

Managing the Future The Short Version

By

Stephen M. Millett, Ph.D.

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Several years ago a corporate client of mine asked “Do I really need to think about the future?” After a moment, I somewhat flippantly responded, “No, not if you are willing to accept whatever happens.” Perhaps the executive believed that the future was already determined, so he did not need to worry since there was nothing he could do about it. Or perhaps he was taking the opposite point of view that since the future cannot be predicted there was no use in wasting his time thinking about it. In either case, my response was correct, if not politic. As a pragmatist, I urge my clients to think seriously about the future, plan, and prepare for it – and then monitor events and detect changes according to new situations in order to adjust strategies to achieve goals.

It is in the self-interest of companies, especially new and growing enterprises that depend on other people’s money, to exude confidence of success in the future. Companies rarely admit a lack of faith in continuous growth. Business people tend to think linearly – they think the future will always be better than in the past. They assume that how things are going today will naturally continue into the future. Managers may also believe in business cycles, of course, because they learned them in college and business schools. Too often cycles, however, are rationalizations. When business is growing, complacent managers will claim the credit for themselves; but when business declines, the same managers will attribute reversals to uncontrollable circumstances and complain “How was I supposed to know *that* would happen?”

If market conditions and business operations remained the same for long periods of time, then anticipating the future would be less important than it really is. We would just plan to do more of the same. But time moves in only one direction, and the passing of time introduces variability, or risk. As the popular saying goes, change happens. Yet the uncertainty of change makes planning more difficult while it makes it more important to do. If we did not know that before, we certainly learned it in the economic mess called the Great Recession.

Astute managers, on the other hand, learn quickly that business trends can experience changes, not all of them good. They acquire the skills to better anticipate the future and to adjust to it when necessary. What holds for clever managers in particular also holds for clever people in general.

I have been performing forecasting and planning projects for managers and executives in corporations, non-profits, and government agencies around the world for about 30 years. My specialties as a futurist and a management consultant include trend analysis, facilitation of expert focus groups, scenario generation, and strategic planning. During my career, I have learned many lessons the hard way. I have studied the three Ps (physics, psychology, and philosophy) of time along with various religious,

economic and political, and even occult approaches to understanding the future in order to formulate sound theories to back up my methods. I have helped managers think about the future beyond orthodox corporate culture and unwarranted optimism. I have helped R&D staff envision new products to meet emerging consumer demand. Now I wish to share my theories and practices with future generations of managers and leaders – and everyday people, too, who wish to gain more direction and control in their lives.

My theories and methods rest upon the philosophical foundation that only the present literally exists, and that we cannot perceive or directly know the future because it does not yet exist. I take verb tenses seriously: the past did exist and the future will exist, but only the present exists now. In pragmatic ways, we all make up little pieces of the future as we go. We can, however, in an abstract way “access” the future before it occurs from our knowledge of the past and the present and our ability to employ logic and imagination to anticipate potential futures. There may be only one future in the future, but in the present we can imagine alternative futures as alternative possible, even likely, outcomes from trends and imagined changes.

Our future, still evolving and yet to occur from the perspective of the present, will be a product of both our own design and elements beyond our control that we often characterize as “chance” or “luck.” I believe that good luck can be maximized and bad luck can be minimized with forethought, planning, and preparation. There are indeed things coming that will be beyond our control; but if we do nothing to prepare for the future, then we deserve whatever happens to us, good or bad. We may not be able to control the future, but we can steer forward in desired directions.

Bad things have a way of happening on their own, but good things have to be made to happen. I admire students who prepare to do well on exams; young people who plan years in advance by taking courses leading to professions in medicine, law, and teaching; employees who work smart as well as hard by planning ahead; athletes who dedicate huge amounts of time and effort in practices leading to competitive victories; soldiers who plan and train for successful missions; architects who meticulously draw blueprints for highly complex building projects; carpenters and tailors who “measure twice, cut once;” actors and musicians who repeatedly rehearse for perfect performances; and business people who think through a strategy of required investments and actions to achieve their goals.

I use the term “futuring” to mean a rigorous process of thinking about the future in order to form well considered expectations.(1) Futuring is essentially the same thing as forecasting, but it embraces qualitative as well as quantitative methods. It also includes alternative futures (scenarios) beyond just single-point predictions. The purpose of futuring is to form well considered expectations for the future so that we can improve our odds of achieving our goals by making the right choices today. It is about making a better tomorrow rather than waiting to see what “fate” brings us.

I offer you five fundamental futuring principles to guide you toward well considered expectations for the future.

Futuring Principle 1: The future will be some unknown combination of continuity and change.

In 1927 the British astronomer Sir Arthur Eddington used the term “the arrow of time” to capture the image of time flying in only one direction. He was an early defender of Albert Einstein’s theories of relativity, including the concept of space-time. Physicists have long recognized that time is

asymmetrical, meaning that it cannot move both forward and backward, only forward. Fundamentally, within the known laws of physics, time travel back into the past is physically impossible, despite the imaginations of such skilled novelists as H. G. Wells. The British physicist Stephen Hawking speculated that if the universe stopped expanding and then started to contract, time would flow in the opposite direction, from the future to the past, so that we would remember the future but we would not know the past. Later, he reversed himself and concluded that time, or at least the human perception of it, would still flow from the past to the future.(2)

Physicists have yet to explain why time's arrow flies toward only the future. One explanation is that time travels with the exponential expansion of the universe. Contrary to Hawking's theoretical premise, there is no evidence that the universe will ever contract; all the data point to continued expansion, the one way direction of the universe from the Big Bang outward. Another explanation for time's arrow involves the Second Law of Thermodynamics, which states that, in the absence of new energy, the natural state of things decays from order to disorder. This progression, called entropy, moves in only one direction. An example is the well-known fact that heat (a higher energy level) flows toward cold (a lower energy level) unless an outside force redirects it. The argument is that the past was a higher state of order (like heat) determined by what has actually happened to a lower state of order (like cold) because there are many possible futures. Closely related to the Second Law of Thermodynamics is the explanation that time is a way to track very long chains of cause and effect relationships, whereby past causes lead to future effects but effects never change the causes that preceded them.(3)

Sound complicated? Not really. We have many popular expressions that capture the same thoughts, such as "A stitch in time saves nine" and "You can't undo the past." In addition, we perceive time's arrow every day in such phenomena as the passing of one day to the next, one year following another, physical wear and erosion, decay, and our own aging.

If we use Eddington's metaphor of time's arrow, does that also mean that time has a trajectory toward a target? Many religions and philosophies have asserted as much. There are elements of fatalistic expectations that the progress of events will lead to a final culmination of perfection found in the various tenants of Judaism, Christianity, Islam, Hinduism, and Buddhism, to say nothing of countless cults and primitive mythologies. In religious terms, the one way arrow of time is called predestination or fate. In both the natural and social sciences, it is called determinism. The physics of Sir Isaac Newton is deterministic: the same causes will always end with the same, predictable results. Even probabilities are deterministic in the sense that a bell shape curve will represent a known distribution of possible results. Today we are experiencing a period of biological determinism, whereby we read almost daily in the news of discoveries of DNA sequences believed to cause (or contribute strongly to) malignant growths, heart disease, diabetes, Alzheimer's, etc.

If predestination and determinism, like the path of time's arrow, were to exist, then the future would be literally a linear extrapolation of the past toward an expected future and therefore more predictable. The future would be all continuity according to some cosmic plan. We see many examples of such linear thinking in the far more mundane world of economics and business today. During the budgeting process of any company, organization, or agency, estimates will be made about future revenues and expenses. Most annual budgeting is operational planning for one or two years and accounts for steady rates of growth year after year based on previous performance. The goals are largely aspirational and the expectations more of the same.

Trend analysis, which takes many qualitative as well as quantitative forms, provides foresight to the extent that the future is a continuation of patterns from the past and present. Trends are all about continuity with relatively minor deviations. When the future moves slowly with strong continuity and little change, we can rely on trends to provide much information about the future; but when continuities are seriously disrupted by changes, then trends provide limited clues to the future.

All forms of trend projections do not have to be straight lines – they could also be curves and cycles. Business managers often refer to business cycles with very little insight into what they really are. Cycles are metaphors for variations between boundaries, real or abstract. The 20th century champion of the concept of cycles was Joseph Schumpeter, whose book *Business Cycles* appeared in two volumes of over 1,000 pages in 1939. His monumental work of business history showed intervals of Kitchin cycles of 40 months, Juglar cycles of 8-10 years, and Kondratieff cycles of 50-60 years. Yet, Schumpeter admitted his own doubts, as had Clement Juglar some 80 years before him, whether the periods of the cycles had regularity and whether they were predictive in practice as well as in theory.(4)

Economists have pursued precise business cycles for 80 years since Schumpeter's treatise and some have made predictions that were close, but never precise. It is always easier to see the cycles after they happen. After the Wall Street crash that occurred in late September 2008, economists claimed that the U.S. had come to the end of a long growth period. Some thought the recession would be shallow and short. Some futurists, however, including myself, felt that events signaled a much deeper and longer recession, the worst since the Great Depression of the 1930s. It was realized only later, when the official data became publically available, that the recession had actually begun in December 2007 and we did not know it at the time. My study of history indicates that Schumpeter was insightful to the degree of recognizing phases of economic behavior characterized as innovation, growth, peaking, crisis management, and recovery. These are various positions within a relatively closed system. I buy the concept of cycles, but without the side dishes of predictability.

Historical trends tell us a lot about the past, but they are imperfect, although useful, indicators of the future. The past may or may not be prologue, but it certainly provides ample precedents. There are situations in which trend projections may be prescient: when we know all the variables in the system and they remain constant within certain tolerances; we know the relationships among the variables and they remain relatively constant; we have nearly complete and accurate time series data; the time horizon for forecasting is reasonably short (maybe one to three years); and no "black swans" or other types of disruptive events occur.

I see trends in economics, politics, social structures and relationships, and war as repeating patterns in human behavior.(5) As Shakespeare's Julius Caesar said to his future assassin, "Men at some time are masters of their fates: The fault, dear Brutus, is not in our stars, but in ourselves."(6) The things that men and women did in the past provide us with indications of what could happen in the future based on our understanding of historical behavioral patterns while recognizing that conditions provide the context for specific acts. Repeating behavior does not require the same act in the same way; it may only be an expression familiar in the past but fresh in its moment.

Trends reflect the continuities of human behavior. Continuity does not mean "sameness" in the sense that nothing changes. Continuity implies a strong carry-over from one day to another, although everyday is different in some regard (and certainly unique on the calendar). Trends do not imply homeostasis and trend lines can have any number of different angles and shapes rather than just being horizontally flat.

Important trends that provide continuity in the lives of individuals and societies include the following:

- Tradition, culture, and customs
- Belief systems and worldviews, both religious and secular
- Routines and habits (both individual and institutional)
- History and precedents
- Conventions, procedures, protocols, and processes (political, legal, social, commercial, industrial, etc.)
- Institutions, organizations, and governments
- Constitutions, laws, regulations, and treaties
- Contracts, commitments, promises, and obligations
- Legacies and inheritances from past generations
- Buildings, physical assets, and infrastructure from the past
- Codes of conduct, morality, and ethics
- Memories of past experiences
- Family relationships and ways
- Occupation, career, and work

Some trends as patterns of continuity are strong and survive for long periods of time without significant changes. Other trends, however, are relatively weak and subject to sudden and substantial changes. A major challenge of the futurist is to sort out which trends are which.

So trends count, but so, too, do changes. Some changes are very small and minor deviations from the norm, but some changes are huge. While I recognize the importance of changes, I am not willing to go so far as to say that the future will be all changes and no continuities. An extreme case for the role of changes appeared as the bestselling book *The Black Swan* by Nassim Nicholas Taleb. (7) He is very correct to point out to what silly lengths some people will go to believe that the future will be more of the past. He is dismissive of most forecasts, especially of statistical projections and probabilities. The great moments of history, Taleb argues, were dramatic changes that could not have been predicted – and that most events that shape our lives are accidents and happenstance beyond our ability to anticipate. Taken to extremes, some readers of Taleb might conclude that he is opposed to all forms of forecasting, modeling, and planning as exercises in futility, even self-delusion. In a post-script to his book, Taleb argued that it was impossible to predict true black swans, while many of daily life's more mundane affairs certainly can be anticipated based on long-term stable trends.(8)

Like the list above of continuities, we can make a list of potential sources of changes in the future:

- Challenges, threats, fear, and anxiety (both individual and institutional)
- Boredom and the longing for change
- Hunger, thirst, fatigue, and impatience
- Acts of anger, violence, and revenge – including acts of terrorism and wars
- Illness and death
- Accidents and mistakes
- Equipment failures
- Loss of property, liberty, a job, or a loved one
- Aging, decay, and erosion
- Creativity, innovation, and inventions
- New knowledge, exploration and discovery, and technology breakthroughs
- Ups and downs of the economy

- Corporate acquisitions and mergers
- Reorganizations and switches of managers, bosses, and other types of personnel changes
- Elections and new political directions
- Weather conditions, including storms, and climate changes
- Natural disasters
- Genetic mutations

A further examination of this topic leads us to the conclusion that there are at least three kinds of changes:

1. Those that are relatively minor variations on trends within a macro-structure (a long-term paradigm)
2. Those that cause major changes in trends, even creating new trends but within the same macro-structure
3. Those that are relatively sudden and huge in their impacts, even shifting the boundary conditions of macro-structures (the so called “black swans”).

People adjust to changes all the time. Some changes are inconvenient and annoying, but people recover quickly to return to their normal habits and routines. Some changes are merely deviations from existing trends. But obviously some changes are monumental, even catastrophic, ending previous trends and beginning new ones. Monumental unexpected changes that do not fit previous patterns are called “outliers,” “disruptive events,” “wild cards,” “game changers,” “paradigm shifters,” and “black swans.”

As an aside, my observation in the context of business culture and environments is that people do not oppose change itself; they fear change because it may mean loss. The fear comes from equating change with loss, so to help people make change managers have to position the change as beneficial with opportunities for gain rather than loss.

I take a middle position between the extreme propositions that 1) the past is all continuity, and therefore the future will be much the same if not exactly the same as the past so that trend analysis and time-series projections will tell us much about the future, and 2) the past is all change, including extreme discontinuities in addition to many small changes, and therefore the future cannot be predicted and planned for; that thinking about the future and planning are largely wasteful, even dangerous because they set up wishful thinking and false expectations. Every futuring project that I have experienced involved sorting out trends versus changes. I will relate two of them to you as examples.

In 1987 a company asked me to help them generate scenarios on the future of the European Union (EU). The firm was a global corporation that manufactured equipment and provided support services to retail stores and banks. They had completed a major transformation from electro-mechanical devices to computers, and they had repositioned themselves as a global leader in business-to-business information technologies (IT). The company had traditionally been strong in marketing, but faced a major challenge with customers in Western Europe. The challenge was the emergence of the EU, which had set for itself certain unification goals by 1992. The firm asked me to generate scenarios so that it could better understand how likely the EU would achieve their goals and what the implications would be for business. The specific question addressed whether a cohesive EU would become a fortress Europe with protectionist trade policies and whether the American-based company would have to invest billions of dollars in new plants within the EU.

I understood the company's need to make a major investment decision and how they would use the scenarios. We formed a project team and rapidly agreed upon a topic question to guide our work. We held several expert focus groups in the U.S. and Europe to let the most knowledgeable people tell us what were the most important descriptors (trends, issues, factors, elements, or variables) that we should consider in the scenarios. We performed extensive research on the descriptors and their relationships with each other in order to imagine alternative states (outcomes) for each descriptor by 1992, their apparent probabilities of occurrence, and their impacts upon each other as displayed in a cross-impact matrix. A personal computer (remember them before laptops?) with a special scenario-generating software program calculated the probabilities and cross-impact values and generated a distribution of logically consistent but alternative outcomes (scenarios).

We learned from the scenarios that a Fortress Europe could emerge as a result of the EU achieving its 1992 goals, but that the circumstances for it were unlikely relative to other possible outcomes. The most likely scenarios showed a future in which the EU would achieve most, but not all, of its EU goals by 1992 and then continue working on further cohesive issues throughout the decade. The hardest issues for unification would be currency and banking. In international trade policy, the key issue would be reciprocity rather than protection. The implications drawn from the scenarios were that the company would not have to build more factories in Europe due to the EU as long as the U.S. and EU treated each other as equal partners in trade and investments. It was possible, but very unlikely given the strong "free trade" trends in American-European economic relations, that the U.S. would erect trade barriers against the EU or vice versa. On the other hand, Japanese corporations, because of Japanese trade policies concerning foreign imports into Japan, would likely have to invest heavily into manufacturing within Europe rather than risk a trade war between them and the Europeans.

