through which change may be managed more humanely and effectively.

What are some characteristics of change? Joseph argues that change:

- Alters something over time
- Has a direction, rate of alteration, curvilinear trajectory
- Is caused by something
- Can cause displacements
- Can result in developing something new
- Can have short-term positive and/or negative impacts
- Aspects of rate, magnitude, direction, timing are forecastable
- Can have long-term consequences
- Often is irreversible
- Poses problems, threats and/or opportunities
- Is usually progressive
- Amount accelerates as society’s knowledge base advances
- Has a trend path precursor and a path into a future
- Can be identified, researched, forecasted [14]

The conceptual scope of change is difficult to grasp. While these characteristics seem to define what change is and what it can affect, the reality is that the change facing society today is beyond the set of skills most people have learned to use. The rate of change, formerly slow and sporadic, has never been so constant and overwhelming. Reactive coping can no longer suffice; anticipating change has become critical to human survival. This is true not only for individuals, but also for institutions. Traditions, standard operating procedures, and goals and objectives of every institution have been subjected to great stress as the result of accelerated and uncertain change. Modern managers must prepare their organizations for the trauma of unprecedented change; libraries are no exception. In order to effectively anticipate what is to come, we need to develop knowledge of futures research. By adopting a futurist perspective, library managers can, at best, be prepared for a variety of alternative futures and be better able to adapt to rapid and unpredictable changes in their environments, markets, and constituencies. [15]

What is a futurist perspective? Brodzinski identifies five principles, within the caveats that futures research techniques are no better than the data they use and that the futurist perspective must not be constrained by institutional traditions, values and taboos. [16]

- The future is determined by a combination of factors, not the least of which is human choice. What we decide today will have a significant effect tomorrow.
- There are alternative futures. There is always a range of decision and planning choices. We must seek out and determine these choices and select the best possible alternative.
- We operate within an interdependent, interrelated system. Any major decision, development, or force that affects any part of the system is likely to affect the entire system. We must be aware of changes not only in our own areas but in other areas within the system.
- Tomorrow’s problems are developing today. Minor problems ignored today may have catastrophic consequences five years from now. Gradual changes or distinct trends and developments cannot be ignored. We cannot allow ourselves to become preoccupied with immediate concerns. The near future must be an integral part of current decision making.
- We should regularly develop possible responses to potential changes. We should monitor trends and developments and not hesitate to use the collective creativity and judgment of our staffs to develop forecasts, projections, and predictions.

However, forecasts of possible futures are not always correct. Futurist John B. Mahaffie explains that forecasts fail when they overestimate the speed at which a development will become important to [and therefore accepted by] society, and when they underestimate the wider implications and secondary effects of a technological innovation. He suggests that the basic structure of any forecast should include: clear statements of the forecast’s purpose, of the technological and social assumptions on which it is based, the time horizon in which the events should happen, and examinations of the possibilities of environmental, social or technological surprises that could speed up, slow down, or derail the plan. [17]

With this caution in mind, it is still essential to face change with a futures orientation. Once a futurist perspective, or mindset, is adopted, then futures research can be employed in order to gather necessary data.
The Case for Using Futures Methodologies

The way people think about the future has changed dramatically in recent years. A new attitude has emerged in public and private planning agencies as well as in the research community. The effect has been to extend former planning horizons into a more distant future and to replace haphazard intuitive gambles, as a basis for planning, by systematic analysis of the opportunities the future has to offer. Societies and journals that focus on the future have emerged worldwide, as well as conferences that are attended by thousands of people. [18]

This change in attitude toward the future is becoming evident in three areas: [19]

- **Philosophically**...There is a new understanding of what it means to talk about the future. There is a growing awareness that much can be said about future trends in terms of probability and, through proper planning, considerable influence can be exerted over these probabilities. Moreover, it is recognized that there are many possible futures, with associated probabilities that can be estimated and manipulated.
- **Pragmatically**...There is a growing recognition that it is important to do something about the future. This new attitude derives from the perception that not only are technology, society and the environment undergoing change, but that the rate of change is accelerating. Therefore, it has become necessary to strive to anticipate change proactively--rather than belatedly react to change that is already occurring.
- **Methodologically**...There are new and more effective ways to do something about the future. Futures research--which seeks to explore the potentialities of interactive intervention in future developments--is emerging as a highly multidisciplinary branch of operations research.

