A Primer on Futures Studies, Foresight and the Use of Scenarios

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This article is a very brief 'primer' on futures studies and foresight. The intention is to provide some solid starting points and orientation for people who are new to this field of study. I also want to place the use of scenarios and scenario planning into context as one methodology within a much broader foresight framework.

The Name of the Game

The "futures field" is very broad, and goes by a variety of different names: "futures research", "futures studies", sometimes "futures analysis", "futurism", "futuristics", or even "futurology". The terms "futurism" and (ugh!) "futurology" are particularly archaic, and today have rather negative connotations of, respectively sloppy or very superficial work, or of excessively empiricist and overly-prediction-oriented work; they are actively discouraged by those who work seriously in the field. I will use the blanket term "futures field", or just simply "futures". Note that "futures" in this sense has *nothing whatsoever* to do with stock market "futures trading" or speculation. Instead, futurists use the plural of "futures" because the master concept of the futures field is that of the existence of many potential *alternative futures*, rather than simply a single future.

The Three "Laws" of Futures

Futures (or foresight) work is *not*, contrary to popular misconception, about prediction or crystal-ball gazing and trying to guess what "the future" will be. Serious futurists are not in the business of prediction. Ray Amara, a former president of the Institute for the Future once suggested (Amara, 1981) that there are three fundamental premises upon which the futures filed rests. I have adapted these and like to call them, not too seriously, "The Three 'Laws' of Futures".

The future is not predetermined. At the most fundamental level of nature, the physical processes of the universe are inherently indeterminate (this is the Heisenbery Uncertainty Principle of physics). Given this, how could any future stemming out of present physical processes be anything other than indeterminate also? Therefore, there is no, and cannot be, any future stemming out of present physical processes be anything other than indeterminate also? Therefore, there is no, and cannot be, any *single* predetermined future; rather there are considered to be infinitely many potential *alternative* futures.

The future is not predictable. Although this sounds similar to the previous "law", it is quite different, for the following reason. *Even if the future were predetermined*, we could never collect enough information about it to an arbitrary degree of accuracy (ie to an infinite number of decimal places) to construct a complete model of how it would develop. At some point, the errors introduced by not having infinitely-precise information would cause the model to deviate from "reality" (whatever that is). And because the future is *not* predetermined, predictability is *doubly* impossible; we are therefore able, and forced, to make *choices* among the many potential alternative futures.

Future outcomes can be influenced by our choices in the present. Even though we can't determine which future of an infinite possible variety will eventuate, nevertheless we can influence by the shape of the future which does eventuate by the choices we make regarding our actions (or inaction) in the present (*in*action is also a choice). These choices have *consequences* and so they need to be made as wisely as we know how.

All of these reflections add up to a need to take *responsibility* for our futures. The actual future (singular) which eventuates, and in which we will ultimately live and experience as "the present" at *that* time, will be governed by our actions (or inaction) in *this* present, along with the choices we have made among many alternative potential futures (plural). Our choices and the passage of time reduce the infinite field of *potentialities* to a single experienced *actuality*, which then passes into history and cannot be changed. In other words, and this is the key point, we can only have an influence on the potentialities of the "yet to be" and can do nothing about the "what has already been". Therefore, let us try to create a better present moment (and thus past history), by choosing more wisely and responsibility among out potential alternative futures.

Types of Potential Futures

It is useful to distinguish *four* classes of potential alternative futures (adapted from Henchey, 1978):

Possible futures. This class of futures includes all the kinds of futures we can possibly imagine - those which "*might* happen" - no matter how far-fetched, unlikely or "way out". They might, as a result, involve knowledge which we do not yet possess (the "warp drive" of *Star Trek* is a good example), or might also involve transgressions of currently-accepted physical laws or principles. I tend to characterise these futures as being reliant on the existence of some *future knowledge* (ie knowledge we do not yet possess) in order to come about.

Plausible futures. This class encompasses those futures which "*could* happen" (ie they are not excluded) according to our *current* knowledge (as opposed to future knowledge) of how things work. They stem from our current understanding of physical laws, processes, causation, systems of human interaction, etc. This is clearly a smaller subset of futures than the possible.

Probably futures. This class of futures contains those which are considered "likely to happen", and stem in part from the continuance of *current trends*. Some probably futures are considered more likely than others; the one considered most likely is often called "business-as-usual". It is a simple linear extension of the present. However, trends are not necessarily continuous over long periods of time, and discontinuities in the trends may occur. Some trends may fade out suddenly, while new ones may emerge unexpectedly. Some people think that studying or "reading" trends is the whole game of foresight or futures work, but it is clear from this description that merely reading trends gives rise to a *much smaller* class of futures than the previous two.