My client company already had some manufacturing in Europe, and they decided to expand that base for a number of reasons, but not in fear of a future trade war between the U.S. and the EU. The scenarios emphasized the emerging importance of post-market service, therefore the company would need to invest more heavily in service centers and networks rather than in factories. The client did so over the next decade and enjoyed growth in its European sales.

As the most likely scenarios foretold, the EU did achieve many, but not all of its cohesion goals in 1992. Currency and banking uniformity remained difficult to attain. The British stubbornly held out for the pound sterling, but other members of the EU transitioned to a common Euro. Banking unification was hard to achieve, but progress toward the goals were made step by step. Our scenarios had successfully framed well considered expectations in Europe for the client. The unification of the EU was a major game-changer in world economics, but the changes were planned, announced, and gradually implemented. Such changes proved to be not particularly disruptive to the long term continuity of trade relations across the Atlantic.

Then some big disruptive events, definitely black swans, occurred unexpectedly. To the amazement of the West, the Berlin Wall came down in November 1989, the Communist regime in East Germany collapsed, the German unification occurred in October 1990. It seemed unbelievable at the time that such stupendous changes could occur and virtually nobody predicted them. Even more startling was the collapse of the Communist Party of the Soviet Union and the dissolution of the USSR in 1990-1991. A new government in Moscow declared in favor of a Western-style democracy and a free enterprise economy. The Cold War was suddenly over!

My client was closely following the news from Europe. They called me up on the telephone and asked how the end of the Cold War was going to change our scenarios on EU unification. In the original scenarios, we had a descriptor on Soviet-Western relations, and the prevailing state was the continuation of détente and generally more friendly relations in the future than in the past. A return to old Cold War tensions in Europe was not likely. We got that part right, but we completely failed to foresee the end of the Cold War altogether. Even if we had foreseen such a dramatic event, I wonder who would have believed us. The nice thing about having a cross-impact model from which to generate scenarios on a computer was that we could change any number of inputs and run new simulations based on new information. I went back to our scenario software program and entered the fall of the Soviet Union as a disruptive event and cross-impacted it upon the descriptors already in our model.

The scenario simulations led us to the conclusion that the headaches of EU unification would be increased by the prospect of EU expansion to include a new unified Germany and the former Communist countries of Eastern Europe that were desperate to realign their new market-driven economies with the West. We gained sufficient foresight to conclude that the EU unification goals were likely to prevail, but they would be slower to achieve with the new difficulties associated with folding the former Communist countries into the EU. The implications of the scenarios for the client did not change their business plans within the EU, but they encouraged the client to begin to explore new business opportunities in Eastern Europe and the new Russia.

I am often asked whether my forecasts have ever come true. The simple answer is “yes.” A far more difficult question, however, is how to evaluate scenarios as alternative portraits of the future. When we do trend projections and time-series forecasts that produce a specific number, like the annual GDP rate, we can check what we said with what happened. I don’t like doing that kind of forecasting, and on this score I agree with the strongly held views of Taleb. I don’t believe that there can be only one future in the future, so I think in terms of alternative futures. I believe that trend analysis provides a knowledge base for understanding the future, but I recognize that trend analysis can capture only continuities, which are important but rarely a true representation of the future. You have to consider discontinuities, too. In this one case history, the baseline scenarios provided views of the future that emphasized the continuities and relatively minor deviations from them. The simulations of the baseline scenarios with hypothetical or real disruptive events give us a more complete picture.

So, in this particular case history, like many others that I could share, the real question was whether the scenarios got the basic story right, provided a useful framework for framing expectations for the future, and gave managers sufficient foresight to make wise investment and business strategy decisions. The answer is still “yes.” We were successful in sorting out the approximately correct mixture of continuity and change relative to the question asked by the client.

What questions should you be asking now about potentially stable or changing market conditions, customers, and technologies that would help you make wiser decisions in the present about investments, strategies, R&D, and personnel to achieve your corporate and organizational goals in the future?

Don’t trust single point projections of historical data to dates in the future. Distrust forecasts with graphs showing lines and curves. Look for both continuities and changes and ask questions about the story that emerges from the forecasts.

Although no future condition can be predicted with a 100% judgment (*a priori*) probability of occurrence, Futuring Principle 1 comes about as close to absolute certainty as anything can be. It is theoretically possible that there might be no changes at all, so that the future could be all continuity. This outcome seems possible for very short time horizons, but very unlikely given extended lengths of time in the future. Although big changes are relatively rare, small changes are happening all the time. It is also theoretically possible that the future could evolve so that it contained no continuity and constituted absolute change. This would be something like the end of days, the collapse of the universe, and the termination of time.

Futuring Principle 2: If the future cannot be predicted with precision, then it can be anticipated with varying degrees of uncertainty depending upon conditions. Forecasts and plans are expectations for the future and they are always conditional.

In 1926, a year before Eddington coined the term “the arrow of time” in the realm of cosmology, a German physicist made a startling discovery in the realm of quantum mechanics. Werner Heisenberg found that in his research into the world of the very small he could not detect at the same time both the position and the velocity of an electron, or for any other particle for that matter. His finding became the Heisenberg Uncertainty Principle. You can determine the position of a particle, but then you have to estimate with probabilities the momentum of the particle, and vice versa. Some things you just cannot know for certain. Such a principle would have confounded Newton and didn’t do much to comfort Einstein, either.

What could be more uncertain than the future? There’s a popular proposition that nobody can predict the future. I agree. But I strongly disagree if that saying is extended to “...and so there is no point to thinking about or planning for the future.” You most certainly can, and should. You may not be able to predict the future of anything with precision, but to use the Heisenberg metaphor, you can anticipate likely outcomes in the future with varying degrees of judgment probabilities. You can learn what has happened in the past (to the extent that evidence of the past exists today) and you can know where we are in the present, but you cannot know through our limited perceptual capabilities what will happen in the future with certainty. But you can estimate.

Little more than 160 years prior to Heisenberg’s discovery, the Royal Society of London published a paper on another kind of uncertainty. The paper had been written by the Rev. Thomas Bayes before he died in 1761. He developed an approach to calculating probabilities using prior (*a priori*) information as a starting point and new information to recalculate probabilities (*a posteriori*). The calculation of probabilities was a continuous learning process until the end state was achieved. Bayes more or less originated conditional probabilities, whereby potential events in the future could be estimated according to pre-existing conditions and information about them. Such was the beginning of Bayesian probabilities and information theory.(9)

Traditional statisticians have more or less ignored Bayes, while physicists heartily embraced Heisenberg’s uncertainty. The statisticians objected that the mechanics of Bayesian calculations were too convoluted. They also shunned the subjectivity of Bayes’ *a priori* probabilities. After all, is not the whole point of statistical forecasts to reduce uncertainty and appear objective? A maverick statistician from Italy shocked everyone in 1935 when he concluded that *all* probabilities are subjective, and he proved it mathematically. Bruno de Finetti used the term “exchangeability” to express the thought that people generally expect the future to be much like the present, so they use (exchange) past data as a

substitute for future data. In addition, he identified examples of subjective decisions made by statisticians in picking variables and methods to use. He urged statisticians to admit their biases openly so that they could be reviewed and scrutinized: "...when one pretends to *eliminate* the subjective factors one succeeds only in *hiding* them...but never in avoiding a gap in logic."(10)

I would say the same for all forecasts.

Futuring Principle 2 follows directly from Futuring Principle 1. We cannot predict the future precisely because of the possibility of changes, but we can anticipate the future by estimating (using subjective probabilities according to Bayes and de Finetti) future conditions. My experience has taught me that all forecasts are sets of expectations for the future, whether well considered or not, and that all are predicated upon assumptions or expectations of future sets of conditions. Following the advice of de Finetti, we have to make the underlying assumptions and expected sets of conditions for the future as explicit as we can and subject them to peer review. We make forecasts in the present, so there is no way that we can know for sure whether they are prescient or not until events unfold in the future; but I know what I can and cannot successfully defend before the skeptical minds of CEOs who have to make major decisions today that will not likely pay off for years to come.

Forecasts, as the product of the process of futuring, take at least two forms. One is an expectation for a certain outcome in the future. The forecast, whether a number or a description, must provide explicit conditions to explain why it is likely, and how likely, it is to happen in the future. We can monitor those conditions and we can change the forecast as conditions change. This is futuring as learning. The second is to identify the conditions of the future and to draw inferences about what outcomes we should expect to see given those conditions. Because the past and present are not perfect predictors of the future, we have to attach *a priori* probabilities to both the conditions and the outcomes associated with them. Some trends and expected conditions for the future may seem very likely, but never with an *a priori* probability of 100% as though variables were parameters. Other trends and expected conditions are very uncertain, volatile, and highly speculative due to an acknowledged lack of information, and they should be so identified with low *a priori* probabilities of occurrence.

I am frequently asked to express my expectations about the future by various friends and colleagues. I am always tempted to just give my view of the future without boring them with the various conditions and caveats. But when I have the time and energy, I will state my expectations of future conditions and then give a qualitative forecast based on them. I should always say, "It depends upon circumstances. If Dow Jones Industrial Average continues to rise so that people have new confidence in their investments and their retirement funds, and if the unemployment rate starts to go back down, and if companies offer consumers exciting new products, and if...."

Upon what could we ever claim predictability, even if it could be achieved? I want to now explore various theories of predictability, but with the understanding that even if the abstractions were valid, the practice of them can never achieve 100% certainty due to errors, chance, and so-called black swans.

The Will of God and Divine Predestination. If you believe that God made the universe and still controls it, then you may also believe that God knows the future and may occasionally share His foreknowledge of the future with his selected messengers on Earth. If you believe that God has determined the future, then you may look for God's signs and His messages as voiced through His prophets. This avenue to discovering the future in the present has lasted thousands of years, and

billions of Christians, Muslims, and Hindus believe in one form or another of divine predestination or cosmic fate as an article of faith. For them futuring is believing.

But faith in a designed future, God's target to which the arrow of time is flying, is not science and not the basis for identifying trends and leading indicators. Even if you believe in God's future, there is no way for us common human beings to perceive it. We cannot provide evidence and logic to support beforehand the predictability of religious prophecies or occult fortunes. The powers of prophecy cannot be taught and practiced in the corporations and organizations of our material world. While futurists abound, real prophets are extremely rare.

We cannot believe in the forecasting methods of the occult, either. While we are still today, like our ancient ancestors, fascinated with astrology, horoscopes, Tarot cards, and palm readings, they are forms of entertainment, not inquiry. You may enjoy them, but don't believe them.

If predestination or fate were to exist, then it would provide a very powerful foundation for trend analysis and linear projections. The very fact that so many projections are wrong suggests that it is more likely that, to paraphrase Shakespeare's Caesar, human behavior rather than the stars determines our fates.

A corollary to divine prophecy might be the human envisioning aspects of visioning, which are highly inspired, imaginative, and idiosyncratic. Many examples of envisioning the future is little more than wishful thinking based more on values of the "should be" sort than the hard realities. We may have visions of the future, but we lack the powers to implement our visions or convince other people to go along with us. However, envisioning must be taken very seriously when the envisioning individual has the ambition, energy, resources, and capabilities to make his or her own prophecy come true.

Laws of Nature. The secular version of divine predestination is natural determinism, commonly called the "laws of nature" or the "laws of physics." Sir Isaac Newton revolutionized natural philosophy, or what we call science, with the publication in 1687 of his monumental work *Principia*. He identified consistent forces of nature, such as inertia, momentum, and gravity, although he could not define precisely what caused gravity. He also asserted that time was a constant entity in the universe independent of all other physical things. Since Newton, scientists have continued to pursue the forces of nature. So, too, have philosophers, economists, sociologists, and historians. If the affairs of people were driven by the same Newtonian forces of nature, then we could anticipate future economic booms and busts, revolutions and wars, and social upheavals.

In the 20th century, Einstein's theories of relativity held that there is at most one constant in the physical universe: the speed of light. Time, contrary to Newton's view, was not absolute and inseparable from space. The behavior of physical phenomena is predictable only within specified frames of reference (meaning specific conditions, which we might also call boundary conditions). Newton's laws of physics are highly predictable within the frame of reference of the surface of the Earth and normal Earth conditions. So, too are the laws of thermodynamics. We enjoy the comforts and high quality of life today in part due to the scientific and technological predictabilities of physics, chemistry, engineering, and biology.

We might also note in passing that while many people with a basic education may think science is highly precise and predictable, virtually all professional scientists know full well that science is full of theories and speculations to a far greater degree than pat laws of nature. Einstein, for example, used thought

experiments and deductive mathematics to reason what had to be true before anybody could demonstrate the validity of specific and general relativity (including the concept of space-time). Einstein's theories have been proven many times with advanced scientific techniques, even when Einstein himself doubted the physical reality of some of his own conclusions. Scientists today will admit that the field of science concerns what can be justifiably said about the physical universe rather than the pursuit of absolute scientific truth. Often when scientists talk about the "predictability" of scientific theories, they really mean the consistent, although never definitive, replication by other scientists of data from phenomena in precisely defined circumstances. In the back of their minds, scientists are tempered by Heisenberg's uncertainty.

The physicist Niels Bohr, a contemporary of Einstein and Heisenberg, allegedly said something to the effect that it is hard to make predictions, especially about the future. At first blush, this remark sounds very funny, like an oxymoron (which is why the same quote has also been attributed to famous baseball philosopher Yogi Berra). But at a deeper level, to give Bohr his due, the remark may draw a distinction between anticipating well established and uniformly consistent behavior of phenomena as opposed to predicting "the future," especially of people. Bohr knew well that even the most common principles of science, even with all the uncertainties of science, did not apply also to the vastly complicated human behavior in economics, politics, love, and war.

Numerous attempts have failed to discover natural laws that govern societies and cultures. In this sense, "discovery" amounts to a theory that attracts a broad consensus of experts over a long period of time. There may be historical analogies, metaphors, and similes to such natural laws of physics, but none has been proved to be predictive consistently to any impressive degree of certainty. If we ever were to discover natural laws of societies and cultures like the few natural laws of physics, then we might have methods to predict with high degrees of confidence the phenomena of enduring human behavior over long periods of time (and likely only with highly circumscribed sets of conditions). Such laws of nature will more likely come from our expanding knowledge of human biology, evolution, and psychology than from physics.

Trend Momentum. As previously discussed in the first futuring principle, there may be trends that are so well established and so strong in historical inertia (a metaphor) that they provide the basis for predicting the future. This is the commonly held idea that tomorrow will be much like today because today is so similar to the day before. It is also the idea that the past and present, to one degree or another, shape the future – and that the future will be a reflection of the past. To use a simile from Newtonian mechanics, some cultural and social trends are so deeply rooted in tradition and habit, the structure of human activities, that they are like a force ($F=ma$) propelling people knowingly or unknowingly into the future. Trend momentum, of course, can be changed, but only with considerable new sources of energy.

The 19th century transcendentalist Henry David Thoreau observed that every day he walked on the same route from his cabin to Walden Pond. He wore a path through the grass and underbrush. From this very simple, everyday experience he extrapolated a generalization about all human activities: "The surface of the earth is soft and impressible by the feet of men; and so with the paths which the mind travels. How worn and dusty, then, must be the highways of the world, how deep the ruts of tradition and conformity!"(11)

Trend momentum may be caused by historically stable patterns of social behavior (culture, traditions, customs, rituals, religious beliefs and churches, social institutions, political systems, economic systems,

etc.) and by life-long patterns of individual behavior (habits, biases, education, experiences, past decisions, etc.). To express the idea once again, history may or may not be prolog, but it does provide enduring precedents for the future. The culture of an organization or corporation can be as conforming as any other “highway of the world.” Another source of trend momentum may be the investments of the past. Large investments in infrastructure, buildings, and plants provide a momentum of their own. So as to not “under-leverage assets,” corporations as well as municipalities tend to keep using buildings longer than anticipated at the time of their construction.

