A useful introduction to the study of the future is at futureswatch.org

For a Dutch translation of this article by Johanne Teerink, click here.
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Methods and Approaches of Futures Studies

For all of human history people have tried to develop methods for predicting the future, from reading palms to gazing at the stars. But in recent years, primarily since World War II, scientists, sociologists, operations researchers, and others, many of whom began to call themselves futurists, have developed quantitative and qualitative methods for rationally anticipating the future. What separates futurists from the soothsayers who came before is rationality, an awareness that the future cannot be known with absolute certainty, and the recognition that many different futures are possible, depending on decisions people make in the present.

Generally, methods for studying the future do not pretend to be able to predict the future, although assessing the probabilities of alternative futures is an important aspect of futures studies methods. Rather, futures studies methods are generally designed to help people better understand future possibilities in order to make better decisions today. Futurists often say they use their methods to reduce uncertainty, although it may be more accurate to say they are trying to manage uncertainty. Many decisions must be made today in the face of great uncertainty about what may happen in the future or even what the effects of today's decision might be in the future. Futures methods help people to deal with this uncertainty by clarifying what is known, what can be known, what the likely range of possibilities is, what the most desirable possibilities are, and how today's decisions may play out in each of a variety of possible futures.

Futures research methods are both descriptive and prescriptive. Descriptive methods, sometimes also called extrapolative, attempt to describe objectively what the future will be or could be. Prescriptive methods, also called normative, focus on what the future should be. Prescriptive methods try to help people clarify their values and preferences so they can develop visions of desirable futures. Once they understand what they would like the future to be, they're better able to take the appropriate steps to create that preferred future. Although much has been learned about futures studies methods since most were developed in the 50s and 60s, they remain somewhat amorphous. One can probably identify as many futures studies methods as there are futurists, as each futurist develops his or her own style for looking ahead. But gradually, some consensus on methodologies is developing.

One principle upon which most futurists would agree is the need to use multiple methods to address most futures problems. One will gain much greater insight by developing a futures research program that combines environmental scanning, trend assessment, delphi, and scenarios, for example, than one could achieve using any single method alone. Thus, although several of the more popular methods are described individually in the pages that follow, they are ideally used in various combinations.

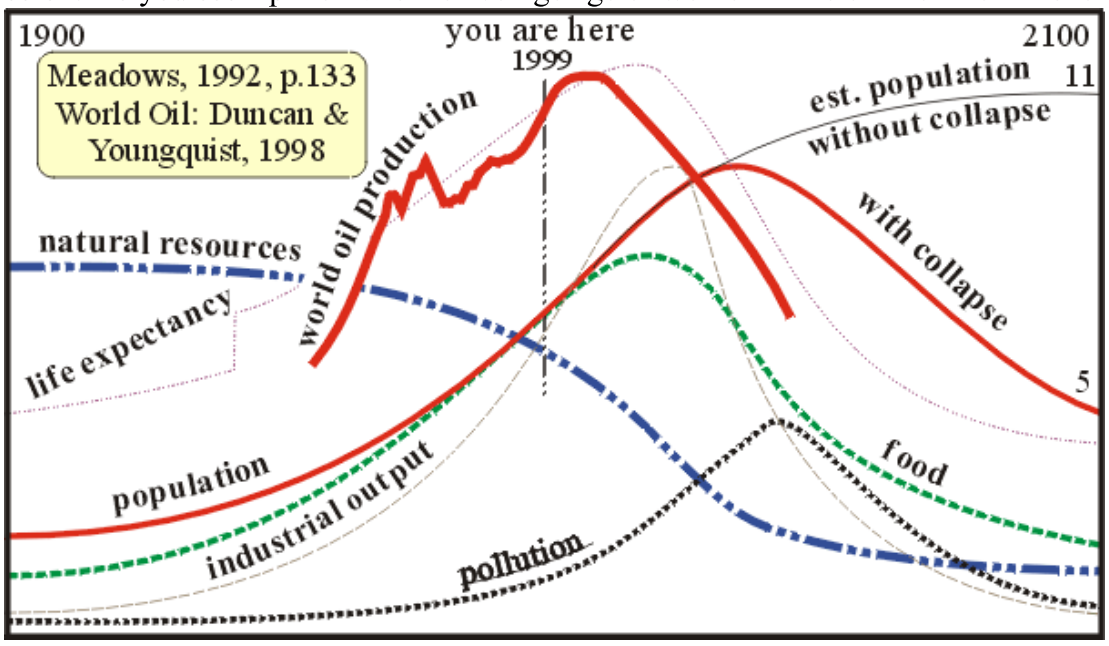
Another principle upon which some consensus is developing is that futures research should be participatory: it should involve stakeholders and decision-makers directly in the process of developing forecasts or creating scenarios, because that is the only way to enable people to fully appreciate and perceive the range of possible futures.