The three classes of futures described above are all largely concerned with *informational* or cognitive knowledge. The fourth class, ***Preferable futures*** is, by contrast, concerned with what we "want to" happen; in other words, these futures are largely *emotional* rather than cognitive. They derive from *value judgements,* and are more overtly subjective than the previous three classes. Because values differ so markedly between people, this class of futures is quite varied. Preferable (or *preferred)* futures can lie in any of the previous three classes.

The Apollo Moon Landing, for example, was a preferred future of President Kennedy which began as merely *possible* but not yet *plausible* (from the perspective of 1961) because the knowledge did not yet exist at that time to achieve the goal. The requisite knowledge as *created* during the decade of the 1960s until the idea of actually achieving the landing in the desired time-frame moved into the realm of the *plausible,* then the *probable*, and was finally actualised as reality in 1969. It is now, of course, a key event in human history.

This example indicates an important point regarding thinking about futures: the judgement of what is possible, plausible and probably (and perhaps even preferable) depends on being "situated in time", and the assessments may change as time goes on. Preferable futures may be so desirable that we consciously seek to move them out of the realm of the merely possible and into

the realm of the distinctly plausible by actively *creating* the knowledge needed to bring them about as reality. It is this ability to envision and then move towards desirable preferred futures (or to consciously move away from undesirable futures) which gives humanity its greatest chance for further survival.

Figure 1 shows a graphical representation of these four types of alternative futures, using a well known metaphor: the "futures cone", which expand from the present on the left into alternative futures on the right. Visible in the diagram are "scenarios", depicted as regions in the Plausible realm. Also visible are "Wild Cards" - low-probability events or mini-scenarios (hence they are outside the Probable realm) which, if they occurred, would have very high impact. They can be either Possible or Plausible, according to the above definitions. Examples would include an asteroid or cometary impact with Early (plausible), or very-high-speed interstellar space travel (possible).

Levels of Depth in Futures Thinking

Richard Slaughter (1989, 1999) has distinguished four levels of "depth" in futures thinking. These may be conceptualised as follows.

"Pop" futurism. This is the shallowest and most superficial level of futures thinking; it is also by far the most widespread, well-known and popular. It is usually highly media-oriented and is found in most TV programs dealing with "the future", in newspaper magazine articles, popular books, "sound bites" on the news etc. This is the level of "reading trends" which, as we saw earlier, only reveals a very small segment of the potential futures which may await us. I often call this type of future "techno-wow!" because of its frequent up-beat preoccupation with technology. There is often little insight found at this level.

Problem-oriented futures work is more serious, and attempts to look at deeper issues and their causes. It is often concerned with how organisations and society might, or ought to, respond to challenges lying in the nearer-term future. It is where most corporate strategic thinking is conducted and, in the public sector, often touches upon the "big-picture" problems, such as climate change, soil erosion, ozone-layer depletion, salinity, etc. Most futures work takes place in this realm.

Critical futures studies attempts to "probe beneath the surface" of the social causes of the problems being addressed at the previous level. This level of depth deals with how we *create* the problems in the first place through our worldviews and depth, unquestioned assumptions. It is concerned with how we create meaning in a social context, and with what we consider important; there is re-questioning of what constitutes social life, often questioning taken-for-granted notions such as "growth is good", and the treating of nature merely as a resource to be exploited. There is as yet relatively little work done at this level of depth, although this is now changing.

The deepest level identified by Slaughter he calls ***epistemological futures work***. This is where the foundational areas of the futures field feed into the whole futures enterprise: philosophy, epistemology, ontology, cosmology, macrohistory, the study of time, the nature and influence of consciousness on the human endeavour etc. It is at this level, the deepest, Slaughter suggests, that the most powerful and insightful forms and approaches to futures work operate, "unfreezing eh everyday life we take for granted" and "identifying new sources of freedom and new ways ahead".

This "layering" of futures thinking has been used to develop an analytical method, *causal layered analysis* (Inayatullah, 1998), which is also very useful in workshop settings to get to the deep issues beneath the "litany" of problems and themes which tend to capture and divert our attention and paralyse us into inaction.

Approaches to the Implementation of Foresight

Slaughter (has also suggested three broad types of *implementation* or application of foresight work.