In our day to day language, we often hear people talk about “the wave of the future,” which is an allusion to perceived trend momentum. We understand trend momentum through trend analysis, or the continuities that will in part account for what happens in the future.

Trend momentum and the analysis of them as patterns will likely remain the single most popular futuring method. The practitioner, however, must know when and how to justifiably use trend momentum for forecasting rather than carelessly interpret trends as simple linear projections of the past to the future.

Cause-and-Effect Relationships and Sequences. Nearly three centuries ago, the Scottish philosopher David Hume warned us that we too often jump to conclusions about effects attributed to causes that may be wrong. Too often things that we witness may appear related but are really only coincidental. We may grow used to certain cause-and-effect relationships and assume that such relationships will always exist in the future because we are accustomed to them in the past. When we assume cause-and-effect relationships, we form expectations for the future, but those expectations may or not be logically justified. We may see patterns when no patterns can be materially validated and we may attribute causes, or human motivations, when none can be shown to exist. Countless numbers of psychological experiments over the last century have validated Hume’s observation as a valid observation of typically human perception. (12)

People draw everyday conclusions from assumed cause-and-effect relationships. The ways of “everyday logic,” however, may be neither logical nor correct. People make perceptual errors all the time. Causality can be purely coincidental, even accidental. Statistical correlations may appear as causality, but they may be related only in form but totally unrelated in substance. Correlations may demonstrate relationships, but not necessarily cause-and-effect phenomena.

However, to recognize Hume’s caution does not invalidate the scientific observation that cause-and-effect sequences exist in nature and that we can perceive them accurately in some if not most cases. Cause-and-effect relationships have been well established in modern science since Galileo dropped objects from the Tower of Pisa. Although philosophers and psychologists have commented on the numerous mistakes that people frequently make in assigning erroneous causes to events, scientific studies have validated that people can accurately perceive and anticipate correctly results coming from demonstrated, not just assumed, causes. If this were not the case, then there would be no foundation for serious physics, chemistry, and medicine.

I have seen some very perceptive people with strong observational skills demonstrate a remarkable ability to anticipate (at least approximately, if not exactly) what others will do or say based on repetitive experiences. The great ice hockey player Wayne Gretzke is frequently quoted as having said that he did not skate to where the puck was but to where he anticipated it to be. He developed an exceptional ability to read the game on the ice, anticipating both the position of the puck and other players to score time after time. There are equally talented athletes in football, soccer, baseball, basketball, and golf

who can consistently guess correctly where the ball is going to go and what the next play will be. Great pool players also know how to run the table because they line up a succession of shots. They know how to anticipate where every ball will be on the table and at what time and in what sequence. They develop what we call a keen intuition, almost a “second sight” or “sixth sense.” But what they actually have developed is an extraordinary foresight based on very extensive experience of cause-and-effect relationships, within the boundary conditions of the game’s rules.

Fundamentally, Sir Isaac Newton established some basic mechanical cause-and-effect laws that were highly predictive of certain phenomena, as mentioned above. Much of our scientific knowledge is based on well-proven and persistent cause-and-effect relationships among objects.

Weather forecasting is perhaps the one form of prediction that most people trust, at least up to a point, that is largely based on known causes and their effects. Mark Twain used to quip that everybody complained about the weather but nobody did anything about it. In truth, meteorologists have greatly improved their ability to predict changing weather conditions. With extensive observation and data, they learned the relationships among pressure, temperature, and winds. They also learned about the Jet Stream and how it affects weather patterns and climate conditions. As long as the causes and effects remain constant over time, without unforeseen disruptions, meteorologists can be remarkably accurate in their forecasts. Short-term forecasts are typically the most accurate, because weather conditions are so volatile that accurate long-term forecasts are elusive. The best that our weather people can do is to give us their best approximations, often expressed as evidence-based but still subjective probabilities, of future weather and then revise the forecasts with new information as it becomes available.

Another aspect of this discussion is the phenomena of direct versus indirect cause-and-effect relationships. Particularly in modeling, one can confuse direct and indirect impacts. An example of a direct relationship would be trend or element A influences B, which in turn influences C. The direct cause-and-effect relationship is A on B and B on C. The indirect relationship is A on C. Many models require just primary relationships, both impacts and feedbacks, and rely on an algorithm (literally or figuratively) to sort out the secondary and tertiary impacts. Other models may try to explicitly calculate all the relationships, both direct and indirect. An inherent problem, however, is building redundancy into the model. If you model both A on B and A on C as direct cause-and-effect relationships, then you may be exaggerating the impacts of A and underestimating the impacts of B. My experience is that simple, elegant models are more reliable representations of phenomena than very complex models, which run the risks of including too many variables and calculating too many redundancies. Having said this, the building of simple, elegant models that represent well the phenomena, which are dynamic rather than static over time, is a very difficult thing to do.

Intuitively visualizing long chains of cause-and-effect relationships is very difficult, if not impossible, to do. Constructing a hypothetical sequence of events leading to a logically consistent result in the future is one definition of the term “scenario” (as opposed to another definition, which is a description of a set of conditions that will plausibly exist by a certain time in the future). Such a sequence of cause-and-effect events is easier to describe than to quantify, although scenario paths and trees and real option analysis can be quantified, at least with judgment probabilities. There is an often observed danger that a “genius” futurist will assert with great conviction a sequence of events that is otherwise impossible to replicate by formal futuring methods and cannot be rationally critiqued by peers that may persuade people at the time but in almost every case will prove incorrect in its predictions of future events.

It is much easier, and more theoretically sound, in most cases to forecast future conditions as the likely culmination of multiple trends interacting with each other than it is to predict specific events by specified times in the future. The “if...then” proposition can be a type of cause-and-effect relationship. Rather than my telling you what I think will likely happen in the future (and leaving my thinking processes to myself), I should tell you what conditions I think will come to pass and discuss likely outcomes in the contexts of expected conditions in the future. I should do this with an explanation of what impacts what and where the feedback loops are.

My experience has been that it is more valid to interpolate trends hypothetically from a future set of conditions (scenarios) back to the present than it is to project the present to future states. The more popular approach is to project trends forward using the linear momentum of history and current conditions. As we have seen, linear projections can be prescient in some cases (boundary conditions) and can be widely off the mark due to the occurrence of changes (and even mistakes and lack of correct information in the process of making linear projections). The approach that has worked best for me is to do the scenarios of alternative future states and then work backwards to fill in the gap between the future and the present with hypothetical paths. These paths can provide the basis for strategic plans to reach desired future outcomes (with futuring merging with visioning).

The tracking and interpretation of leading indicators (such as the inflation rate, unemployment rate, the GDP growth rate, etc.) might be included in either trends momentum or cause-and-effect relationships. In a contemporary way, the searching for and identification of leading indicators is like reading “the signs” of ancient fortune telling. One interpretation of leading indicators is based on trend momentum based on past experience and present circumstances. Another interpretation of them is that leading indicators are states in cause-and-effect relationships with high probability consequences. The logic of the leading indicators is “if x happens, then y will follow.” This proposition may be based on excellent past evidence or it may be an intuitive hunch, but it must be made explicit and subject to peer review and future validation.

While understanding and documenting cause-and-effect relationships, especially in human affairs, can rarely if ever be achieved with 100% predictability, it remains along with trend momentum as one of the best reasons we have to anticipate the future from the past and present.

Closed Systems and Fixed Sets. In a closed system, we know all the variables and their relationships, which remain stable because they are insulated from outside influences. A fixed set, or a finite area (also called “boundary conditions”), of objects or data is virtually the same as a closed system. In many forecasts, we see assumptions used as boundary conditions. Both closed systems and fixed sets can be highly predictable. A common example is a deck of cards, which numbers 52 cards of known values. As cards are played, one can anticipate by the process of elimination what cards remain. If the aces of Hearts, Clubs, and Diamonds have already been seen, then one can assign a high probability (up to 100%) that the ace of Spades will show up by the end of the game if all the cards have been distributed and none remain in the deck. Solving card probabilities, like billiard chances, is another excellent application for Bayes’ theorem, which is exactly why some casinos forbid card counting by players. When systems are closed and when sets are finite, you can predict future performance, which is why many mathematical models make correct predictions. Relatively small numbers of variables, constancy of relationships among them, the lack of externally influenced changes, and relatively short time horizons will lead to high levels of predictability.

It might also be noted that closed systems, in nature and in human affairs, are rare. Open systems with many variables, with dynamic rather than constant relationships among the variables, vulnerable to external forces, and with relatively long time horizons provide too much uncertainty to be predicted with precision. This is another reason why many econometric models that try to predict annual GDP are typically wrong. Predicting the Dow Jones average from one day to another (as opposed to years) on Wall Street is virtually impossible, although frequently attempted. There are too many variables based on human behavior with too many possibilities of accidents and disruptive events to be predictable.

Another way of looking at closed systems and finite sets is the perspective of social structures, which are effective boundary conditions. Culture determines what behaviors are socially acceptable and what are not. The restraints of a cultural paradigm, reinforced by customs and laws, limit the total range of behavior and channel it in ways that are predictable to a certain extent. Rules and laws are meant to limit potential human actions, but people do in certain circumstances break them and sometimes even get away with it. By and large, however, culture provides a structure that qualifies, to one extent or another, as a closed system or finite set, thereby providing patterns with some predictability. In fact, the French historian Fernand Braudel subtitled his masterpiece on cultural structures of everyday life in Europe from the 15th to the 18 centuries "The Limits of the Possible." (13)

It appears that the more highly structured and restrictive a socio-economic or political paradigm is the more predictable the patterns of behavior are likely to be. We have seen regimes in history that were highly regimented. People were punished for certain types of behavior, such as speaking out in criticism of the government, that strongly inhibited what people felt free to do. They naturally avoided the potential threats of wrong behavior and adapted to correct modes of living that made their individual as well as social behaviors less random and more predictable. Cultures, societies, and whole civilizations can be viewed as a spectrum of closed vs. open systems and therefore predictable vs. random behaviors. I must quickly qualify this statement by reminding you that very few if any systems are totally closed, although some can be extensively closed, and there may be some very open systems. (14)

You might also consider the typical bell-shaped distribution curve of statistics as a type of structure. Statisticians are quick to array masses of data into two-dimensional graph shapes that are characteristic of fitting the data to a known pattern.

The historian David Staley makes the argument that scenarios are analogous to alternative structures for the future. Scenarios, used in the sense of alternative future conditions rather than hypothetical sequences of events, may be predictive in as much as we can analyze trends, imagine alternative outcomes, and describe different future contexts for a given topic of inquiry. Events are virtually impossible to predict, but structures may be predictable. (15) In this regard, a scenario is a structure that is also a plausible if not probable closed system or fixed set of conditions in the future wherein some behaviors would be logically expected and certain events could happen.

The existence of a closed system or fixed set greatly simplifies the challenges of futuring. It is much easier to be prescient when you have to deal with only a few trends or a limited number of variables. The inherent danger, of course, is that the futurist will assume or assert a set of trends and potential events that are really not a closed system or a fixed set. All representations and all models are simplifications of reality, and therefore all apparently fixed set models are really simplifications of more open systems. This leads to errors of omission of potentially important considerations. Such omissions come back to haunt the futurist as a "surprise." Something happens that was not expected because it was not even considered. Statisticians call these surprises, or data points occurring outside of the model

or the shape of a curve, an “outlier.” Economic analysts and forecasters call them “exogenous variables.”

In the context of economics and business, structures include fixed assets, institutions, corporate cultures, business models, technologies, processes, and distribution channels. In stable conditions, an economic model and a business paradigm act very much like a closed system. The metaphor of a model as representation of a structure as a closed system works. But in moments of crisis and panic, we learn that a system is more open and vulnerable to changes than we previously thought.

My experience is that building a relatively simple model is very helpful as a representation of the topic and that the results based on trends and their impacts upon one another can only be a baseline model. Such a baseline rests upon the judgment that all trends will play out as expected. Then you have to run simulations of hypothetical events, even black swans, upon the baseline to see what the variations might be. This approach is even more powerful and potentially prescient when the simulations are performed on scenarios as distinctly different alternative futures rather than just sensitivity analysis upon a single outcome that is so common to linear time-series and trend extrapolations.

The concept of closed systems and fixed sets leads us to employing trend analysis, scenario generation, and modeling and simulation for futuring. You might also view planning as the process of erecting structures (boundary conditions) for future investments, strategies, and actions.

Knowledge of Intentions. One basis of predictability is the foreknowledge of what others intend to do. People’s plans reflect their goals and intentions. Some people will publicly announce their goals and even their plans before they do something. If you knew what a person (or organization, company, or country) intends to do, then you could improve your ability to anticipate what they are likely to do in combination with the knowledge of their typical patterns of behavior, their resources, and circumstances. Of course, everybody expresses good intentions that are never carried out, so even knowing others’ plans and wishes cannot anticipate the future with certainty.

The knowledge of enemy intentions and plans is a particularly acute challenge for national intelligence. In the case history of the Japanese surprise attack on Pearl Harbor on December 7, 1941, American intelligence knew that the Japanese fleet was at sea, but not exactly where it was. There was no warning signs of an imminent attack, which American intelligence thought was more likely to come at the Philippines rather than Hawaii. The attack came as a complete, and devastating, surprise to the Americans, both in terms of when and where. American military intelligence grossly underrated Japanese capabilities and misinterpreted their intentions, thereby missing any early warning signals that an attack on Pearl Harbor was in motion. Likewise, national intelligence failed to pick up on the intentions and the preparations of Muslim extremists to attack the World Trade Center and the Pentagon on September 11, 2001, which consequent results just as traumatic to American security as the Japanese attack on Pearl Harbor 60 years previously.

During the Cold War, we could sometimes, but rarely, penetrate Soviet planning. With time, the U.S. learned to better anticipate what the Soviets were and were not likely to do based on their ideological mental models, their actual military resources, and particular conditions. The Strategic Arms Limitation Talks (SALT) were particularly valuable to the U.S. in picking up on patterns of Soviet thinking about deterrence and potential nuclear war. We learned that the Soviets were just as paranoid, if not more so, than the U.S. was about a potential surprise enemy attack upon them. After all, they had suffered a surprise attack from Nazi Germany just six months before the surprise Japanese attack at Pearl Harbor.

The Soviet intentions in case of a perceived imminent nuclear attack upon them from the U.S. was apparently (logically deduced from what they would articulate) a preemptive attack of their own, thereby causing the very nuclear war that they feared most. SALT contributed much to the relieving of Soviet fears that in themselves were the cause of so many Soviet military intentions and plans.

Whether in national security or in business, one person's surprise may be another person's intention.

In general, if you know the intentions, plans, and preparations of any person, company, organization, or government, you are in a better position to anticipate correctly what they are likely to do in the future. Planning is a leading indicator of future behavior and understanding the plans of others is an element of predictability of the future.

Self-Fulfilling Prophecies. People can make remarkably precise and accurate predictions about the future when they have the motivation, intention, plans, and resources of their own to make them happen. The idea of self-fulfilling prophecy is very old, with literary examples remaining from ancient Greece and India. In our own times the concept has been attributed variously to William James, Karl Popper, and Robert K. Merton. It is applied both in positive and negative terms. The positive occurs when a person makes a prediction and then goes out and makes it happen. In a broader sense, a self-fulfilling prophecy may occur when the prediction or forecast itself influences people's thinking or actions toward the predicted outcome. In the negative sense, people can make predictions or experience premonitions based on great fears and those fears can so influence their own behavior (and the behavior of other people responding to them) that they produce the very result that they dreaded.

In the contemporary world of politics and business, the concept of the self-fulfilling prophecy applies primarily to visioning and planning – seeing a desired outcome in the future, acquiring and allocating necessary resources, and working very hard to make it happen. Some self-fulfilling prophecies occur, but many fall short. In a larger sense, the self-fulfilling prophecy can occur only under specified and controlled circumstances, such as a closed system, otherwise intervening variables might frustrate and divert the effort toward the goal. When the self-fulfilling prophecy happens as a form of visioning with little or no reference to futuring, it may amount to little more than wishful thinking and good luck rather than astute futuring, planning, and operations.