Futures research can be viewed as a family of analytic methods largely devoted to forecasting or projecting what the future might be, including implications of potential policies and actions. The strengths and weaknesses of each method must be assessed and skill in application learned if the outcome is to be successful. In addition, the techniques must be appropriate to the situation or problem involved and also be meaningful and intellectually acceptable to those individuals who will ultimately have to make policy decisions. [20]

However, some caveats about forecasting should be acknowledged: [21]

- The future is probabilistic--it is not deterministic
- Methods are highly judgmental and rely greatly on assumption--not on empirical or scientific fact
- Important events always will be omitted
- Accuracy measurements are paradoxical as forecasts often lead to policies intended to change the forecasts--i.e., inhibit undesirable consequences
- Value judgments, leading to policies, are based upon present value standards--and values change

Applying assumptions to libraries, Shuman proposes the following condensed list: [22]

- The study of the future is a meaningful exercise which may profit the student, the practitioner, and society in general.
- Both society and libraries have a future (they shall not perish from the earth). Otherwise, why bother?
- The future will not be all that radically different from today, despite the onrushing march of technology. It will just be different, mostly a case of old wine in new bottles.
- We are not utterly powerless in the face of an uncertain and unknowable future, despite the fact that a high degree of precision in futuring or forecasting is impossible. And even if we fail to predict some future event, we have at least given it some thought, which puts us in a better position than our colleagues who reason that the future will take care of itself.
- Techniques and procedures evolved in other subject disciplines have relevance for libraries and the information profession.
- What happens today affects (or at least may influence) what will happen tomorrow in any and all subject fields.
- It is both useful and important to construct utopian (best-case), dystopian (worst-case) and most likely (middle-case) scenarios of the future of any subject or discipline.

With full knowledge of both the potential and limitations of futures research, the next step is to consider some of the many methods that have been developed to connect with the future. Only a few can be summarized in this paper.

An Overview of Specific Methodologies

**Trend Extrapolation.** The analysis of trends is based on empirical examination of a phenomenon with repeated measurements taken across time. [23] One of the simplest, most popular, methods of exploratory forecasting, trend extrapolation has as its underlying assumption that the present conditions will not change substantially and that it is reasonable to project the behavior of the recent past into the near future. However, this basic model makes no provisions for changes or reversals in the trend or for major shifts in the environment affecting the trend.

There are variations of trend extrapolation, such as the S-curve [to represent future developments] or the envelope curve [to extrapolate broad trends from smaller, contributory trends]. [24] Both of these variations have the advantage of acknowledging other factors such as leveling-off periods, limits, and periods of rapid growth. Strengths of both the basic and varietal models include low cost, ease of interpretation, simplicity of construction, and a high level of reliability. [25] The major limitation is that cited above, where changes in the trend and/or the effects of other trends are not recognized.

**Cross-Impact Analysis.** More sophisticated than trend extrapolation, this method attempts to analyze one trend or event in the light of
the occurrence or nonoccurrence of a series of related events. A matrix is often used to facilitate this comparison. [26] Cross-impact analysis enables the researcher to systematically examine the interactions among events, to organize the data descriptively, to use only a small number of input events, and to test the outcomes against a variety of occurrences. [27] In terms of limitations, the cross-impact model is able to consider only pairs of events, does not consider the effects of non-occurrence within the model, lacks specific definitions of the cross impact factors, and cannot directly assess the likelihood of specific events. [28] However, when cross-impact analysis is used in conjunction with another methodology [such as the Delphi Method], the power of the forecast is considerably enhanced.

