AN APPROACH TO THE FUTURE

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Abstract. This paper describes the rudiments of an approach to the future that we should teach and practice in our personal and professional lives. It begins with a consideration of change. The future is about change. If there were no change, we would have no reason to pay attention to the future. The paper concludes with an approach to long-term forecasting that takes uncertainty seriously. The result is a set of plausible futures for which we must be ready; otherwise, we run the risk of being surprised—or worse.

INTRODUCTION

My colleague, Draper Kauffman, created a set of aphorisms about systems thinking (Kauffman 1980: 39), one of which is "High morality depends on accurate prophecy." If we desire to do good and we define a good action as one that has good outcomes, then we must be able to tell what the outcome of an action is before we can judge whether it is good or not. So forecasting is not just a nice description of the future; it is knowledge that is essential to knowing what to do.

It is disappointing, therefore, that so few people teach about the future when, in fact, we will live the rest of our lives there. Almost everything we do is intended to understand or to influence the future. But where is the future in our educational systems? We study the past, which we should, but why not study an equal amount about the future?

There are two answers to that question – one professional and the other epistemological. The professional answer is that teachers do not teach what they do not know. Since they were never taught about the future, how can we expect them to teach their students about the future? The more important and deeper answer is that most people believe that the future is unknowable. You cannot teach things you cannot know. But that is a fallacy. The future is knowable in exactly the same way that next week's weather is knowable or next week's stock market or next week's ball scores. We can know them as a set of possibilities, as plausible alternative futures, any one of which has a significant chance of occurring. Granted, knowing a set of possibilities is not as satisfying as <u>really knowing</u> what will happen. But when really knowing is impossible, is it not better to know something about the future (its possibilities) than to ignore it and know little or nothing?

CHANGE

The study of the future is the study of change. But everything does not change at the same time or at the same rate, so every future is some combination of constants and changes. Constants and changes form strata, where the top levels are changing faster compared to the constant or slower-changing lower levels. The ocean serves as an analogy: the waves are driven by the winds, but currents are driven by the moon and the rotation of the Earth.

Our personal and organizational futures are shaped by two sets of forces: change that happens to us (from the external world beyond our control, which we call "inbound" change) and change that we create ourselves (based on our decisions and actions, which we call "outbound" change). Therefore, the future is partially constrained by the forces of the world (i.e., we cannot get the exact future we want), but we are not totally constrained because we still have some discretion. People and groups have different proportions of constraint and discretion in different situations, and those proportions themselves can change over time. But some measure of both inbound and outbound change shapes the future all the time.

Change also occurs at two rates: continuous, incremental change, versus discontinuous, disruptive change. Discontinuous change reaches further down into the strata, and results in more fundamental changes. It may change so much that the world becomes unrecognizable.

Continuous and discontinuous change alternate to form a pattern of punctuated equilibrium as in the theory of biological evolution (Gould and Ethredge 1972). Punctuated equilibrium consists of eras, which

are relatively long periods of stability and continuous change separated by shorter periods of instability and disruptive change. The change from one era to another is characterized by an S-curve with three periods: a run-up period in which change is slow and incremental, a period of explosive growth in which change is unexpected and chaotic, and a maturation period in which change slows and the characteristics of the new era emerge.

Every system matures over time—from individuals to the planet as a whole. In the process, systems get good at what they do—actions become more routine and more efficient; fewer mistakes are made. And the system will remain in that state as long as its environment lets it. The environment is usually changing, however, and sooner or later it puts new demands on the system that it is unable to meet or even recognize. A mature system reaches the law of diminishing returns because it is approaching its inherent capacity for performance. It cannot get much better short of radically changing how it does things. According to the old sayings, "If you keep doin' what you been doin', you'll keep gettin' what you been gettin'," or "The definition of insanity is doing the same thing over and over again and expecting different results." The law of diminishing returns means that simply adding more inputs (people, money, time, effort) will not improve performance much more. To create real change, one has to dismantle the current system (era), partially at least, and build a new one.

Understandably, most people do not want to usher in a new era because they are familiar with and good at what the old era requires. What is more, the transition between eras is always difficult. Would that it were not so, but transformational change always involves taking some steps backwards, in terms of reduced performance, heightened risk, more mistakes, and extra cost compared to remaining in the existing era. We pay that price and take those risks, however, in order to achieve breakthrough results. The costs and difficulties are actually investments that pay off when a successful transformation creates an increased capacity for performance of which the old system (era) was simply incapable.