Although many futurist strive for objectivity, ultimately, most futures methods rely heavily on subjective human judgment. But there are various tools one can use to augment individual human judgment. A method's

value often lies in amalgamating the judgment of many people, enhancing creativity, generating questions and ideas to produce different judgments, and demonstrating consistencies and inconsistencies among and within competing views of the future.

As discussed in Chapter 2, Principles of Futures Studies, futurists often divide the purposes of futures studies as imagining the possible, assessing the probable, and deciding on the preferable. Most futures studies methods focus on one or two of these goals, but not all three; thus one almost always will need multiple methods if on is to work through the full range of futures studies. For instance, analyzing a present trend will give some information about the possible and the probable, as we analyze what will happen if the trend continues or what may cause the trend to change, but it tells us relatively little about what we like to have happen. Visioning techniques may tell us something about the possible, as we brainstorm a range of alternatives, and the preferable, as we use visioning to imagine preferred futures, but it may tell us relatively little about the probabilities of our preferred futures without the help of other techniques.
Futures studies can also be thought of as encompassing five stages, although many individual projects will focus on one or two stages and leave the rest to other projects. The first stage is to identify and monitor change. The second stage is to critique and analyze change. The third stage is to imagine alternatives. The fourth stage is to envision the preferred alternative. And the fifth and final stage is to plan and implement steps to achieve the preferred vision.1

Trend Analysis: A Method Everyone Uses
Trend analysis involves the use of any of a variety of techniques based on historical data. Trend analysis involves several processes. One process is spotting an emerging trend, that is, identifying a change in the world around us. For example, you may notice that more and more people seem to be waiting until they are in their thirties to have children. You may have spotted a trend-i.e., that people are delaying child birth. Now you need to do some analysis to see what the nature of the trend is and what its implications might be. You could first look at historical data. What was the average age of women having their first child in 1950? In 1955? and so on. Do you see a pattern? Is the average age of women at the birth of their first child increasing?



You might see the age at birth of the first child is increasing by six months over each five-year interval. That is, perhaps the average age was 21 in 1950, 21.5 in 1955, 22 in 1960, and so on until 1995 when the average age is 26. Then you might extrapolate the trend into the future, to predict that the average age would be 26.5 in 2000 and 27 in the year 2005 and so on. But trend analysis requires that you do more than simply extrapolate

the trend forward. You have to ask, what is causing this trend, and will those causes continue indefinitely? Are there upper limits to the trend? What other forces may affect the trend? At this point trend analysis relies more on subjective judgment rather than objective extrapolation of historical data.

Trend extrapolation is the most straight-forward and objective component of trend analysis. Extrapolation essentially consists of taking historical data, fitting a curve to the data, and extending the curve into the future. Trend extrapolation assumes that things will keep changing in the future the way they have been changing in the past. One simply extends the line or the curve forward to predict where things will be at a certain future time.
If the population of a city is known to be increasing at the rate of 2% a year, we assume that it will continue to do so in the future, and we can use simple arithmetic to calculate what the population will be in five years. In other words, we can generate a forecast by observing a change through time in the character of something and projecting (extrapolating) that change into the future. In making a forecast, we naturally disregard short-term changes or fluctuations, such as the swelling of a city's population each morning as people come to work. What is important is the longer-term change, that is, the trend.
Trend extrapolation is one of the most commonly used ways to generate a forecast. City planners, economists, demographers, and many other specialists constantly extrapolate trends -- consciously or unconsciously -- when they think about the future. So, too, do ordinary people. Assuming that the future will be like the past or that past changes will continue in the same direction and rate is a perfectly sensible way to begin trying to understand the future. It can not, however, be the end of our endeavors, or we would end up with absurd results. For example, we might estimate that a child aged four has grown at the rate of five inches a year, and then calculate that this rate of growth means he will be more than 13 feet tall at the age of 34! We would not accept this forecast, because we know that human beings never grow that tall. Long before he reaches the age of 34, we forecast, his rate of growth will slow and eventually halt at a height that will probably be somewhere between five feet and six and a half feet.