Pragmatic foresight is mostly focussed on competitive advantage in business and industry. It seeks new markets, new challenges, innovation, is highly entrepreneurial, and looks at the future as a competitive space within which one needs to manoeuvre in order to gain advantage. Most of the foresight work undertaken in the corporate world is of this nature.

Progressive foresight. Whereas the pragmatic approach is about competing *within* industry, the progressive approach seeks to *redefine* or *transform* industry and the work industrial processes are conceptualised and carried out. In other words, the very notion of what constitutes industry (or competition) is called into question. The concepts of cooperation, sustainability and sustainable development are some of the key aspects of this approach to implementing foresight.

Civilisational foresight is aimed at not only transforming industry, but re-conceptualising human activities and transforming the *whole of society*. It seeks to take a large-scale, big-picture "global view" of human activities world-wide, and is concerned with finding ways to change the current trajectory of the human race away from nightmarish Dystopian futures towards futures that "sane people would *want* to inhabit". This is the most urgently needed application of foresight (ie at a social level), yet it is also the least common.

Clearly, then, there are different aspects to futures work; the *type* of futures concerned, the level of *depth* at which the work is conducted, and the *approach* to implementation. There are, of course, may other aspects to futures, but these few paragraphs of brief introduction should serve to begin to widen and deepen an understanding of what is still a largely misunderstood knowledge discipline.

Foresight, Strategy and Planning

There is often some confusion about the relation between strategic thinking, strategy development and strategic planning. The confusion between these three types of activities lies essentially in the belief that they are all the same thing - which they are not. They are, in fact, three quite separate but mutually inter-dependent activities which have decidedly different foci of interest, and which require quite different styles of thinking for their proper execution.

Experts on strategy, such as Mintzberg (1994), have characterised the essential difference between strategic planning, strategy development, and strategic thinking. In essence, strategic planning is about analysis - the breaking down of a goal or objective into steps, designing how the steps may be implemented, estimating the anticipated consequences of each step, and measuring the manner by which progress is being made. This is a planned, programmed activity requiring thinking which is strongly analytical, logical and deductive, in order to ensure that things stay "on track". Strategic thinking, on the other hand, is about synthesis; it is generally intuitive and attempts to go beyond what logical thinking can inform. Because information about potential futures is *always* incomplete, the thinking required for success in this activity needs to be "synthetical", as it were, and inductive, not analytical and deductive.

Foresight then, as a part of a strategic thinking, is designed to open up an expanded range of perceptions of the strategic options available, so that strategy-making is potentially wiser. Strategic thinking is concerned with *exploration* (based on limited and patchy information) and *options*, not the steps needed for *implementation of actions*, which is the realm of strategic planning.

The junction between these two activities is the mysterious "black box" of strategy development of strategy-making itself, where a particular goal or objective is actually set or a decision made. The focus here is on assessing options, examining choices, making a *decision*, and/or setting a *destination*.

Thus, in brief, as a process, strategic thinking is about exploring options; strategy development is about making decisions and setting directions, and strategic planning is about implementing actions. All three are needed and vitally necessary for successfully confronting the strategic environment.

Foresight, therefore, is an element of strategic thinking, which informs strategy-making, which informs strategic planning and action. It does *not* replace strategic planning, which is a proven methodology for implementing, monitoring and reporting on strategy. Rather, foresight work enriches the context within which strategy is developed, planned and executed.

A Generic Foresight Process

The Foresight and Planning Unit (FPU) was set up at Swinburne in 1999 and charged with the mission of developing, implementing and continuously improving the University Planning Framework in ways that met the needs of the University community, and with developing a strong foresight and strategic thinking capacity to underpin and inform the University's strategy development.

I arrived in the FPU in August 2000 and, adapting some earlier work, set about developing a foresight framework which would not only fit into the University's planning framework, but also be widely applicable to non-organisational foresight work. Foresight was implemented *at* Swinburne *for* Swinburne using the pragmatic approach - addressing the strategic question of how to survive in an increasingly competitive education environment. While this implementation was informed by the solid discipline and academic rigour of the futures field, it also operated within the confines of the strategic reality of Swinburne having to remain viable as an organisation. Maintaining this balance was of prime importance.

Using, in particular, the earlier work of Slaughter (1999) and Horton (1999) during 2000 I developed a generic foresight framework (Voros, 2003). There are four elements of the process: Inputs; "Foresight Work"; Outputs; and Strategy.

Inputs. This is the gathering of information and strategic intelligence. Many methods, techniques and frameworks exist, of which "environmental scanning" is perhaps the best known. The tools and techniques of "competitive intelligence" are also relevant here.