Everyday people make everyday plans every day. Many of them are fulfilled, particularly when the person has control over the vital elements of the plan. To the extent that any plans contain elements beyond the person's control, such plans are vulnerable to outside interference, chance, and change. Many plans are intentions that may or may not be realized depending upon varying conditions. A familiar example is when the father of a family says that he will take the whole family to the local amusement park on Saturday. This is a promise and a prediction to the ears of children. It is also an intention, a plan, and an expectation in the minds of adults that may or may not actually happen according to circumstances. There may be a terrible storm on Saturday; the father may have to go into work unexpectedly; a child may come down with the flu; the amusement park may close for the day because of a power failure; etc., etc., etc.

Plans reflect one's self-centered expectations for the future that can be changed for any number of reasons. Knowing this, when any corporate or non-profit plan that I have ever participated in actually produces the fully intended results, I call it "luck" – it may have been a particularly prescient plan, but it got implemented correctly with no outside interference. Most successful plans turn out to be general

guidelines for investments and operations, but remain sufficiently flexible to tolerate changes and still remain “directionally correct.”

Both personal and corporate planning reminds me of Robert Burns’ famous Scottish poem *To A Mouse* (1785). It tells the story of what happened when a common mouse built a home in a field that subsequently got plowed up by the farmer much to the surprise of the mouse. Burns writes (16):

But, Mousie, thou art no thy lane,
In proving foresight may be vain;
The best-laid schemes o’ mice an’ men,
Gang aft a-gley,
An lea’e us nought but grief an pain,
For promis’d joy.

My translation into contemporary American goes like this:

But little mouse, you are not alone
In proving that foresight may be in vain.
The best thought out plans of mice and men often go wrong
And leave us nothing but grief and pain instead of expected happiness.

Despite their potential perils, individuals, organizations, and companies have to formulate plans for the future. No planning would result in no way of controlling resources, actions, or results. An operation without plans would rely on little more than trial and error and luck. Planning affords us the opportunity of molding the future in our own way, to give us the chance to realize the self-fulfilling prophecy.

At this point, let me build a mental bridge from the theoretical to the practical with a case history of my own. Several years ago an Asian corporation approached me with a request to do a forecast of American consumer value in personal transportation to the year 2050. At first I suspected that the client was kidding me, but when he showed me his budget for such a project I said to myself: now that is a serious amount of money, so I had better give this some serious thought. But upon what basis does one construct a forecast out 50 years into the future? Are there any long-term trends or systems that would provide foresight that far over the time horizon or would we just make it all up like a science fiction novel? The client was expecting my team to use trend analysis, so he requested that we look back at least 50 years in order to project trends 50 years ahead. But what trends? After giving the question some critical thought, we concluded that, yes, there were such trends: long-term socio-demographics, especially generational and life-stage trends (trend momentum and cause-and-effect relationships); long-term economic growth since 1945 (trend momentum, not laws of nature); and five hundred years of American culture and popular attitudes toward mobility (trend momentum and a closed system or fixed set).

The client was clever enough to request characterizations of American consumer value in personal transportation decade by decade from 1950 to 2050. The question was to what extent American consumer values had remained constant and how they had changed. We discovered that American consumer values in one sense had always been the same: Americans love the independence of personal transportation, if they can afford it. The U.S. is a large country in which mobility has always been a challenge. Americans developed with the national attitude that they enjoy an inalienable right to go where and when they want to go. Americans loved horses, buggies, and wagons. With the invention of commercial automobiles in the early 20th century, they gravitated to cars, motorcycles, and trucks. In

addition, Americans, like many other people around the world, love the sensation of speed and the pride of ownership of a fancy and comfortable vehicle.

In the 1950s, when deciding what vehicles to purchase, American consumers sought out vehicles with exaggerated styling and lots of power – the “muscle cars.” They paid little attention to fuel efficiency and environmental quality and barely a nod to safety. By the 1970s, however, consumer value shifted. The air quality laws of state and Federal governments required reduced air emissions from cars and trucks and the first Energy Crisis of 1973 made people very frightened of potentially unaffordable gasoline prices. Also, safety became an issue with mandated seat belts and the improved quality of vehicles. Therefore, many people shifted to smaller, more fuel efficient and cleaner cars, even when small cars felt less safe on the road with heavier vehicles.

A major shift in consumer value occurred in the 1990s and early 2000s when computer chips became micro-processors in vehicles. Inside the workings of a vehicle, chips improved engine fuel efficiency, automatic transmissions, four-wheel drive when needed, safety, comfort, and communications. People became used to being on-line with their friends. They wanted their telephones and Internet connections in their vehicles as well as in their homes. One major trend expected to continue for decades is the further integration of computers into vehicles, perhaps eventually automated “smart” driving. Computers will provide improved diagnostics of vehicle performance and thereby improve safety and avoid repairs. In large, off the road vehicles, remote sensing of vehicle performance is already available. People will have on-board GPS and navigation aids, as some have today, in addition to other communication conveniences. With breakthroughs in voice pattern recognition software, the driver will be able to speak directly to the vehicle itself. A car will be “trained” to recognize its owner’s voice and start, stop, and lock on command.

Styling will be important in the future, but more for interior design than the external extravagances of the 1950s. Safety, comfort, convenience, and reliability will likely remain as important benefits to 2050.

While Americans have a heritage of traveling when they want to, the roads have become so congested at times that nobody can drive anywhere through the gridlock. By allowing everybody to travel at will, everybody jeopardizes his or her freedom of mobility in traffic jams. A probable solution to the traffic problem of the future is better road information and automated coordination of drivers. By the 2020s, almost every car on American roads will offer real-time information on the weather, road construction and conditions, accidents, potential travel problems, and traffic tie ups. There will be little need for external Amber Alert signs as all that information will be accessible within each car. At some later time, most probably by 2050, each driver will file his or her driving destination and route into a central computer, that will store the routing information and come back to the driver with further instructions and travel suggestions.

Fuel efficiency and environmental emissions declined in consumer importance during the 1990s, but re-emerged by the end of the decade of 2000-2010. In the 1990s Americans wanted comfort, communications, and safety, both from the car itself and from outside. Cars became more reliable and fewer accidents originated with the vehicle than with the operator. People, however, were afraid of being pushed around the road by big trucks and even shot at by road-rage drivers. The SUV became the rage, despite the fact that it did not achieve a high standard of fuel efficiency.

Then came the oil crisis of 2008. I had asserted years before that the gag point of gasoline prices in the U.S. was about \$5.00 per gallon. Events proved me only slightly off. In July 2008, the global market

price of oil hit about \$147 per barrel and gasoline at the pump in the U.S. soared over \$4.00 per gallon. For the first time in American history, people began to cut back on their vehicle driving in order to conserve gas. Previously, Americans had driven more miles despite up and down gas prices. What we did not know in July 2008 was that the American economy was already sliding into a recession and that a huge financial panic would occur from late September 2008 into March 2009.

Energy for personal vehicles was a major focus of our forecast. Significant technologies for alternative energy sources had already emerged in the 1990s, and we believed that they would become only more important in the future. Previous consumer value in energy efficiency and environmental quality would likely shift to energy systems. We foresaw the growth of hybrid fuel vehicle sales and the eventual proliferation on the road of plug-in, re-chargeable vehicles and vehicles with fuel cells. We expressed the point of view that fuel cells would most likely be introduced as auxiliary power sources for automotive computers and electronics before they became power train systems.

In our forecast to 2050, we provided historical data on American economic growth. Since 1945, the annual GDP of the U.S. grew steadily despite a few recession years. Compared with the Great Depression, the recessions after World War II were relatively minor and brief. Since 1980, there had been an almost regular cycle of recessions every 10 years, but they were nothing on the scale of the unexpected Great Recession that began in 2008. We did not see this huge downturn coming. Basically, we asserted that economic growth would continue with periodic ups and downs all the way to 2050. In any event, we asserted that American consumers would generally continue to be able to afford to own their own vehicles across a spectrum of low-priced, basic vehicles to high-end luxury vehicles. In the long-term, the global over capacity in automotive manufacturing will reduce prices for basic vehicles, while new technology will provide higher valued benefits at additional prices. Whether we were right or wrong still depends upon four decades more of economics.

Our client was very sophisticated: he knew that we could not predict the future of American consumer value with precision, but he wanted our well considered expectations to use as a baseline for monitoring trends and events. He also wanted an approximation of future consumer value to place priorities on technology investments. Since our futuring study, the client has implemented the following fundamental business strategies:

- Continue the emphasis on alternative energy systems for personal vehicles in the U.S. due to consumer value (not just government regulations) in energy efficiency (resulting in lower energy costs) and significantly improved air quality emissions.
- Take seriously the long-term implications of global climate change and carbon management on industries around the world.
- Shift management focus to more long-term benefits for consumers and less on short-term manufacturing cost cutting and lowest retail prices.
- Place more importance on the integration of information and communication systems in vehicles.
- Place more importance on passenger comfort and interior design.

Futuring Principle 3: Futuring and visioning are different but complementary perspectives of the future.

Several years ago when I was still formulating my concept of futuring and visioning, I was exchanging e-mails with a futurist in England. After I expressed my ideas about the different but complementary nature of futuring and visioning and how they should fit together like mirror-image triangles, he came

back to me with my ideas visualized as a presentation slide called “Millett’s Hourglass.” I have extensively modified the slide over time, but retained the concept and the appellation. The present version appears below (Figure 1).

Futuring appears at the top of the “hourglass.” It is an approach that moves from the external to the internal environment. In futuring, you have to set aside temporarily your own wishes in order to see the world much as others see it. We all live within a macro-environment of trends and events typically beyond our immediate control. Futuring works from the most general macro-environmental trends down to the more specific opportunities.

Visioning, on the other hand, is the “internal to external” or “inside-out” or “bottom up” approach to the future. It begins with the foundations of any enterprise: its mission, values, aspirations (goals, both long-term and short-term), and culture. Every enterprise has an origin and history based on the vision and hopes of its founders and investors. It will have a culture (the proper ways of doing things), mission, and values, typically reflecting the board of directors (or investors) and senior managers. This is the sustaining foundation of any enterprise. Next, the enterprise will have a physical character represented by facilities, plants, offices, equipment, tools, and capabilities, both material and cerebral. This is the intermediate level of visioning. At a more operational and day-to-day, or year-to-year, basis, an

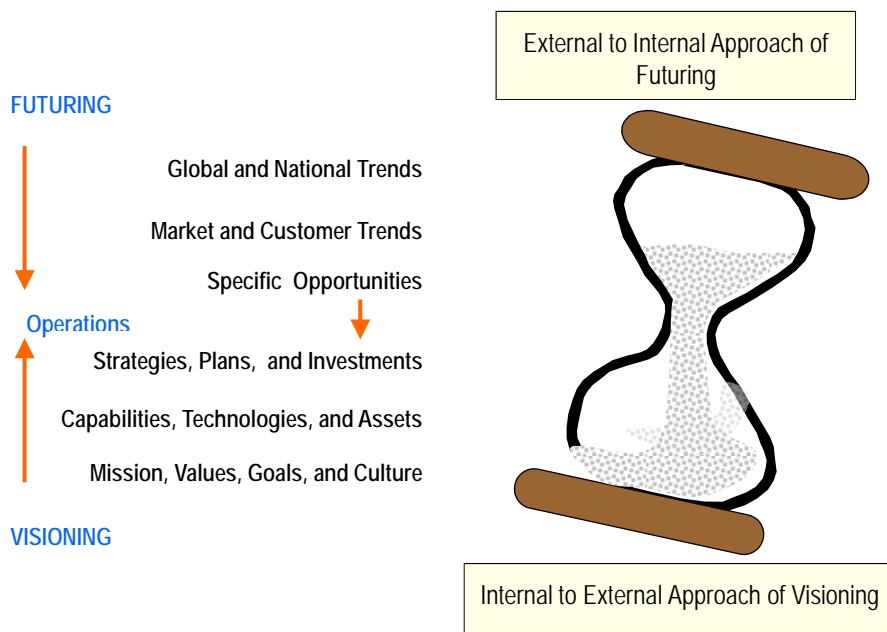


Figure 1: “Millett’s Hourglass” (adapted from Stephen M. Millett, “Futuring and visioning: complementary approaches to strategic decision making,” *Strategy & Leadership*, Vol. 34, No. 3, 2006, p. 46)

enterprise of whatever sort will have strategies, plans, and investments for the future. The intersection of futuring and visioning most clearly occurs with operations, which is the physical manifestation of strategies as embodied in plans and where the enterprise tries to make a future in the marketplace to its

own liking. Operations are where visioning encounters futuring, both the thinking about and the emerging realities of the future. It is the point where the internal and external environments of the enterprise intersect.(17)

In the words of contemporary futurists, futuring addresses possible and probable futures while visioning concerns preferred futures. The two approaches are different, but complementary. In making decisions and plans for the future, you have to do both and fit them together.

While the more sophisticated managers know that they cannot predict the future with certainty, they realize that they have to anticipate it, or at least salient features of it, in order to recognize the potential importance of emerging business opportunities and threats. Executive managers in particular are the stewards of investors and owners, and they have to both protect and grow the asset base with which they have been entrusted. To do that, they have to think about and plan for the future. In this sense, futuring and visioning are forms of risk management. No executive can afford to be take the attitude that “whatever will be will be.”

Many companies and organizations will perform a type of external environmental analysis, trend monitoring, or horizon scanning called PEST: political, economic, social, and technological. Some include the natural environment, business ethics, and other factors of particular importance to the enterprise. The point is that a manager has to be informed about and prepared to respond to the prevailing trends and events external to operations.

If you did not believe this before 2009, then the Great Recession should have taught you to mind at least the macro-environmental trends. But even the ones who were watching then did not believe in what they were seeing.

I was working on several futuring projects during 2008, when it became increasingly clear to me that the U.S. was sliding into a recession. I thought that the global market price of oil had gotten so high that it would push the U.S. into a recession not unlike what we had experienced in the 1970s and 1980s. I knew little about the real estate bubble or the international trading of derivatives, so I did not anticipate the coming crisis in the financial and banking sector; but I was confident that high energy prices would restrict consumer spending and that that alone would set off an economic contraction. Yet, some of my clients argued with me that I was too pessimistic. Even if there were a recession, they confidently asserted, it would be relatively shallow and short. I was shocked by the sudden drop in stock prices, the near collapse of banks and financial institutions worldwide, and the sharp increase in unemployment. By January 2009, I was telling people that I expected a long and serious recession, the worst since the 1930s.

From the point of view of futuring, we learned at least five lessons from the tracking and forecasting of American economic trends since 2008:

1. The most important trends require the closest monitoring; but the trick is identifying what the most important trends will be in the future, not just presently and in the past. Selecting the most important trends is always an exercise in expert judgment.
2. A wide variety of trends have to be tracked, because so many trends may emerge to shape the future. This activity is known as “environmental scanning” or “trend scanning,” which typically goes to more breadth but less depth than trend monitoring.
3. While multiple trends must be watched, they rarely play out in isolation of each other. There must be a way to think about the future as multiple combinations of trends that interact with

each other. Some trends provide positive while others give negative reinforcement to other trends. The ways to do this include cross-impact analysis, systems analysis, and modeling and simulation.

4. Because of uncertainty and the spectrum of possible outcomes in the future, it is more helpful to think in terms of multiple outcomes, or scenarios, with varying Bayesian probabilities of occurrence rather than trying to imagine a single outcome in the future.
5. Thinking about the future is one thing, but doing something about it is another. Often in the face of great uncertainty we tend to wait too long and commit the sins of omission. We may or may not be able to influence the course of trends and events, but we can think about alternative futures and prepare for them the best we can.

Visioning, unlike futuring, stems from internal factors, such as corporate mission, values, goals, and culture. As mentioned above, every enterprise has a reason for existing. It has a mission, which provides the direction for both thinking and acting. The long-term mission sets context for short-term goals. Typical mission and goals include:

- Enhanced brand image and corporate reputation
- Fulfilling an empty market niche or social need
- Superior customer satisfaction
- Increased market share
- Sales growth
- Profit growth
- Improved returns on investments (ROI) and returns on assets (ROA)

Culture, in companies and organizations as well as in societies, provides physical and psychological security through established expectations and norms of behavior for each individual. Incentives, rewards, and punishments become well-known and highly predictable. Culture provides continuity. For some companies, culture becomes the vehicle to sustain success over time. Therefore, by its very nature, culture resists change. Oddly, the corporate culture that sustains operations also stifles innovation. In this sense, we often hear the employees and lower managers say, "If it isn't broken, don't try to fix it." Innovations might be distractions and deviations. As many executives have discovered, changing a company's culture is no trivial undertaking.