Cyclical Pattern Analysis

Closely related to trend analysis is cyclical pattern analysis, see theTrends Timeline Graph. Trends Timeline in Flash. Many phenomena appear to operate on cycles, and cyclical pattern analysis uses cyclic or recurring patterns (also referred to as waves, warps, bursts, surges, epochs, and episodes) as templates for anticipating future developments in various areas, such as public policy, the economy, etc. The "business cycle" is probably the best known example of this, in which a recession is followed by recovery, which leads to over-expansion of capacity, which in turn leads back to recession, and the cycle begins again. A similar, though much longer-range cycle, was proposed by Russian economist N.D. Kondratieff, who hypothesized that Western societies cycle through a pattern of long waves, characterized by recession-depression-revival-prosperity. The length of the overall cycle averages 56 years, with peaks in the occurring in 1800, 1856, 1916, and 1969.4 The Kondratieff Wave attracted great attention in the mid-1980s, when the cycle predicted depression, but has attracted less attention recently.
Other cycles futurists have explored include product life cycles, historical cycles, and generational cycles. See my paper on Sept 11 as a turning point in history.

Environmental Scanning

Environmental scanning refers to the process of scanning the media (especially online media and media used heavily by youth) to identify emerging issues to enable organizations or individuals to anticipate and respond to changes in the external environment.5 Scanning is meant to provide strategic intelligence to the strategic planning process by identifying changing trends and potential developments, monitoring them, forecasting their future pattern and assessing their impacts.6
"The objective of scanning is to look over the widest range of possible factors and to identify connections with the organization's function or business, and especially to identify the significant positive or negative effects

those could have on the organization and its activities. In general, the objectives in monitoring and scanning are to:
* detect scientific, technical, economic, social, political and ecological events and other elements important to the company;
* define the potential threats or opportunities or major potential changes for the organization that are implied by those events;
* provide continuous awareness and evaluation of trends to guide planning and action choices;
* inform management and staff of the need for anticipatory action; minimize reaction; stimulate proaction;
* alert management and staff to trends which are converging, diverging, speeding up, slowing down, or interacting.7
Scanning may be active or passive. "Passive scanning is what most people do when they read journals or newspapers," writes James Morrison, an expert in and proponent of scanning.8 Active scanning is a more deliberate and conscious effort to review information from a broad array sources and subject areas.
The best known practitioner of Environmental Scanning is probably Faith Popcorn.

Scenarios: Making Up Stories About the Future

Scenario planning is the use of internally consistent narrative descriptions of possible states of affairs or development in the future. Usually, alternative scenarios are developed in order to allow people to conceptualize alternative futures and to clarify possible consequences of present developments and decisions.
A scenario is simply a series of events that we imagine happening in the future. Our everyday thinking is filled with little ventures into the mysterious world of tomorrow, or next week, or next year. And these ventures are scenarios, though rarely as well developed as the elaborate scenarios prepared by professional researchers working for government agencies, the military, and commercial enterprises.
A scenario begins when we ask, "What would happen if such-and-such occurred?" For example, "What would happen if we went to the theater on Saturday night?" Once this question is posed, we can begin to imagine the various consequences of the event. First, certain preparations would be necessary for this event to occur; for example, there would be the need for transportation to the theater. In addition, if the event does occur, there will be additional consequences, such as being absent from home at a time when we anticipate that a relative might come. In our minds, we may develop a large number of scenarios in an effort to decide whether or not to go to the theater on Saturday night. We develop these scenarios intuitively and rarely bother to write them down. We may, however, discuss them with each other and with friends.
What does a scenario do for us?
Fundamentally, scenarios are tools for ordering our perceptions about alternative futures in which today's decisions may play out. First, it makes us aware of potential problems that might occur if we were to take the proposed action. We can then (1) abandon the proposed action or (2) prepare to take precautions that will minimize the problems that might result.