**Delphi Method.** Developed at the RAND Corporation by Olaf Helmer and Norman Dalkey, the Delphi Method is based on an anonymous series of iterations and feedback which solicit and report expert opinion until general consensus is reached. In brief, the following steps are followed:

1. The problem is identified and objectives determined.
2. An expert [invitational] panel is developed, usually divided into homogeneous groups.
3. Round I...A questionnaire is given to the panel [generally by mail], in which the problem is stated and derivative open-ended questions are presented.
4. Responses are synthesized into a series of statements to which panel members will respond by indicating “Strongly agree,” “Agree,” “Undecided,” “Disagree,” or “Strongly disagree.”
5. Round II...The synthesized statements are given to the panel.
6. Panel responses are tabulated; panelists having opinions falling outside the interquartile range [for each statement] containing 50 percent of the responses are directed to either change their response or justify their answers. Justification comments will be circulated to the panel; opinions may be changed at any point during the process.
7. Round III...Respondents receive information on the IQR and median of Round II and are given the option to change their opinions or provide justification comments.
8. Round IV. Respondents receive an update on the IQR and have the opportunity to make further changes and/or comments.

The process usually results in a convergence of opinion; occasionally there is a definite divergence that must also be reported.

**Scenarios.** Envisioning positive [and negative] images of the future has long been recognized as a necessary precondition for creating desirable futures. [29] Wilson outlines necessary criteria for scenarios: they are hypothetical, provide an outline of a possible future, and are multifaceted and holistic in their approach to the future. [30] Neither a prediction nor a forecast, scenarios assist the analyst to deal with events and interactions among events that might otherwise be ignored. A well-constructed scenario may be a direct extrapolation or may suggest events and conditions not presently being considered from the environment that is being studied. [31] Three major approaches can be used in the construction of a scenario:[32]

- Based on consensus and using the Delphi Method to elicit expert forecasts for a specific time frame, the combination or synthesis of opinions leads to scenario development.
- Iteration-through-synopsis involves the development of different scenarios in various disciplines, which are then combined and modified in a compatible manner.
- A cross-impact technique is used to test the effect of one aspect of the scenario on all of its contributing parts.

Scenarios can highlight a range of alternatives and view possible outcomes of events. The library manager developing one or more scenarios for the next decade must be conscious of both plausibility and reality. A scenario needs to be complete, internally consistent, and free of personal bias. Elements in the scenario must not be contradictory or improbable.

**Simulations and Models.** Dictionary definitions of the word “model” include three discrete forms: as a noun implying representation; as an adjective implying a degree of idealization; and as a verb to show what something is like. A simulation model imitates and represents the system under study in the form of a set of mathematical variables and a number of explicit relationships between them; the process is usually performed with the help of a computer. The computer simulation model can be a device for prediction, a method for deriving the future consequences of assumptions made about the present; a tool for learning how a system works; and a means of improving communication. [33] The central utility of computer modelling is that large-scale interactions can be simulated in small-scale analogues; processes and events which might take weeks, months or years to occur in real time may be run through in a few hours or days. Experimentation with various effects and hazards can take place with no “real life” costs.[34]

A variation of the basic simulation model, simulation gaming presents a dynamic model that is an abstraction of complex reality. Within the context of a game, the conceptual map serves as a mental blueprint to help convey complex systems. Learning occurs through simulation games because they represent abstract symbolic maps of multidimensional phenomena that serve as basic reference systems for data that are transmitted. Simulation gaming is a mechanism for assisting with the articulation of various possibilities before they occur. A game can provide an overview and a level of detail within mechanisms that illustrate the major dynamics of the linkages among system components. Since it is possible to experiment within the safe environment of the game, the individual has the opportunity to learn how the system responds to various stimuli. [35]

**Environmental Scanning.** Beginning with collecting information about the external environment, scanning examines multiple areas: political, economic, social, technological, psychographic and demographic. Data can be gathered from both secondary and primary sources which are both external and internal to the organization. In marketing terms, this process is known as the marketing audit. The scan can include, at its most basic, the gathering of data; a more complex scan will insert the retrieved data into one or more of the methods described above.
Environmental scanning is an imperative for all types of libraries, as effective long-range and strategic planning require a knowledge of anticipated trends and events. The following diagram illustrates the type of data that must gathered. This diagram highlights three aspects of the total library environment (diagram unavailable; please contact author for a copy): the **External Environment**, including both the macro environment (aspects of the outside world which influence the library, but over which the library has no control) and the micro environment (aspects of the region and community in which the library is situated, and where influence can be exerted); the **Information Environment**, including all participants, such as vendors, other libraries and information agencies, media organizations, and so forth; and the **Library Environment** itself, an internal look at resources and operations. Environmental scanning must examine each of these environments both individually and collectively in order to present a complete picture.