I have facilitated or participated in hundreds of new product and innovation workshops with various corporate clients around the world. Some of these workshops were very exciting, but too many were disappointing. The inertia of continuing business as usual, especially if the business had been particularly successful in the past, is very strong. I eventually learned that there are three principal barriers to new product and service development: corporate culture, assets, and distribution. Companies are very reluctant to go into a new business that "just does not feel right." This means that the corporate culture preserves stability and resists change. If a new opportunity fits the existing culture, it is much more likely to be pursued, and be successful, than something that goes against the grain of corporate culture. The second barrier is the existence of capital assets that executive managers, particularly Chief Financial Officers, are highly resistant to abandoning. Once large investments have been made, managers want to get the most out of them and not have to make new investments. So, a new product or service concept has to fit the existing asset base or it is highly unlikely to be approved. Unless the business case is very compelling, companies resist making large new capital investments and under-utilizing existing assets to support new products and services. Finally, I have seen many attractive new product and service concepts shot down by people who say "I don't

know how to get this product to market.” Companies like to use their existing distribution channels and do not lightly venture into new channels that may be expensive, unfamiliar, and risky. The distribution barrier, however, should become less of a problem in the future with the Internet and courier services like FedEx, UPS, DHL, and the U.S. Postal Service.

So assets and strategic competencies and technologies, including distribution systems, act to reinforce both the positive and negative attributes of corporate culture.

Operations mark the intersection of futuring and visioning. It is the doing of everyday work and business. It is to the market what tactics are to the battlefield. It engages the customer with transactions in the setting of business customs and regulations in the face of competition. An individual or an enterprise might take one day at a time and act totally spontaneously. Transactions for the day could be left up to chance (fate). Few business people or enterprises are willing to run such risks today. They plan ahead to have the right items for the right customers at the right price, at the right place, and at the right time. When a person or an enterprise has expectations for daily (monthly or yearly) transactions and those transactions meet or exceed expectations, then the person or enterprise has in fact influenced the external business environment and realized an internally desired result. This is the moment of the well considered expectations for the future being met by futuring and visioning.

Futuring is typically incorporated into the planning stage of visioning that precedes operations. Operations can put into action the mental functions of strategy and planning; it can also make desired futures happen to the extent that any company or organization can effectively apply its resources to achieve its desired results (the self-fulfilling prophecy). Operations can impact external environments, and thereby influence futuring.

Theoretically, in the planning process it should make little difference whether you start with futuring or visioning – you need to do both. But in practical terms, it does make a difference. Futuring generally should be done first. It provides an external and customer orientation for visioning. Many companies will do the visioning without even doing the futuring. The result may be only wishful thinking. Having said this, the relationship between futuring and visioning is not linear, but rather iterative. Elements of visioning (the mission, business definition, and goals) will show up in the expert judgment of which trends to research and forecast in the futuring.

When formulating strategies and making plans, you can evaluate options according to seven criteria, three from futuring and four from visioning:

1. *Market conditions and business opportunities*, or the total environment within which customers live, work, play, and spend (from futuring)
2. *Customers*, their behavior, and their value proposition are clearly identified and present attractive business opportunities (from futuring)
3. *Competitors and their likely responses* (from futuring)
4. *Corporate culture*, business mission, values, and goals (from visioning)
5. *Corporate assets and strategic competencies and technologies* (from visioning)
6. *Distribution networks* (from visioning)
7. *Risk and potential returns on investments (ROI)* (from visioning)

These criteria may be evaluated across a spectrum from very good (maybe five points) to poor (one point).

I have told clients that I can think strategically and I can think operationally, but I can't think strategically and operationally at the same time. They can't either. We get so wrapped up in the practical work of daily operations that we put aside abstract thinking, which is the nature of strategy. We are so busy fulfilling orders and meeting deadlines that we suspend watching trends outside the walls of our own offices and plants. Recognizing this fact of contemporary business life, I recommend that every company and organization do futuring on a routine basis (once every three years, unless rapidly changing business environments call for more frequent futuring), but do visioning at least once, maybe twice, a year at a strategic retreat. Futuring will be done by a relatively few number of people. They will continuously track and report on trends. The reporting takes the forms of periodic briefings to senior management and regular newsletters to both managers and staff through e-mails and paper copies. The people doing the futuring should prepare background materials and briefings for the more numerous participants of visioning retreats. My experience is that most people do not enjoy doing futuring and are not particularly good at it without proper training. But they have lots to say about the nature of the company or organization, especially corporate politics.

You may have noticed that Millett's Hourglass tilts at the top to the right. This is not a graphic mistake. It represents an important point that external environments change faster than internal environments creating a misalignment of the two. The demographics of customers change over time. In the U.S., they are increasingly diverse, older, and more female than male. Economic conditions change, just as we discussed in connection with the Great Recession. Technologies can unexpectedly explode in benefits and cost savings to customers. Competitors and business modes change over time, too. A strategic issue for every company and organization is to keep up with external changes and stay as well aligned as possible with external business conditions. To do so requires well considered expectations, current information, and the courage to adapt to new situations.

Before leaving this discussion of futuring and visioning I want to say something about visionary leadership, which is extremely powerful but very rare. Many of us are dreamers, but few are visionary. We have fantasies about wonderful experiences in the future, but they are mostly flights of fancy: we will make a lot of money and live free and well; we will have spontaneous erotic encounters with beautiful partners; we will travel to exotic places beyond the ordinary. But most of these dreams are the stuff of our imagination unbounded by everyday reality. Making our dreams come true often ends up requiring too much time, effort, and money beyond our mundane everyday lives. Very, very few of us, on the other hand are visionaries to the extent that we can imagine a highly desired future and actually make it happen.

What makes visionaries so rare and different from the rest of us? I wish I knew. They certainly have active imaginations – but they have the ability to go far beyond just wishful thinking. They seem to have a capability of seeing many trends, recognizing patterns, understanding cause and effect relationships, and anticipating important changes. They have bold goals and they know how to achieve them. Visionary leaders may do either explicit or intuitive futuring. They are futurists in their own ways. They are very well informed about economic, demographic, social, consumer, and technological trends. But they also see opportunities that others miss. They not only have a vision of a desired and possible state in the future, they have specific ideas about how to achieve it.

A dramatic example of a visionary leader's thinking was provided by Sen. Edward Kennedy when he attributed a saying to his slain brother Robert adapted from George Bernard Shaw: "Some men see things as they are and ask why. Others dream things that never were and ask why not."

When we think of visionary leadership in American business history, we immediately think of inventors and corporate empire-builders such as Eli Whitney, Cornelius Vanderbilt, John D. Rockefeller, Andrew Carnegie, Thomas Edison, Alexander Graham Bell, Howard Hughes, Steve Jobs, and Bill Gates. Many less famous visionary leaders on more modest terms have also appeared in thousands of companies, organizations, and non-profits. They have achieved wondrous results to the awe of their contemporaries.

Can visionary thinking and leadership be taught? Can they be captured and transferred to students in MBA courses or to readers through business books? Can less visionary people than the great ones also, to one extent or another, acquire and use the basic methods of the visioning? I think the answer is “yes,” but maybe I am being too positive.

The key to visionary leadership through the processes of visioning is the combination of extraordinary intuition and supreme practicality. Intuition along with imagination provides the mental images, or mental models, of what could be; practically based on education and experience provides the guidance as to how to gather and use resources for achieving aspired goals in the future.

Futuring Principle 4: All forecasts and plans should be well considered expectations for the future.

Forecasts and plans produced from futuring and visioning activities fail for many reasons. One obvious reason is that you cannot predict “the future” with certainty, only with degrees of uncertainty, and therefore too many forecasts assert too much. Forecasts and plans contain the same kinds of common errors found in many forms of scholarship, such as failing to adequately define terms, not accessing adequate information and acknowledging sources, committing the sins of omission, failing to explicitly state our assumptions and trains of logic, being too precise when precision is lacking, being too vague when more specificity could have been provided, failing to describe the conditions that bound future outcomes, and failing to admit appropriate shadows of doubt. Although the phenomena of time and the future may continue to elude our understanding, most of the mistakes of futuring and visioning lie with challenges in our perceptions of the phenomena.

By examining the reasons why most forecasts and plans fall short, I can recommend ways to form well considered expectations for the future.

Predispositions. People’s predispositions include firmly held beliefs, convictions, biases, optimism and pessimism, values, preconceived ideas, and mental models. I have often admitted that I hold some strong convictions, although my associates suffer from biases. I remember as a young man being told that every story has three versions: yours, mine, and the truth. The reality is that we all have biases of one kind or another and they color our entire perception of the world and of time, including the ways we manage the present and the uncertainties of the future. Biases come in all shapes and sizes; they are often implicit and deeply rooted in our logical assumptions, so much so that we hardly recognize them ourselves and rarely make them explicit to others. They are based on our past experiences, good and bad, and they stem from the emotional structure behind seemingly objective rationalizations. We have learned over time how to cope with the fears associated with the uncertainties of the future, which may hide very scary monsters.

A very common bias in thinking about the future is the attitudinal inclination toward being either too optimistic or too pessimistic. The most commonly observed type of optimism in both every day and professional lives is view that the future will be better than the past and that we just need to get through today. I saw an upward spiraling of optimism during the boom of the 1990's – some futurists were calling for an extended boom that would last another 20 years or so. Then, after the crash of 2008-2009, some of the same optimists switched to excessive pessimism that the Great Recession might last another 20 years or so.

When most people venture to tell you what they *think* the future will be, they are really telling you what they either *hope* or *fear* the future will be. Their views are often more emotional than logical.

Some people are called “eternal optimists,” because they always see the proverbial silver lining in every dark cloud. By the nature of their personalities and their personal experiences, they see the future as being more wonderful than it is today. There is a word in English that identifies the overly optimistic person: “Pollyanna.” It comes from the lead character and title of a very popular children’s book authored by Eleanor Porter in 1913. The initial novel was so popular that it spun off a series of books, board games, and movies over most of the 20th century. The character Pollyanna played “The Glad Game,” whereby she could find something good in every situation. Her optimism about the present and the future is contagious. Even when faced with her own crippling accident and the prospect that she might never walk again, she with the help of others persevered toward a complete physical recovery. The ending of the story is uplifting – despite how bad things seem today, they will get better in the future. We continue today to enjoy plays, movies, and works of fiction that have happy endings. Of course, in our own lives, we sadly learn that not every situation has a good ending.

The opposite is the persistent pessimist. This type of person sees disaster in every situation and can make only gloomy predictions for the future: “Things are bad now and will only get worse.” No amount of information or arguments will sway them from their bias toward negative expectations for the future.

The ultimate pessimist is the “prophet of doom,” or the person who warns of the pending end of the world. The Old Testament abounds in such prophets. Every religion has an element of disaster; for Christians, the prophecy of the Book of Revelation tells of periods of earthly wars and disasters before the final day of God’s judgment and the entering of eternity. Early Christians preached the end of the earth, and self-proclaimed prophets have been warning of the end of life as we know it over the last 2,000 years. We still occasionally hear the refrain today in the 21st century. It certainly is the stuff of science fiction and fantasy, with stories of depleted oil, huge meteors striking our planet, earthquakes, volcano eruptions, global starvation, global over-heating, an extended nuclear winter, and alien invasions. (18)

Many famous forecasts have been excessively negative. The most famous example was an anonymously authored tract entitled *An Essay on the Principle of Population As It Affects the Future Improvement of Society* that appeared in England in 1798. The author proved to be the Rev. Thomas Robert Malthus, a friend of David Hume. Malthus calculated that population would grow faster than the resources of society to feed, house, and employ them. The result would be poverty and famine until populations were reduced back into balance with resources. Malthus may have been influenced by the catastrophic famine in Scotland in 1699, and he had no inkling of the potato famine that would devastate Ireland during the 1840s. His work prompted one English intellectual to characterize economics as “the dismal science.” Joining with Malthus in his pessimistic view of the future was the economist David Ricardo,

who rejected the optimistic attitude of Adam Smith toward the continued economic growth of the Industrial Revolution. Ricardo viewed a growing scarcity of resources resulting in social tensions and even upheavals. Of course, in this same vein, no one was more pessimistic about the future of the industrial order than Karl Marx, although Marx swung from being overly pessimistic about the future of the economic conditions that he observed in his day (and condemned as “capitalism”) to being overly optimistic in predicting the triumph of the working class and the achievement of a classless (communist) social order in the future when all people would have their needs met while providing as they could to the overall well being of a global society.(19)

Malthus was overly pessimistic because he saw the trends in rapid population growth and concluded that the current social and economic paradigm that he knew could never support it. But the social and economic paradigm changed with the population growth. New technologies led to improved productivity in both manufacturing and agriculture. Since Malthus’ theory appeared, forecasters, futurists, and the “prophets of gloom” have repeatedly warned that the Earth’s resources cannot sustain continued population growth and economic development. Their attitude appears to be “enough is enough,” which too often means that other people have to give up what they want.

The errors of overly pessimistic demographic and economic forecasts originate in making linear extrapolations of trends judged as “bad” without acknowledging the possibilities of trend variations (such as cycles), countervailing trends, or good disruptive events (good luck or “white swans” as opposed to black swans). The “good luck” that Malthus, for example, failed to consider was the rapid increase in both agricultural and industrial productivity due to innovations in technology. Likewise, Marx failed to adequately consider the ramifications of the fact that in a free market system workers are also consumers: people have to earn enough money to buy the goods produced in their factories, or factories cannot continue to produce the goods for which there are no consumers. Further, the pessimists see closed systems with fixed elements and defined limitations. Just the opposite may also hold for optimists.

A scientific variation on the negative bias toward the future was offered by the Harvard zoologist and geologist Stephen Jay Gould, who rejected the idea of “progress” or any particular directionality in biological evolution. In the tradition of Darwin, who saw chance as the primary force behind evolution, Gould was just as opposed to linear determinism in biological evolution as Karl Popper was in philosophical historicism. He observed that in general species vary *from* smaller but not necessarily *toward* larger sizes. Gould characterized a complete, or closed, system as a “full house” and argued that the limits of nature in such a system constituted a “right wall,” a metaphor for the right side of a two dimensional graph (which is a representation of a closed system). He argued that genetic variation in species could occur in any number of possible directions within the system, but could not cross over the “right wall.”(20) Such would be the biological equivalent of exceeding the speed of light in Einstein’s relativity. Gould would have agreed with those economic and environmental pessimists who would say “this is the limit” or “this is just as good as it gets.”

But how do we know that we are in a “complete system” and that the “right wall” is fixed rather than adjustable?

Today we hear comparable forecasts that we have hit the right wall of Earth’s resources and environmental integrity. Some overly pessimistic futurists are saying that the long cycle of economic growth since World War II has come to an inevitable end and that world economics will be very different in the future. Some of these futurists were also the same ones who foretold of continuous long-term

economic good times back in 2000. There is a point of view that holds that we are already destroying the planet and all life on it, including ourselves, through excessive man-caused emissions of greenhouse gases, especially carbon. Mankind with all its vain glory will end up like the dinosaurs, but will there be anybody left thousands of years from now to find our bones?

Closely related to biases of optimism and pessimism are the biases of values, both religious and ideological. Futurists are human, too, and they share all the attributes of the human condition. Some futurists have strong religious beliefs that color their expectations for the future; some others may hold strong deterministic views based on motion, molecules, and DNA. There are futurists in the public sector who embrace public values (what is good for the people), and there are futurists in the private sector who embrace private values (what is good for the company). Likewise, political biases can skew forecasts.

I recall a futuring project that I managed during the Reagan Administration for a major aerospace and defense company. They had experienced huge growth in business volume due to the major military buildup at that time and they projected more growth throughout the 1980s and 1990s. They were making their own significant investments in future strategic weapon systems for the U.S. Air Force. I concluded from our scenario project that the client had unrealistic expectations. They were seeing the trends that supported their biases and ignoring those that did not. At the end of the project, which had generated a lot of contentious debates, the client smiled and said to me, "Thank you for bringing no biases to us in your forecast." I had to laugh and confess, "Oh, I have plenty of biases – they're just not the same as yours." For this very reason, well considered expectations for the future need to explicitly identify underlying assumptions (mental models), present evidence and compelling logic, and then be subjected to expert peer review and validated and modified by continuous trend monitoring.