Human systems also change at four levels simultaneously: individuals, groups or organizations, the group's immediate environment, and the global environment. Physicians and psychologists manage change at the individual level; managers, at the group level; and traditional forecasters and planners, at the level of the immediate environment. Once in a while, however, it is necessary to take a look at the global environment, the macro world out there, because many changes in the immediate environment come from there. Those changes in turn affect the organization and the individuals in that environment.

The global environment consists of domains—large domains of action and change. Different people use different categories to characterize these domains, but they are all based on a simple five-segment model called STEEP, the acronym of the segments: social, technological, economic, environmental, and political (Morrison 1992). Each of these domains is changing all the time and affecting the immediate environment of groups and individuals as it does so. And each domain affects every other domain. No matter what causal chain is considered—social structure affects the technologies that get invented and produced (technology), which affects how much money people make and the standard of living they enjoy (economy), which in turn impacts the biophysical world (environment), some of which is regulated by government (political). Any other sequences would also work.

The final attribute of change is the time horizon, how long it takes for some changes to have an effect. Most of what we do deals with the near-term, measured in hours or days. We also deal with the medium-term, measured in weeks or months. Rarely do we consider the long-term, sometimes called the strategic horizon, measured in years or even decades. And that oversight is unfortunate because some changes will have effects for decades or perhaps even centuries. Most of our time cannot be spent on the strategic horizon. Our enterprises would collapse and we would fail in the near- and medium-term. But spending no time on strategic matters is just as risky. If we do not invest our time (and our money) for some long-term return, the long-term future will be just what it is today or more likely worse.

So the four main attributes of change are:

- Source—Inbound and Outbound
- Rate—Continuous and Discontinuous
- Level—Individual, Group, Immediate environment, Global environment
- Time—Near-term, Medium-term, and Long-term (Strategic)

Would that we had learned even this little bit in school so we could understand and manage change with more intelligence and forethought.

FORECASTING

Given these attributes of change, how can we know anything about changes and the effects that are yet to come? The answer is simple: exactly the way we know about anything that we cannot directly observe. We make inferences (call them judgments, estimates, interpretations, or conclusions) based on two types of information—evidence and assumptions (Toulmin 1958). We all know about evidence. Those are the facts that support the inference. Assumptions, however, are the shadowy partners of the evidence. We have been taught to "state your assumptions," but we do it poorly, casually, even haphazardly, more to just fill in that box and move on.

But assumptions are the key to the whole ballgame, even though they have gotten a bad rap in our scientific, fact-oriented culture. Everyone makes assumptions all the time. The light will come on when I flick the switch; the car will start when I turn the key. Professionals also make assumptions in science (the instrument is properly calibrated), in law enforcement (the fingerprint was left yesterday, not last year), in finance (gold will be a good hedge against inflation). Most importantly for our argument here, historians also make assumptions. The document or the photograph was not altered; the date on the building is accurate; people believed what they wrote in their diaries. Those are all excellent assumptions, by the way, and they are hard to challenge.

Forecasters use evidence and assumptions in exactly the same way. Evidence can be time series data, people's hopes and fears, an organization's statement about executing a new strategy. The difference, however, is that assumptions about the future are much easier to challenge. A trend that has gone on for 20 years might not go on for another 20, people may not get what they hope for, or organizations may not execute their strategy successfully. These are quite reasonable alternative assumptions, to be sure. Does that make the original assumption wrong? No, it's just not as solid as the historian's. Does it make the conclusion wrong? No, it just introduces a fair amount of uncertainty into the conclusion. Does it mean that we know nothing about the future when we make such assumptions? Finally and definitely, no! We know the expected future if we accept the original assumptions, <u>and</u> we know one or more alternative futures if we consider one or more of the alternative assumptions.

But do we not have to choose which assumptions we will use in making our forecast? Absolutely not! And that is the fallacy of traditional forecasting. Making assumptions resolves uncertainty. It literally makes it go away. As a result, I can state my conclusion with much more certainty than I should because, of course, I have stated my assumptions, haven't I? But stating assumptions does not resolve the uncertainties in the world—only in our heads and in our forecasts and in our plans. The big problem with traditional forecasting is not that people do not state their assumptions. Good forecasters do. It is that they do not challenge those assumptions with alternatives. Challenging an assumption does not mean that the original assumption is wrong or even less probable than an alternative assumption. We are not trying to disprove anything. We are merely raising the possibility that the original assumption might be wrong because there is an alternative assumption that might be true instead. Notice the emphasis on "might." We are not saying it is; we are just saying that it might be. In that statement, then, is the power of knowing the future as it really exists.