What is learned needs to be folded into an overall marketing plan through the design of strategies for action. The following questions can prove helpful:

- What has been and is going on out there?
- What could happen to change current trends?
- What future conditions could they create?
- How happy would we be if they came about?
- What can we do to intervene?
- How effective would those actions be?
- What steps should we take?
- What should we monitor to see how things are doing? 

Regardless of the method(s) used, how can we recognize good information about the future? *It is information that helps us improve our current performance so that we can achieve a better future than would otherwise occur.*

### Setting an Action Agenda

With a toolbox full of possible methodologies in place, it is time to take the first step toward building a futures perspective by setting an action agenda. What can be included that will stimulate thinking and motivate research? Consider the following:

- Read or reread Toffler's book, *Future Shock*. No longer new, it still presents ideas that are relevant to current times.
- Develop a trend file. Collect newspaper and magazine articles that discuss developing trends.
- Read periodicals outside the library and information studies field. Check particularly those publications emerging from the areas of business and computer science. Widen weekly reading to include popular periodicals as well as professional journals.
- Subscribe to a future-oriented publication, such as the World Future Society's *The Futurist*.
- Attend conferences that have programs addressing futures topics.
- Think about the consequences of new developments--going beyond the obvious to secondary and tertiary effects.
- Try making simple forecasts. Gather information about an interesting subject and speculate about trends and alternative futures.
- In planning and decision-making, construct more than one possible course of action; check on alternatives. Consider possible, probable, and preferable. Work toward what is preferable.
- Continually relate present activities to the larger institutional, regional, national and global spheres of influence; no one operates in a vacuum.

### Conclusion

In spite of the uncertainties, the lack of scientific validity and reliability, and the relative newness of futures research, we are faced with the hard truth that there are difficult times ahead. The magnitude of the problems, the urgency for solutions, and the rapid rate of change have rendered traditional approaches less than effective. There is a mandate for a large-scale, interdisciplinary and creative effort that can take on both current situations and anticipated future conditions. In many ways, this is a good definition of futures research--and it is certainly a clarion call to action.

As we face uncertainty and change, a futures perspective--supported by appropriate futures research--will enable us to make confident and visionary decisions. We must always remember that today is the future we worried about yesterday; today is the result of decisions that were made yesterday. Today's decisions will affect all our tomorrows--it is up to us to work tirelessly so that tomorrow is the one that we preferred.

### Notes

2. Ibid.
3. Charles Fourier, from France, was a founder of a utopian colony in the New World.
5. Jib Fowles, 8.
10. Michael Marien, “Toward a New Futures Research: Insights from Twelve Types of Futurists,” *Futures Research Quarterly*
Scenarios are about making decisions today with an understanding of how they might turn out. The intention is that the decisions taken will prove to be robust under a variety of alternative futures. They should also prompt an informed dialogue and debate about strategic matters within an organisation. Scenario planning offers a way of putting a lot of ideas and possibilities together. Scenarios start by recognising the importance of driving forces that shape the world. These can be Political, Economic, Social and Technological (see Figure 1, below) Futures Research Methodologies: Linking Today’s Decisions With Tomorrow’s Possibilities. Which World: Scenarios for the 21st Century, by Allen Hammond. Tomorrow’s Global Community. Futures Research Methods. The Future and Its Enemies. Futures Research - Futures Research is concerned with the forces of change that will shape our individual and common futures. It represents no scientific domain in the first place - on the contrary Futures Research stresses the need to involve everybody in the process of building their common future. Since anything that has happened in the past up to the present may be relevant for the future this task demands a holistic and interdisciplinary approach.