Convictions, biases, and values are all wrapped up into the larger context of mental models, or what the Germans call *Weltanschauung*, "world view." It is an orientation based on personal experiences, attitudes, beliefs, and culture. It may be highly individual or it may be shared among a large group, even a nation. Some might argue that there may be a genetic predisposition to a particular way of thinking (or, at least, the processing of information). Professor Peter Senge of MIT called patterns of behavior "nature's templates" and emphasized the importance of mental models in the contexts of both systems analysis and management.(21) Regardless of their origins (inherited, learned, or both), mental models provide filters for both intellectual and emotional expectations for the future.

In short, predispositions such as personality orientations, religious or secular beliefs, convictions, biases, and preconceived ideas and mental models compromise most forecasts and plans because they lead people to skew expert judgment, exaggerate trend momentum, misinterpret cause and effect relationships, and ignore information that does not fit their mental models. Even more egregious than errors in forming well considered expectations, they lead to inflexibility on the parts of both leaders and futurists that makes adjustments (also called deviations) in response to unexpected changes very difficult if not impossible.

Self-Interest and Wishful Thinking. The predispositions discussed above may be conscious or subconscious, but they are largely ways of processing data and coming to conclusions. They are rationalizations. Self-interest, on the other hand, is very material. It is more about the pocket book than the head. Self-interest leads some people to listen to and believe those expectations for the future that make them look or feel good now. Their wishful thinking is that the future will inevitably unfold just as they want it to. Futurists are subject to tremendous temptations to tell people what they want

to hear. This is especially true for futurists who live on fees from clients and salaries from employers. In ancient cultures, the king would kill the messenger who brought ill tidings. A similar situation exists even today when the futurist fears career-ruining retribution from an unhappy client or boss whose sense of self-interest was threatened by unwelcome but better considered expectations for the future.

I admit that the line between abstract predispositions and material self-interests is very vague. People like both: they feel most comfortable when their abstract ideas and expectations for the future align well with their self-interests. Their way of thinking about the future is highly influenced by wishful thinking.

I have experienced many awkward moments when I managed a futuring project that produced forecasts that were not to the liking of the client – more precisely, presenting scenarios that warned them that the future that they wanted and that they expected had a low probability of occurrence due to circumstances beyond their control. The challenge is not to change the scenarios to suit the client's wishes, but to present the scenarios as options that may occur under different sets of circumstances. Potentially unwelcome views of the future have to be packaged particularly well to impress the skeptical client to consider what otherwise might be dismissed as impossible.

Many historical cases exist when someone gave a forecast designed to please an executive. I will share with you my favorite story of a prediction that served well the self-interests and wishful thinking of both the fortuneteller and the patron. During the Jewish uprising against the Romans that began in 69 CE, the Roman legions systematically besieged and massacred rebel strongholds in and around Judea. Masada was the most famous of these. When the rebels saw that they could not win, they committed suicide rather than fall into the brutal hands of the conquerors. But another situation occurred at Jotapata in Galilee. After a long and bloody siege, the few survivors of the Jewish garrison killed each other, leaving only one alive, the commander, Josephus. According to his own account in *The Jewish War*, Josephus did not commit suicide but allowed himself to be taken prisoner. As was the custom, he was presented to the Roman commander for the sentence of death. Rather than humbling himself and begging for mercy, Josephus announced to the Roman general: "You suppose, sir, that in capturing me you have merely secured a prisoner, but I come as a messenger of the greatness that awaits you. Had I not been sent by God Himself, I knew the Jewish law and how a general ought to die....You, Vespasian, are Caesar and Emperor, you and your son here. So load me with your heaviest chains and keep me for yourself; for you are master not only of me, Caesar, but of land and sea and all the human race..." Vespasian, being a traditional Roman who embraced the customs of Fate and fortunetelling, decided to keep Josephus alive. True to the prophecy, Vespasian was proclaimed the Roman emperor in that same year, 69, founding the Flavian Dynasty. When he died ten years later, he was succeeded by his son Titus, a great Roman general in his own right who had stood at his father's side in Galilee when Josephus had made his prediction about their destiny. Josephus became a Roman citizen, an advisor to the emperors, a scholar, and the historian of the Jewish people.(22)

We often see a convergence of convictions, biases, values, and self-interest. People find it emotionally very difficult to reconcile their values with self-interests if they are not in harmony. In general, people like to enjoy harmonious emotional states in which their values and their self-interests are well aligned. This alignment very much influences their views of the future as well as the present. To generate well considered expectations for the future that are relatively if not absolutely free of convictions, biases, values and self-interest is theoretically possible but very difficult. It would require a great deal of latitude for emotional detachment, a strong sense of security, and much hard analysis and logic. In addition, there may be no absolute standard for "objectivity," which may only be a consensus of

perceptions among people who share the same belief system or experiences. This observation suggests that effective forecasts are not so much those that please the self-interests and biases of executives but rather those that emerge through participation in the process of futuring and consensus in their results.

I have seen many forecasts and plans fail because they were too ambitious given existing and changing conditions. Especially in planning, high goals can be set that are substantially misaligned with opportunities. As I have repeatedly said, planning based on visioning with little or no futuring to temper it can amount to little more than wishful thinking. It is not enough to want to achieve a goal in the future – you must also know how to achieve it within the context of external circumstances and your own resources.

Yet, it must be admitted that sometimes wishful thinking works. It works everyday in many small ways, but it is hard to achieve with the big things in life. Certainly goals provide motivation and direction. I suppose that if you had no goals you would not need plans; but if you have goals, you have to have plans. Without sound planning, adequate resources, and hard work, wishful thinking depends too heavily upon luck.

The Recency Effect. People are more influenced by the present than they typically realize. Trend analysis is inherently limited by information from the past and the present, and the more you rely on trend analysis alone the more you will be confined to the proposition that the future will look a lot like the past and the present. Beyond the potentially hypnotic power of trend analysis, managers often fall into the trap of assuming (setting parameters and boundary conditions) that the most important trends and issues of the present will also be the most important ones in the future.

We call the influence of the present on our thinking about the future the “recency effect.” It is one of the major causes of errors in both futuring and visioning. It leads to both errors of commission (including factors and relationships that seem important today but will prove not to be so important in the future) and errors of omission (failing to see emerging trends and issues that appear to be minor today but will prove to be major in the future).

The Scottish Enlightenment philosopher David Hume concluded as early as 1739 that people’s perceptions of cause-and-effect relationships are based on their past experiences, habits, and expectations. While people can recognize valid chains of causes and effect, they also make frequent errors simply because the future is not going to be exactly like the past. Anticipating Bayes’ theory of conditional probabilities, Hume observed that “probability is founded on the presumption of a resemblance betwixt those objects, of which we have had experience, and those, of which we have had none...” More than two centuries later, countless psychological experiments have demonstrated that people’s perception of the present frames both their memories of the past and their expectations for the future. How people *feel* about the past and the present typically colors how they *think* about the future. Harvard psychology professor Daniel Gilbert concluded that “Because predictions about the future are made *in* the present, they are inevitably influenced *by* the present....[W]e tend to imagine the future as the present with a twist...” Curiously, the theologian Augustine of Hippo (St. Augustine) made a very similar observation in the fourth century: “[T]here are three times, a present of things past, a present of things present, a present of things to come....The present considering the past is the memory [or history], the present considering the present is immediate awareness, the present considering the future is expectation.”(23)

We tend to think that the issues that we are wrestling with today will be the same ones that will dominate our thinking in the future. Using this line of reasoning, we might expect that the big issues for another decade or more will be renewed economic growth, financial stability in world markets, terrorism, the war in Afghanistan, health care, energy, and global climate change (in other words, the things that obsess us today). But the big issues in the future might be very different, such as

- Political unrest and domestic violence in China leading to the collapse of political domination by the Communist Party
- Cuba becomes a democratic and free-market country closely allied with the U.S.
- The addition of new states to the United States
- A new energy crisis caused by inadequate supplies and soaring prices of electricity in the U.S.
- U.S. military intervention to restore political, social, and economic stability in Mexico
- Shift in security focus from potential acts of terrorism by Muslim extremists to acts of domestic violence by drug cartels and political and social fringe elements (survivalists, extreme libertarians, anarchists, eco-terrorists, etc.)
- Social, economic, and political conflicts between aging Boomers and younger generations in the U.S. over government spending priorities (health vs. education), employment (Boomers staying in jobs too long to the detriment of younger employees), taxes (especially for Social Security and Medicare), and interest rates (with the aging interest group demanding higher interest rates)
- Reduced size of the European Union with countries gravitating to other economic blocs (such as a trans-Atlantic trading group and an energy-rich economic bloc including Russia and central Eurasia)
- Al Qaeda takeover of Saudi Arabia
- The middle class revolution brings a democratic and pro-Western government to power in Iran
- The Taliban take over Pakistan and its nuclear arsenal
- Re-emergence of Russian power in Eastern Europe and Central Asia
- The collapse of Pakistan and its re-union with the rest of the Indian subcontinent
- A cartel of oil-buying countries that will set the global price of oil rather than the free market or the oil-producing countries

False Starting Points and Assumptions. Like any other train of logic, the point of departure often determines the destination for well considered expectations for the future. I have seen many peculiar assumptions made at the very beginning of a forecast that were excused by the disclaimer, “Well, we had to start some place.” Assumptions in futuring are essentially setting 100% *a priori* probabilities on certain conditions, or arbitrarily setting variables to parameters. It is also, to one extent or another, an arbitrary (and possibly biased) definition of a closed system or a fixed set for purposes of predictability. Many assumptions are based on little more than predispositions and wishful thinking, as discussed above.

One place to start a futuring project is with the present. This is a valid but limiting starting point because it fails to consider history and risks the bias of the recency effect. Another place to start is with the past. Economists have told me that in their forecasting they prefer to go back twice as far in time as they will go forward in the future; a forecast, therefore, of GDP in the U.S., for example, from 2010 to 2020 would require trend analysis back to at least 1990. In the case of consumer value in personal transportation discussed earlier, the time frame was 50 years in the past as a run up to 50 years in the future. If you believe in long waves, you might need to go back at least 60 years in time just to forecast economic performance 10 years into the future.

False assumptions include incorrect estimates of what trends, issues, and factors will be important in the future (reflecting the recency effect and potential errors of omission); linear extrapolations of trends without due consideration of potential changes to them; inconstant relationships among trends, issues, and factors; cause-and-effect relationships that may be neither valid nor predictable; the belief that the environment, or paradigm, under consideration is more or less a closed system unaffected by random events or exogenous variables.(24)

Omissions and Unexpected Events. Parallel to the recency effect, by which current conditions and issues dominate a forecast, another common cause of the failure of forecasts and plans is the omission of trends and issues that do not seem important at the moment but emerge as major themes in the future. In addition, there will always be the potential for unexpected and disruptive events to occur that may be impossible to anticipate. In everyday life, we make plans and then we may have to change them because something unexpectedly interferes with them. Or, we hear people say “Now, all things being equal, then....” But “all things” do not always remain “equal,” which is another way of saying “all things remaining the same.” Lots of variables can change, producing unintentional and unexpected circumstances. Common examples of exceptions to plans include changes in the weather, accidents, illness, and other people doing unexpected things that impact you.

Another kind of omission is the failure to anticipate Taleb’s black swans, or those highly disruptive events that seem from the point of view of the present to have very low probabilities of occurrence but potentially very great consequences if they do happen. Such disruptive events are also called “outliers” by statisticians and “exogenous variables” by economists. A major challenge for managers is how to recognize at a very early stage the emergence of a trend that will later work out to be very important. Yet another challenge is how to imagine events that today seem unimaginable but nonetheless come to pass. This is the very riddle “how to think about the unknown that is totally unknown,” or the space called “the unknown unknowns.”

Lack of information. Similar to the errors of omission is the lack of information about the past and present circumstances that compromise well considered expectations for the future. In the case of the lack of information, you may be aware of the most important trends, issues, and factors and even correctly appraise their potential importance, but you do not have adequate information to form an educated guess about the future. You have no factual basis for a probability, so that any *a priori* probability will be simply guess work. The lack of information can be caused by the absolute absence of any information (secrecy of existing information or the total absence of any evidence of any phenomenon) or by the inadequacy of time, effort, and drive relative to the forecaster or planner to acquire information that is available but obscure.

When “hard” data are missing, we rely on “leading indicators” as prophetic signs of future. These leading indicators are taken as “signs,” not from deities, but from experiences with of trend momentum and cause-and-effect chains of events (both those that are firmly established and those that are hypothetical sequential scenarios). Sometimes the leading indicators are prescient and many times they are false leads. Some indicators are well proven and stable, while others are assumed and highly vulnerable to the impacts of other trends and events. The high oil prices of the first half of 2008 turned out to be a weak rather than a strong leading indicator: it anticipated the rapid demise of General Motors and Chrysler, but not directly the financial crisis of Bear Sterns and Lehman Brothers. On the other hand, with perfect hindsight, the decline in housing prices and the exceptionally high volume of sub-prime mortgages leading to borrower defaults proved to be foreshadowing of the financial crisis

that began in mid-September 2009. We are becoming more sophisticated with the enormous amounts of information accessible today and with well-documented experiences, but our ability to read leading indicators is just as much an art today as the reading of “the writing on the wall” by ancient prophets.

In economic, political, and technological futuring we continue to make mistakes in our judgments because we are too certain of trend momentum and assumed cause-and-effect relationships and respect too little the potential disruptions of sudden changes. While some black swans may be theoretically impossible to anticipate, other changes could be anticipated if more of us had information about trend outliers. The lack of information on current conditions often contributes to our surprise when something occurs unexpectedly, but which in retrospect may have been predictable if we had only had sufficient and proper information. Surprise is often a point of view depending upon the position and knowledge of the observer.

For most people the lack of information is one of the most serious problems in anticipating the future. In so many cases, using 20/20 hindsight, we realize that we framed incorrect expectations and made faulty forecasts and plans when we see information that was available to other people but not to us.

Too Much and Incorrect Information Leading to Errors of Interpretation. In addition to the above challenge of too little information is the problem of having too much useless and incorrect information. Researches can get carried away, especially with the distractions of Google, and make the investigation of trends an endless process. Now more than ever is it easy to gather too much information, much of which may be outdated or just plain wrong. The trick always is finding and selecting the best information available – best in terms of currency, accuracy, and relevance to the futuring or visioning project at hand.

Having worked with many scientific and technical organizations, I frequently witnessed analysts who were reluctant to draw conclusions because they demanded more data. At some point in time for every project, enough data is enough – more data past a certain point has decreasing marginal value. But the quality of information is always important. As many managers and futurists know from experience, it is better to have just the right amount of the right information as an input to a conclusion or a decision than to have either too little or too much information.

Too much and incorrect information, obviously, will lead managers to incorrect conclusions and false expectations for the future. The quality of the forecast and the plan is highly influenced by the information used to generate them.

Vagueness. The common trick of oracles, soothsayers, astrologers, and fortunetellers through history was to be dramatically vague. They relied on the tricks of their trade, including mysterious rhymes and riddles full of alleged allegories, metaphors, and symbolism. The traditions of shamans and medicine men who claimed to see the future predate the earliest civilizations. Beliefs in prophets and so called “wise men” were common in ancient Egypt, Mesopotamia, Greece, and Rome. The most famous oracle in ancient Greece was the priestess Pythia, or Oracle of Delphi from the 8th century BCE to the 4th century CE. Her prophecies were attributed to the god Apollo, although there is evidence that she sat in a spot exposed to intoxicating gases rising from underground. She was notoriously vague and mysterious. The interpretation of the Oracle was left up to the supplicant, allowing people to get their money’s worth by hearing what they wanted to hear. After events occurred, people could give a retroactive interpretation of the Oracle that made her look very prophetic. In addition, given the high

authority attributed to the predictions of the Oracle of Delphi, her most famous customers took the appropriate actions that fulfilled the Oracle's prophecy, making it appear correct in hindsight.

There is a famous story, possibly true, that when Alexander the Great sought her out for a prophecy before his Persian campaign in 336 BCE, the Delphi Oracle refused to receive him. The young Macedonian king was so frustrated that he hunted her down in her own chambers and dragged her by her hair to the place where she would give her prophecies. She then allegedly cried out with unaccustomed clarity, "Let go of me, you are invincible!" Alexander certainly had his winning ways.