"Foresight Work". This can be conceived as comprising three broad steps which follow a logical sequence. The first step is ***Analysis*****,** which is best considered as a preliminary stage to more in-depth work, rather than as a stand-alone technique itself. Forecasting and trend analysis are the best known methods. The results of the analysis are then fed into a second step, ***Interpretation***, which seeks to "probe beneath the surface" of the analysis to look for deeper structure and insights. This is the realm of critical futures studies and causal layered analysis (see earlier), systems thinking, and other "depth" approaches to futures thinking. The third step is the actual creation of forward views. I call this step ***Prospection*** (from "pro" = forward, "spect" = look, and "tion" = the noun form of the action; thus, "prospection" is "the activity of looking forward and creating forward views). This is where various views of alternative futures are examined or created. It is where scenario planning, "visioning" and so-called "normative" ("preferred" futures) methods are located in the broader foresight process.

Outputs. The outputs of foresight work are: the range of options generated by the work (tangible); together with the changes in thinking engendered by the whole process, especially the insights generated in the Interpretation step and by the creation of forward views in the Prospection step (intangible). The intangible output might be somewhat difficult for some hard-headed, "objective" people to appreciate or even recognised. But it is quite possibly *the* most important output because of the way it alters the very mechanism of strategy development - the perceptions of the mind(s) involved in strategising. At this point, foresight has done its work - the generation of options and (hopefully and more importantly) an *expanded perception* of strategic options available and possible.

Strategy. The final part in this four-part framework is that of Strategy (both development and planning), about which I will say very little here, given the earlier discussion about the relationship between foresight, strategy and planning. Suffice it is to say that since foresight has done its job, it now hands over its *options* for consideration by decision-makers in generation *decisions* and strategic *actions* for implementation (strategy development and strategic planning).

The results of the Strategy step need to be fed back into the Inputs of the overall foresight framework in an ongoing way, closing the loop, as it were, so that continuous re-assessments and "course corrections" are possible along the "strategic journey". Hardin Tibbs (1999) uses the powerful metaphor of the "strategic landscape" to encapsulate this notion of a strategic actor undertaking a strategic journey into the future.

The Use of Scenarios in Foresight Work

As should be clear form the preceding section, creating scenarios is *but one aspect* of an integrated and ongoing foresight process. The creation of scenarios (as one means of generating forward views) should come at the *end* of a careful and detailed process of wide information gathering, careful analysis and critical interpretation. The deeper the interpretation carried out, the potentially more robust the forward views (in the case, scenarios) which are created. It should also be clear that scenarios based solely on the Analysis step (eg based solely on trends and forecasts) will generate a very narrow range of alternative potential futures, as is clear in Figure 1. Such a paucity of breadth in the forward view, owing to a lack of depth in interpretation, represents a risk to the continued viability of an organisation; doubly so if the narrow range of options generated has a high degree of credibility apportioned to it in the minds of decision-makers because of the use of "hard" (and therefore "solid") quantitative methods. It is valuable here to remember the maxim "garbage in, garbage out" from computer science. Let us be careful what we put in.

Scenarios are a valuable part of foresight work - they are just not the only part - and need to be seen within the context of an on-going, long-term, "closed-loop" organisational foresight process. With this understanding of their place in foresight work, they are a useful tool for generating shared forward views, helping to align strategic action across an organisation on its journey into the future.

References

Amara, R. (1981), 'The Futures Field: Searching for Definitions and Boundaries', The Futurist, 15(1): 25-29.

Henchey, N. (1978), 'Making Sense of Futures Studies', Alternatives, 7: 24-29.

Horton, A. (1999), 'A Simple Guide to Successful Foresight', *Foresight*, 1(1): 5-9.

Inayatullah, S. (1998), Causal Layered Analysis: Poststructuralism as Method, *Futures* 30(8): 815-30.

Mintzberg, H. (1994), *The Rise and Fall of Strategic Planning*, London: Prentice Hall.

Slaughter, R. (1989), 'Probing Beneath the Surface', *Futures*, 21(5): 447-65.

Slaughter, R. (1999), *Futures for the Third Millennium: Enabling the Forward View*, Sydney: Prospect Media.

Tibbs, H. (1999), *Making the Future Visible: Psychology, Scenarios and Strategy*. Paper delivered to Australian Public Service Futures Group, and republished with the author's permission in *prospect*, the Foresight Bulletin, No 6, 2001.

Voros, J. (2003), 'A generic foresight process framework', *Foresight,* 5(3): 10-21.