The presence of plausible alternative assumptions measures the amount of uncertainty in an argument. If there are none, the forecast is strong; if there are some or many, then the forecast is accordingly weaker. This distinction appears in courtrooms, in the United States

at least, every day. Lawyers call it the difference between doubt and reasonable doubt (Diamond 1990). Anyone can doubt any conclusion. No conclusion about the world is true beyond doubt. Descartes taught us that. But reasonable doubt requires a reason. We must have some basis for doubting—not just the possibility that the conclusion is false, but some reason that it might be. In American jurisprudence, a jury that has reasons for its doubt about the guilt of the accused, not just the possibility that the defendant is innocent, must return a verdict of "not guilty." Notice that the verdict is not "innocent." Jurors do not know with certainty that the defendant did not commit the crime. They just know that the case against the defendant is weaker than it should be. Usually, that weakness comes from assumptions that the prosecution had to make that have reasonable and plausible alternatives.

Futurists take uncertainty seriously, perhaps because statements about the long-term future are less certain than statements about the near-term future. For the same reason, other forecasters often make no statements about the long-term future at all. They know that they cannot discount the presence of significant amounts of uncertainty. And that is why most people do not think about the long-term future either—because they cannot be sure.

Futurists take a different tack. Realizing that we ignore the long-term future at our peril, they find a way to talk about it in a rigorous yet meaningful way. Identifying plausible alternative assumptions suggests plausible alternative futures. It is actually that simple. The result is a future that is not a single state the way most people talk about it, but rather a set of alternative futures ("scenarios").

That is the way we should talk about the long-term future in all professional work—what <u>might</u> occur, not just what we think <u>will</u> occur. And that is what we should be teaching our students in general education, from high school on, and in all our professional schools. If the mission of a profession is to do good for some group of people in the future, then rigorous forecasting of that future should be an essential skill of every professional.

CONCLUSION

A useful scheme for forecasting based on these premises (though one that is much simpler than what is actually used) identifies three types of drivers of the future.

> **Trend**—continuous, inbound change of some variable over time, often described by a mathematical function. Examples include the aging of society, economic growth, and increasing planetary temperature. Constants, trends, and plans lead to the expected or baseline future. The expected future is more probable than any of the other futures in the set, provided that the individual or group accepts the assumptions it requires, i.e., assuming nothing really surprising happens.
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> **Event**—a sudden, inbound change in some condition, usually closing one era and opening a new one. Events are the surprises that the assumptions of the expected future assume will not occur. But they might. And if they do, they can create a future significantly different from what was expected. Examples would be the collapse of the Soviet Union, the introduction of Hyper Text Markup Language and creation of the World Wide Web, and the terrorist attacks on 9/11.
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> **Choice**—outbound decisions and actions taken by ourselves and others for a particular purpose. Choice comprises the decisions and actions taken to influence the future. Examples would be President Franklin D. Roosevelt's decision to create Social Security and set 65 as the retirement age, IBM's decision to use Bill Gates' MS-DOS operating system for the personal computer, and the decision to ban chlorofluorocarbons in an effort to preserve the ozone layer.

Each of the three drivers creates a different type of future with its own characteristics and sets of futures research tools to deal with them:

Trends lead to an expected or baseline future, the future that would occur if all or most plausible assumptions turn out to be true.

Events lead to plausible futures, alternatives to the expected future. Scenarios based on plausible alternative assumptions are a common tool to explore plausible futures.

Choices lead to the preferred future, the result of visioning, planning, and action to move in the direction of the preferred future.

The three drivers combine to create the cone of plausibility (Taylor 1990), an image of the future consisting of a cone expanding through time. The baseline future is the center-line of the cone, the plausible futures are all the other regions of the cone, and the preferred future is one area of the cone selected as the vision or goal for an individual or a group. The purpose of traditional predictive forecasting is to establish the center of the cone, the purpose of scenario forecasting is to explore the other major regions of the cone (i.e., other plausible futures), and the purpose of visioning and goal-setting is to select a region to use as the guide for decision and action.

People can move toward their preferred future in two ways: outside-in, i.e., scanning and understanding their future and then deciding how to proceed through it, or inside-out, i.e., establishing a vision or a goal and taking the best path to it. Each approach uses the same sets of tools, but in different orders. The outside-in approach begins with research and forecasting, then goes to visioning and goal-setting, and finally ends with planning and action. The inside-out approach begins with visioning and goal-setting, then assesses the future environment through research and scanning, and finally ends with planning and action.

So can we know the future? No; as a singular condition, the future cannot be known. But can we know the futures? Absolutely, or we can know at least most of them. And that is how we should approach the future.

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