The ancient Roman astrologers, seers, and soothsayers were equally vague. They had to be. The Romans placed great stock in auspices. If the fortunetellers gave unwelcome let alone wrong predictions to powerful men, they were likely to be held accountable with their lives. Again, the vagueness of the predictions allowed a wide berth of interpretations and ex post facto validation.

Arguably the most famous seer since ancient times was the 16th century Frenchman Michel de Nostredame, or Nostradamus in Latin. He was what was called an apothecary in his day. He dealt in medicinal chemistry. Maybe he also dabbled in alchemy and mind-altering drugs. In any event, he combined advanced skills in medicines with progressive views about hygiene and healing during epidemics of the plague. His local fame became national when he began making his predictions in his almanacs, which sold widely. His admirers included Catherine de Medici, the Queen of France, who brought him to the French court as both an apothecary and fortuneteller. In 1555 his *Les Propheties* were published. He made numerous predictions presented in French quatrains. They are all extremely obscure in meaning and subject to all kinds of interpretations. The most accurate predictions were those that were declared to have proven correct *after* events occurred so that the known events could fit the quatrains.

In our own times, as sophisticated as we think we are today, we still indulge ourselves in horoscopes, palm readings, Tarot cards, and other forms of fortunetelling. We want to believe that there are special people who know how to read "the signs" and tell us what we ourselves do not already know about the future. Remember the joke of the gypsy fortuneteller predicting with a flourish "a tall, dark, handsome man will come into your life"? What does that mean? It means whatever the person paying for the fortune wants it to mean. Fortune telling, like professional wrestling, is a form of entertainment. The person whose fortune is being read is mystified, thrilled, enchanted, and excited with chemicals rushing through the brain and the body. "Fortunes" are a real rush.

Unfortunately, too often managers and futurists who should know better get too vague in their forecasts and plans. As an illustration, some will predict that the American economy will grow, but then they will not give a GDP number or even a range. Nor will they give a date. When they do give a GDP rate, they do not further specify whether the rate is an annual average over a period of time and whether the dollars are current or constant (the difference of inflation). They are not only vague about the numbers, but they waffle on the circumstances and the timing of their predictions.

Other forms of vagueness that are very regrettable but avoidable in so many forecasts are the use of terms without sufficient definition and the use of underlying, implicit assumptions. Too many implicit assumptions are presented as "given." Because all forecasts are conditional, they should take the form of "if...then." Too many forecasts present the "then" and do not sufficiently explain the "if." The lack of conditionality as a form of vagueness has been a problem particularly in econometrics and modeling and simulation. The formula authors and model designers make numerous assumptions that they do not

make explicit to others. They make assumptions and value judgments in the very selection of variables to include and not to include in their formulas and models; they make assumptions, too often implicitly, about the relationships among the variables (the coefficients); they fail to adequately define their terms; they are reluctant to reveal hidden algorithms; and they tend to present their forecasts in a vacuum without explaining the conditions required to occur for the forecast to happen.

An odd twist on vagueness is excessive complexity. We often think that highly detailed and complex forecasts have to be more credible, when in reality they are more likely to be off. This is particularly true for forecasts based on very complex formulas and models. You often cannot tell what the forecast means, let alone how it was generated. Models can be so complicated that they are just big “black boxes.” Executives and investors are particularly frustrated by complexity of models and excessive numbers because what they want to hear is “the story,” which they can understand and use in their decisions and plans for the future.

In one sense, vagueness might be an attribute of humility – the futurist admits that he or she cannot make precise forecasts, so they speak in terms of ranges of possibilities or in general descriptions. This type of vagueness is intellectually honest; it admits that the forecaster has doubts about the future. On the other hand, vagueness might also be a manifestation of arrogance if not charlatanism. The ambiguous futurist might be hiding rather than admitting the limitations of futuring. The key here is that the futurist admits limitations and does not claim more than can be reasonably delivered.

Misapproximations. Sometimes managers and futurists are “directionally correct” when they anticipate a major issue, but they miscalculate numbers or ranges of numbers. They may partially, but not completely, correctly identify trends and their outcomes. They may get the basic story right, even though many of the specifics will be wrong. This is the problem of misapproximation. In many forecasts, like playing horseshoes, being close counts. You want to get both the details and the conclusions right, but getting the right results may prove even more important for future decisions than the details.

Poor Packaging. In ancient days, the king might kill the messenger of bad news. Today, many managers face the similar dilemma of delivering unwelcome forecasts to powerful people. The death may not be literal – it might only take the forms of losing face, a job, and future opportunities. The trick is in presenting forecasts in attractive packages, so that even unwanted contents can be useful and appreciated. The presentation of a forecast is just as important as the presentation of excellent food; packaging is just as important to a view of the future as it is for a consumer product beckoning to be bought.

Lack of Ownership. A particular problem with both forecasts and plans is that others may not feel any sense of ownership in them and therefore no obligation to work for their fulfillment. The attitude often seen has been “If I didn’t make the strategy or plans myself, then I can’t be held accountable for them.” This was the basic problem of corporate planning staffs that did planning for corporate executives and division managers. As long as the executives and managers did not directly participate in the planning functions, they often felt no commitment to the plans drawn by others. Central planning worked only when they drafted up the directives of senior corporate commanders according to the model of the U.S. Army in World War II. This type of centralized corporate planning was largely abandoned as unnecessary overhead in the troubled days of the 1980s.

Ownership and the responsibilities for execution of planning became more focused when each level of the company or organization prepared their own plans according to their own performance goals. As corporate goals got pushed down to lower levels of the company or organization, more people had to have plans to show how they were going to meet their goals. The problem then emerged that so many plans became manifestations of wishful thinking with little reference to external customers and market forces (a function that used to be covered by corporate planning but usually got dumped along with the corporate planning office).

Somebody has to have a strong sense of ownership and responsibility for plans in order to feel fully committed to achieving them.

Inadequate Resources, Personnel, and Budgets. Finally, a major problem for both futuring and visioning is the lack of sufficient resources, personnel, and budgets to perform them. Projects may receive too small a budget to produce expected and needed results, and plans may have few resources allocated to reach their targets.

Futuring projects can be scaled from the very simple to the very elaborate. A “genius” forecaster could generate a forecast, even alternative scenarios, in just an hour. You could hold a two-hour expert focus group on a futuring topic and come up with a forecast of a sort with a prioritized list. I have managed futuring projects from as little as \$2,500 to more than \$200,000. What is important is truth in packaging: the sophistication of the forecast typically is commensurate with the amount of effort that went into it.

Of course, you always want the most qualified people working on your forecasts, plans, and their execution. Problems arise when inexperienced people generate forecasts and strategic plans. They may make too many errors discussed above and miss important nuances that might prove of great value to leaders and managers, who tend to see finer shades of gray better than many futurists and analysts do.

My experience with both strategic and operational planning has shown that most plans fail because they did not provide for sufficient resources, time, money, material, and personnel to achieve their objectives. It is the opposite phenomenon of the self-fulfilling prophecy; it occurs when people cannot or will not do what is necessary to make their own plans come true. Sometimes this occurs because the plans did not foresee disruptive events, such as delays in receiving raw materials, mistakes made in operations, poor cooperation from other people, surprising moves by competitors, and changes in consumer behavior and marketplace conditions. Planners may not be able to anticipate everything that could go wrong with their plans, but they should anticipate that something will go wrong somewhere along the plan’s path.

I do not expect “perfect” forecasts or plans. No ideal project has ever occurred with ideal results and I expect that none will ever happen in the future. Knowing all the things that can go wrong, both within and outside of my control, I am delighted when my forecasts or plans work out reasonably well relative to my expectations. I believe, however, that certain approaches are likely to improve the content and use of both forecasts and plans as well considered expectations for the future.

Given the above warnings why so many forecasts go wrong, I offer you the following five key words to keep in mind as managers who are responsible for generating or using futuring and visioning: *thoroughness, honesty, specificity, participation, and review.*

Given sufficient time and resources, *thoroughly* research the trends for continuities and seek the inputs of many experts to identify potential discontinuities. You may want to frame a forecast as alternative futures (scenarios) predicated on different conditions rather than as a single future. Be intellectually *honest*: don't claim to know or predict more than you can. Also, be aware of your own biases and self-interests and guard against letting them contaminate forecasts and plans. Be prepared to question your own assumptions as well as the assumptions of others. When you are wrong, admit it, but also learn from your mistakes. Define your terms so that you can be as *specific* as possible to avoid the potential pitfalls of vagueness. The specificity of the forecast or plan should be well aligned with the management needs to use them. Allow a mixture of various functional managers and staff to *participate* in the process so that they will be better informed and feel a sense of ownership and commitment to the implementation of forecasts and plans. Finally, let the forecasts and plans be critically *reviewed* by others, both insiders and outside consultants, to identify possible errors and to fill potential omissions. Be prepared to monitor new information and events and revise your forecasts and plans accordingly to keep them current as "living documents."

Futuring Principle 5: There is no such thing as an immutable forecast or plan for an immutable future. Forecasts and plans must be continuously monitored, evaluated, and revised according to new data and conditions in order to improve real-time frameworks for making long-term decisions and strategies toward realizing desired outcomes in the future.

I periodically run into the naïve view that a forecast is a fixed expectation for a fixed future that we have to wait to see whether it comes true or not. I hear the same about plans as though they were contracts. Nonsense!

A forecast should present its well considered expectations as a working hypothesis subject to further analysis with new information. At the very least, it should identify what is already known about trends, cause-and-effect relationships, and speculations from intuition. It should identify the most important trends, issues, and factors relevant to a topic of particular interest. These are the same trends, issues, and factors that require monitoring.

Futuring is a learning process – it's a journey, not a destination. The interim destination is the target date of a forecast, but even when that arrives, and all is revealed up to that moment, there will be a future after that. Until the end of days, the future continues. Therefore, no forecast is ever finished. It represents only a milestone in the path of well considered expectations for the future. The same holds for visioning, especially planning. Plans have to be adjusted periodically just to stay current and relative to the realities of everyday business.

In 1973, Don Michael, a former defense planner and professor at the University of Michigan, published a little-known book with the revealing title *On Learning to Plan – and Planning to Learn*. The basic argument in his book and numerous articles and papers was that you have to plan to allocate scarce resources to achieve objectives, but you should think of plans as guidelines that will probably have to change with circumstances over time. In 1989, one year before Senge's *The Fifth Discipline*, Michael characterized planning as "the pedagogy of social learning" for the "learning organization." (25)

The monitoring of trends, forecasts, and scenarios provide many opportunities for learning. New information should be captured and shared. It should be used to update forecasts and plans.

There is a distinction between monitoring and scanning. In monitoring, you know what the most important trends are and you gather information, perhaps daily, on them. The focus is narrow and the dive into the subject is deep. On the other hand, scanning is the process of looking for interesting things of apparent marginal value now that may prove to be important later. In contrast to monitoring, scanning is very broad and not very deep. I advise my clients to do at least 20% scanning and no more than 80% monitoring. If you did only monitoring, you would likely miss the surprises that come from unexpected places.

Applications of Futuring and Visioning

Maybe you are asking yourself at this point, so what? The “so what” is the opportunity to anticipate and make better futures for ourselves as opposed to doing nothing and taking whatever the future hands us.

Operations in many companies and organizations are maybe 95% day-to-day physical, clerical, and managerial work and just 5% cerebral. Yes, thinking always guides actions, but typically the thinking is consistent with routines and repetitive work. This is just as true for corporate executives who have their own daily routines as for shop floor labor. Only rarely do we interrupt our work schedules with such introspective questions as “What is the value of what I am doing for my customers?” and “Am I really going about this in the most efficient and cost-effective way?”

Yet, the 5% cerebral function of business is vital to set strategic context for operations. It is even more important to the survival of the company or organization in times of great stress, often caused by sudden and unexpected changes in customers, marketplace conditions, competitors, and regulation. The analogy from nature might be the animal going about its daily business of eating until it accidentally encounters a predator. Maybe the situation could have been anticipated and avoided, maybe not. In any case, it happens. Does the animal remain still and wait out the threat or does the animal cut and run at the risk of being pounced upon and eaten? Run in a straight line or back-and-forth at a continuous rate or stop-and-go to confuse the predator? This may strike you as a trivial analogy, but I can assure you that many individuals and companies felt like a hunted animal in the clutches of a financial predator when stock prices began to plummet in late September 2008, retirement 401(k) portfolios lost at least half of their value, companies laid off workers, unemployment rose quickly, and the government virtually if not officially took over the national banking and financial system.

Futuring and visioning have many practical uses for managers and leaders, including the following.

Anticipating Changing Customers, Markets, and Competitors. Countless consumer research studies have demonstrated that consumers can anticipate and articulate whether they would buy a new product or not when they see a fairly advanced prototype. They can respond to specific questions about specific prototype products that they can see and feel. Consumer research based on direct consumer feedback works well for the short-term, but it is notoriously misleading for the long-term. Consumers typically think in terms of cash flow and immediate purchasing needs. Most American households live from paycheck to paycheck and have more debt than equity. Consumers find it very difficult to imagine what they would or would not buy in the distant future (maybe no more than a year or so) when they

cannot anticipate how much money they will have to spend or what they will need or want to buy and under what circumstances in the highly uncertain future.

Futuring can provide a surrogate for the voice of the customer in traditional consumer research. The surrogate consists of demographic, economic, and consumer behavior trends that consumers themselves may not be even conscious of. The surrogate may also be the anticipation of changes through the judgment of experts who understand consumers better than consumers understand themselves.

Trends in consumer behavior have been observed through the research techniques of ethnography and historical research. While each individual may be unique and deviate to one degree or another from a observed norm, groups of consumers display remarkably consistent patterns of behavior based upon such factors as age, life stage, gender, race, ethnic background and culture, education, work, income, wealth, etc. This may or may not have been what the great science fiction writer Isaac Asimov had in mind with "psychohistory," but market segmentation and consumer trend forecasts have proven remarkably prescient.

In the 50-year forecast of American consumer value in personal transportation, for example, we identified three super-trends that shaped historical American consumer value and behavior: 1) generational identity and behavior (such as the World War II generation, Boomers, Gen X'ers, and the Millennial Generation) along with life stage (child, student, young adult, middle-age, and elderly) behavior patterns, 2) general economic conditions, and 3) national culture.

In another case history, in 1987-1988 we generated scenarios for the Los Angeles Department of Water and Power (LADWP). The municipal electric utility routinely generated statistical projections of future electricity demand in the Los Angeles service area. Managers knew that their projections had not been particularly accurate in the past; they were also worried about qualitative issues that were not typically included in statistical modeling. Our scenario analysis for 20 years into the future (2007, now come and gone) raised many interesting and sometimes controversial expectations. A strongly held belief existed that power demand rose linearly with population growth. The scenarios suggested, however, that electricity demand in the future may depend more upon technologies than population. The central question became whether the technologies of increasing demand (computers, consumer electronics, home entertainment, automated manufacturing, security systems, office lighting, electric heating and cooling, etc.) would or would not stimulate demand beyond the technologies of energy efficiency and conservation that might lower demand. During the 1990s, both the area population and electricity demand rose, with a substantial increase in the demand for power caused by the various technologies that we anticipated. In light of the scenarios, LADWP increased its electric generating capacity in the 1990s in anticipation of rising consumer demand beyond what their econometric models were predicting. When the electricity shortage crisis hit California in 2000, LADWP was one of the few electric utilities that had sufficient capacity to meet demand. When San Francisco went dark, Los Angeles was aglow. As we reached the target year of 2007, we realized that we got several details wrong, but we got the fundamental story correct.(26)

A major question about the future of American consumer value is whether and to what degree there may be structural and long-term changes caused by the Great Recession that began in 2008. We know that the Great Depression changed many consumer habits and preferences for at least two generations. My expectation is that the current recession will have significant impacts on consumers, too. For example, when consumers cut back on several types of purchases (gasoline, eating out, clothes, etc.),

retail merchants had to cut prices to attract shoppers. Consumers saw deep discounts in the stores at Christmas time in 2008 and again in 2009. Many retail prices remained heavily discounted all through 2009 and 2010. Shoppers are growing used to lower retail prices because of the recession, and they are highly likely to resist price increases in the future. We are seeing continued growth in the large, everyday-low price stores like Walmart. We are also seeing declines in traditional department stores and specialty shops with premium prices. Old department stores are now looking like mass retailers in competition with Target and Kohl's if not Walmart. This could be a shifting long-term trend.