Backcasting

A method closely related to scenarios is backcasting. Backcasting is concerned with how desirable futures can be created, rather than what futures are likely to occur. In backcasting, one envisions a desired future endpoint, and then works backward to determine what policy measures would be required to achieve such a future.
Backcasting involves six steps: determine objective, specify goals and constraints, describe the present system, specify exogenous variables, undertake scenario analysis, and undertake impact analysis.12 The end result of a backcasting study is alternative images of the future, thoroughly analyzed as their feasibility and consequences.13

Visioning

Visioning has become one of the most popular and important futures studies methods, and a wide range of futurists have developed particularized techniques to help people develop their vision of a desirable future for

themselves, their organization, or their community. (Visioning on larger scales, such as national or global scales, remains relatively undeveloped.) Generally, a visioning process will attempt to identify sources of pleasure and dismay in the past and present, will challenge people's current assumptions, will give people a sense of current drivers of change so they can imagine a range of alternative futures, and facilitates a process of achieving some consensus of a preferred vision for the future. "Visioning is a process of making images of the future sufficiently real and compelling to act as 'magnets,' or goals to achieve, or 'spurs' to present action. Visioning can be done by an individual, but it much more frequently takes place in futures workshops,"14 writes Australian futurist Richard Slaughter.

For example, Clem Bezold, who has been developing vision methods since the early 1980s, identifies five stages in building a vision: 1) identification of problems, 2) identification past successes 3) identification of future desires; 4) identification of measurable goals; and 5) identification of resources to achieve those goals.15

"If we can articulate what we want clearly enough, we will be better able to invent and create the future we most desire (our 'preferred' future)," says Bezold. "A preferred future encompasses our ideals (usually in the form of a vision statement or description) and our sense of the best outcome that might be achievable. A vision is a compelling, inspiring statement of the preferred future that the authors and those who subscribe to the vision want to create."16

The visioning concept owes a heavy debt to the future workshop developed by Robert Jungk. Jungk describes the future workshop as follows:

Typically, a future workshop can be divided into a preparatory phase and three workshop phases. The preparatory phase involves deciding on the topic and making the practical arrangements . . . The workshop itself begins with the critique phase, during which all the grievances and negative experiences related to the chosen topic are brought into the open. There then follows the fantasy phase, in which the participants come up with ideas in response to the problems, and with their desires, fantasies and alternative views. A selection is made of the most interesting notions and small working groups develop them into solutions and outline projects. The workshop concludes with the implementation phase, coming back down into the present with its power structures and constraints. It is at this stage that participants critically assess the chances of getting their projects implemented; identifying the obstacles and imaginatively seeking ways round them so as to draw up a plan of action.17

Jim Dator, another long-time expert of the visioning method, has modified Jungk's method in several ways, most significantly in emphasizing the role of the futurist in helping people think more broadly about alternative futures. "I think it is a serious mistake to ask people to engage in any kind of preferred futures envisioning exercise until they have first been challenged to examine their own ideas about the future," says Dator. "One part of the futurist's role is to present, in a dramatic, engaging way, some of the elements, forces or components in the past and present that might significantly influence the future."18

Technological Forecasting

A technology forecaster generally makes forecasts concerning how soon various types of technologies will be possible and what characteristics they may have, rather than what they will have, because the actual technology that will be used in the future depends on economic, social, and political considerations, which are normally beyond the province of the technology forecaster. For example, a technology forecaster might forecast that it will be possible by the year 2050 to produce electricity from nuclear fusion, but whether thermonuclear fusion will actually be used for that purpose may depend on a variety of non-technological considerations.

Technology forecasting is differentiated from the other methods described in this chapter by the subject area of the forecasts rather than the methodology used. Technology forecasting could, theoretically, employ almost any of the other methods described here. However, technology forecasting has developed as a distinct endeavor within futures studies, with its own concepts, literature, and practitioners, so it is useful to address it

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