Another uncertainty of the future is to what degree consumers will remain loyal to brands. For decades, consumers showed a distinct preference for certain brands and the quality associated with them. The new economics of recession, however, may tempt consumers to migrate to less expensive brands, especially store brands that may be produced by the same manufacturers as the well-known brand products. We are currently seeing a proliferation of store and Internet branding that we have never witnessed before. Will the big brand manufacturers also produce the store brands, as some already do, or will they fight back with new product benefits or lower everyday prices? Stay tuned.

Envisioning Potential New Products and Services. In conjunction with anticipating consumer behavior, markets, and competitors, futuring can also be used as a source of inspiration for potential new products and services.

Continuing the previous discussion from above, once you have bounded the uncertainties of trends and imagined disruptive events that may occur with future customers and markets, you can identify emerging business opportunities, including new products and services. The logic runs thus: if I anticipate x , y , and z conditions in the future and if I anticipate the behavior and values of consumers in the future, then there will be an opportunity for a , b , and c products and services.

A debate has raged for years over the sources of inspiration for new product development, especially at the "fuzzy front end." Obviously, one source of inspiration would be customers themselves, if only they had a clue of where they were going and what they would want in the future. As I have mentioned several times before, customers typically do not have an inkling of what they will buy beyond the present. This fact, however, does not preclude research that directly asks customers what they want in the future. You can ask – just be skeptical about short-sighted answers. You can also ask indirect questions, such as what aspects of current products displease you? If it were possible, what would be the characteristics of a perfect product or service? The answers to these questions might give you hints as to how to satisfy future customers by learning how they are dissatisfied today.

Futuring is another source of inspiration for new product development. It can bound the uncertainties of the future and provide foresights into future consumer behavior based on trends in aging, diversity, mobility, education, shopping patterns, affordability, and consumer value propositions. Futuring is a way to anticipate the voice of the customer, or, said another way, of discovering the unarticulated voice of the customer.

An example of identifying an unarticulated demand of the changing consumer occurred in the 1990s in a major scenarios forecast of American home cleaning. The futuring methods employed included expert judgment, trend analysis, and scenarios of alternative futures. The scenarios presented a view that people wanted to have cleaner homes, their being conscious of bacterial and in-door air quality problems in many houses, but their having less time to clean than in the past because of two-wage earning families and over-scheduled children. This appeared equally true for Boomers and Generation

X'ers. A new product idea was derived from the expectations for the future: a disposable wipe with an anti-bacterial agent that could be quickly used on all kinds of surfaces and then simply thrown away. Consumer research conducted near the time of product launch confirmed the viability of the prototype product. When it was introduced to consumers on retail store shelves, it was a huge success, becoming a new household product category with substantial annual sales.

Futuring will never precisely predict future consumer behavior and value, but it can frame both realistic and imaginative expectations when direct consumer research reveals little or nothing.

Thought Leadership. Having generated a forecast for several reasons within the company or organization, you can also use the forecast for thought leadership in the external market. The forecast becomes a piece of strategic conversation with customers and constituents. Futuring can be used for substantive, informative marketing and client relationship-building. You can frame expectations for them and explain how you will be a part of their future. One aspect of this is the backward integration of co-product development with customers to co-strategic planning back to co-futuring.

In 1996 we began the so-called "top 10" technology forecasts at Battelle. We generated these lists using the expert judgment of dozens of Battelle scientists and engineers at the Columbus laboratories and with the national laboratories that Battelle managed for the U.S. Department of Energy. We performed at least one top 10 list each year on a different topic from 1995 to 2005. Given a topic question, the experts generated ideas and voted on them to give us a rank order. The first one was called Strategic Technologies 2005. "Strategic technologies" meant those technologies that would lead to products and services that in general would be commercial successes and dominate markets for years to come. This list, by way of illustration, contained the following items in 1995:

1. Human genome identification and mapping
2. Super materials (anticipating nanotechnologies)
3. Compact, long-lasting, and portable energy (anticipating advanced batteries and fuel cells)
4. Digital high definition TV
5. Electronic miniaturization for personal use (anticipating ubiquitous cell phones, laptops, and hand-held devices like Blackberries)
6. Cost-effective, automated, "smart" systems in manufacturing
7. Anti-aging products
8. Pinpoint medical treatments (anticipating laser surgery and highly targeted drug treatments)
9. Hybrid fuel vehicles
10. Edutainment (anticipating the convergence of entertainment technologies into education)

Looking back on this list, the Battelle experts proved to be overly optimistic about the rate of technological and market progress in some areas, but surprisingly prescient of developments that they were aware of but most people were not, such as electronic miniaturization, manufacturing "smart" systems, pinpoint medical treatments, and hybrid fuel vehicles (which very few consumers knew about). The accuracy of the forecast was not the central issue; the central issue was that Battelle knew R&D and was willing to exercise thought leadership about future technology directions. Battelle had a point of view that it was willing to share, and in sharing took a little step toward making those expectations for the future happen. We offered the lists to the media, which gave us global news coverage at no cost to Battelle. We invited people to talk with us if they had different points of view, and we had many inquiries and conversations with companies and government agencies, some leading directly to business relationships with Battelle. (27)

I mentioned above that customers typically cannot visualize, let alone articulate, what they want and what they are likely to buy beyond the present. For targeted customers, especially large commercial and industrial customers, you can use futuring as a tool of strategic conversation with those customers. This is called “concurrent futuring” as a precursor to “concurrent planning,” the step that comes before “concurrent new product development” or “concurrent engineering.”

Is it possible that a forecast can change the very future that it is forecasting? It certainly is. A forecast might be very persuasive and convince audiences to do something that the forecast shows will be desirable or not do something that will likely end in disaster. Forecasts should give people guidance to the future. Plans, too, can have a powerful influence on people’s expectations and behavior toward achieving goals. Such is the power of the self-fulfilling prophecy.

Teaching the Learning Organization and Changing Corporate Culture. The concept of the learning organization has been much heralded, but often misinterpreted, since the publication in 1990 of Senge’s bestselling book *The Fifth Discipline*. Among many methods, Senge was particularly enamored with the use of scenarios, largely based on Arie de Geus’ reported experiences at Shell, to open people’s mental models up to new possibilities. Senge astutely observed that managers as well as employees get locked into certain ways of thinking based on corporate culture, past success, and day-to-day routines. As long as business continues to thrive and customers and market conditions do not substantively change, what worked in the past will more than likely work in the future. But enterprises do not continuously thrive and customers and market conditions do substantively change over time, and any company has to recognize change and adjust to it or risk going out of business. Successful companies can fall into the traps of overconfidence and arrogance and totally miss changes in their business environments. To say it another way, a company or organization has to be open to learning and changing in order to adapt to change.

Senge asserted that the successful organizations of the future would be the learning organizations about the future. He defined “the learning organization” as the one that is “continually expanding its capacity to create its future.” “Adaptive learning,” he argued is required to get through the tough moments, but “generative learning,” or the ability to anticipate the future and create ways to realize emerging opportunities, was required for sustainable success over the long run.(28)

An example of changing long-term culture was a futuring exercise in 2006 with the State Board of Education in Ohio, of which I was a member, and the senior management of the Ohio Department of Education. We generated four alternative scenarios for education in Ohio by the year 2016. Using the intuitive scenario method made popular by Shell, the group decided to build their scenario structures upon the globalization of the Ohio economy and educational achievement. The conventional wisdom had been that economic growth would generate the tax revenues required to invest in new resources to achieve uniformly high educational achievement across the state. It was widely believed in the existing state government culture that no significant improvements could be made in public education without more money. The new realization, however, was that high educational achievement could stimulate economic growth by attracting new industries and incubating new enterprises in Ohio. We had to move on with our educational agenda and not wait for economic growth – we wanted to make education more proactive and less reactive to economic circumstances. In addition, we had to find ways to cut operational costs and overhead in order to free up money for new programs. We had to explore new ways of providing quality educational services at less, not more, cost. We did not foresee that the Great Recession was coming, but we moved ahead with our agenda despite it.(29)

Risk Management. The traditional methods of risk management have involved the tools of financial modeling and projection. There are many tools to calculate hypothetical returns on assets, returns on investments, product development and product costs, future sales, etc. Some of these models are remarkably accurate in their quantified predictions – but under very specific conditions. In the insurance business, for example, actuarial tables and statistical forecasts based on accident data can be very reliable for determining future pay-outs to insured customers and future profits for the insurers. But one challenge that remains for insurance companies is the variability of the weather, especially storms and disasters like severe winds, rains, floods, tornadoes, and hurricanes. The insurance business, in other words, is well prepared to deal with the typical accidents and small disasters of everyday life, but poorly prepared for the low probability but high risk disasters like a Hurricane Andrew or Katrina.

Futuring provides a way to broaden traditional risk management methods to include disruptive events and alternative futures. All types of companies do risk management of one sort or another, as all enterprises have risks of one kind or another. Investment companies (banks, credit unions, credit card companies, stock brokers, and insurance companies, to name a few) deal specifically in risk, and hence have some of the most sophisticated trend analysis and pattern recognition programs. They monitor customer behavior and market trends very carefully. They are also using expert judgment to anticipate changes in trends and potential disruptive events. The expert judgment typically is that of successful executives and high-priced industry consultants. The financial industry is learning to expand expert judgment methods to ever increasingly broader types of experts to open up the perspective on the future with different concerns, information, and even biases. The same companies are adopting scenario analysis to assess future risks under different possible futures, ranging from the continuity of trends to some real wild cards. If new types of risks can be imagined, then they can be managed.

Strategic Planning. Planning is the junction of futuring and visioning. In the past, too much strategic planning was not very strategic, because it failed to capture external customer and marketplace trends and it leaped to a vision unbounded by realities. The planning was too optimistic – it was full of wishful thinking. A strong strategic plan contains an analysis of the evolving external environment and presents a vision soundly grounded in opportunities along with the alignment of corporate culture, strategic assets and technologies, and resources to execute the vision.

Plans are examples of self-fulfilling prophecies. In fact, plans increase the probabilities that a desired outcome will actually occur because we lay out the path to achieve ourselves that which we chose to achieve. To the extent that all important trends and factors, both external and internal, have been considered, expectations have been well considered, and no disruptive events occur, plans can be implemented up to 100%. Plans fail when important trends and factors have not been considered, goals and expectations have not been well considered, and disruptive events, especially “black swans” and “wild cards,” occur to throw our plans off track.

You should never assume that plans will work out exactly as designed without some later adjustments. It is best to expect that something will go wrong. You may not know what exactly will go wrong, but you know that probably something will. Every “Plan A” should have a backup “Plan B.” We use those expressions in our everyday language, so the concept is hardly novel. Yet so many corporate and organizational plans, especially the big plans, fail to anticipate problems and adjust accordingly. Every plan should have milestones that are periodically reviewed against new information gathered from the continuous monitoring of trends and events. Every plan should have contingencies so that adjustments to changing circumstances can be anticipated and implemented when necessary. This is a far more effective way of managing than making snap decisions in the heat of an unexpected business crisis.

While every level should have its own plans, too many “strategic” plans are operational in character. That is because budgeting is confused with planning. Budgets tend to be very operational and short-term, such as one or two years. Strategic plans should be conceptual with an emphasis on goals and strategies rather than an emphasis on operational mechanics. They should also be more long-term than budgets. Typical strategic plans should have time horizons of five or ten years into the future. The Japanese may have 50 year plans, but 10 years is plenty long enough for most American corporations and institutions.

Futuring and visioning make strategic plans “strategic.” They provide the “big picture” and the long-term perspective. Futuring addresses the most important external trends and provides well considered expectations (forecasts) for them. Visioning, conversely, deals with the most important internal trends and provides the context for capabilities and operations. Strategic plans provide the documentation for both processes in an integrated and coherent manner.

The Benefits of Well Considered Expectations

I have offered many observations based on my experiences and I have related them back to basic theories about time and the future. I have tried to blend philosophy, theories, and practices. My aspiration is to improve the critical judgment of managers, as well as other people, and to encourage them to strive for well considered expectations for the future upon which they can make sound long-term decisions. Managers and investors should become their own best futurists.

A word of caution: we should never allow ourselves to be held hostage by our expectations. We cannot experience or know the future until it occurs. We form expectations all the time, but so many of them, at least in hind sight, seem short-sighted, illogical, even self-centered. We need to improve our skills in managing exaggerated expectations that we hold for others and that others hold for us. We naturally want the future to be good to us, but we are not always ready to make it good for us. The trick is to craft informed, logical, and well considered expectations for the future and then go out and try to make those expectations come true, to the extent that we can control resources and circumstances. Expectations for the future are always works in progress and subject to updates and revisions.

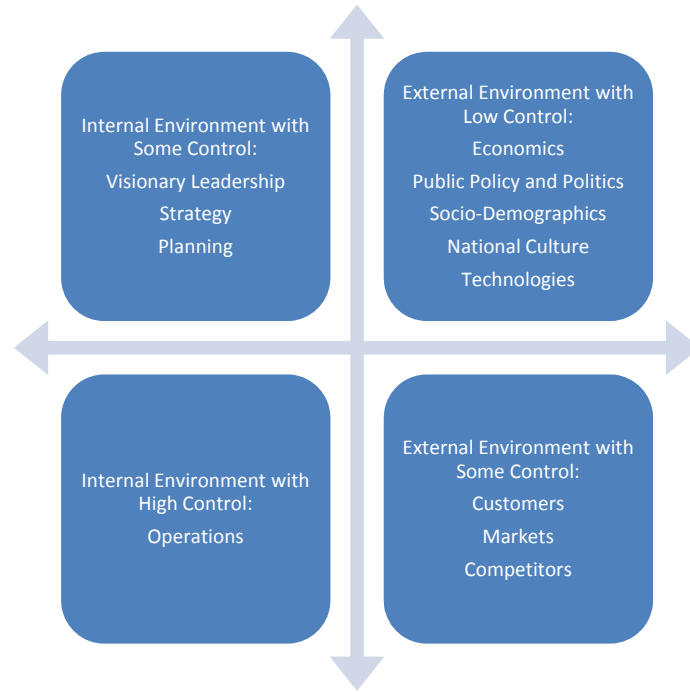
Futuring, to be honest, will never guarantee success, however that term may be defined. You can have prescient expectations and do all the right things and still not achieve your goals. But futuring will improve the chances that expectations and goals for the future will enjoy a happy union, producing plans and actions that you can believe in. At a minimum, well considered expectations for the future should greatly reduce if not eliminate the chances that foolish moves will lead to disasters. Futuring will also provide a basis for learning as life happens so that you can react smartly to the opportunities that unexpectedly emerge.

We delude ourselves when we have expectations that rely heavily upon favorable circumstances over which we have little or no control. When things do work out well, we call it “luck.” But to make our own best future come to pass, we have to have resources, determination, and a certain control over circumstances in addition to random good fortune.

In our thinking about the future of business, or even of life in general, it may help to consider a matrix of environments and the degree of control that we have in them. One such visualization is Figure 1 below.

It's a highly simplified model of reality, of course. The traditional x axis is environments, ranging from left to right from our internal to various external environments. For our purposes here, the "internal environment" is our business, organization, institution, or agency. The y axis is our degree of control over things, ranging from high at the bottom to low at the top of the axis.

Figure 1. Control and Environments



The principal benefit of taking the time and care to form well considered expectations for the future is that such an investment in mental energy will prove profitable, both literally and figuratively. Thinking about the future prepares us to cope with it more effectively. Anticipating the future encourages us to plan for it, and planning is preparation, as long as we stay flexible to the means used to achieve our goals. Don't let a plan make you inflexible in the face of new situations. Sometimes we do not have the luxury of time to think out smart decisions, but in the areas of business, organizational, and personal investment and planning, we often do and we should use that time for planning and preparing for the future as wisely as we can.

We may think of futuring and visioning as managing the future. More literally, they are managing expectations for the future – our expectations for business, for others, for ourselves, and others' expectations for us.

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the probability (P) of the hypothesis (H) given (conditional upon) the data (D) equals the probability of the data conditional upon the correctness of the hypothesis multiplied by the probability of the hypothesis before obtaining the data divided by the averaged probability of the data. I am much more interested in the qualitative power of the formula than its mechanics.

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