

# Worldviews, Assumptions and Typologies of the Future

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*This paper applies Causal Layered Analysis to a classification of methods based on grouping them into those focusing on Foreseeing, Managing and Creating the future. It argues that an understanding of the assumptions behind Futures methods is important both to futurists and to the users of Futures work if misleading conclusions about the future are to be avoided.*

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The methods used in Futures have a variety of origins. As Wendell Bell<sup>1</sup> notes, "Futurists borrow techniques from other disciplines. They are not distinctive to futures studies. What determines their relevance to the futures field is their substantive content and the purpose of their use (e.g. making assertions about possible, probable and preferable futures) rather than their methodological characteristics alone." Equally those methods, like Delphi and Scenarios, which were developed by futurists, have frequently been borrowed and used by others in different circumstances. Futures, then, does not rely on a unique set of methods but, as Bell points out, is differentiated more by the way in which they are used.

Whatever their origin each method carries with it a basis of assumptions about the nature of reality and its applicability to the human situation. Such assumptions are usually set in the cultural milieu in which the method originated and from which the evidence that supports it is taken. The majority of methods, including those considered here, originated within a Western, mainly American or European context, and consequently carry with them assumptions that in those cultures are usually taken for granted. One of the major difficulties resulting from this, can be seen to lie in the failure to consider the assumptions that are implicit within a method and understand their influence over the output. Such difficulties affect both those employing the methods and, because they are less likely to know of the assumptions, those using the results.

There are several ways to characterise methods of thinking about the future but one that is based on an approach to the assumptions underlying the various techniques available divides them initially into three main types<sup>2</sup>:

- Foreseeing - those that attempt to see the future before it occurs, such as prediction, prophesy, and forecasting.
- Managing - those dealing with the present situation in order to bring about change.
- Creating - those that focus on imagining things that never were.

To provide a deeper examination of the assumptions behind this approach and the methods considered, this paper applies Causal Layered Analysis<sup>3</sup> to Foreseeing, Managing and Creating the future. Causal Layered Analysis is itself based on the assumption that the way in which

issues are framed influences how we think about them. At the first level things are taken at face value without any attempt to investigate the causal factors behind them. The analysis of such “facts” constitutes the second level, which examines the causes of the phenomena under consideration. The Foreseeing, Managing and Creating classification of Futures methods occurs at this level. Analysis of this kind frequently occurs within a tacitly accepted context or paradigm such as the Western worldview, which, for example, seldom questions the way the private sector allocates resources through the market mechanism but requires governments that “intervene” to justify their actions. Examination of such paradigms constitutes the third level of analysis. Even these rely on a fourth level of generally unquestioned myths that we are seldom even aware of, such as beliefs about our place in the cosmos, but which directly affect the way we view the world.

### *Foreseeing*

It is frequently assumed that the purpose of thinking about the future is to gain advance information about what is going to happen in time to come. Weather forecasting, for example, is concerned to inform us about the conditions that we may expect to experience in the hours or days ahead. If the forecast is for fine weather and relying on it we go out without protection from the rain that actually occurs, the forecast was useless. If, on the other hand rain was correctly forecast and we took an umbrella and kept dry the forecast served its purpose. The advanced computer models that forecasters now use may appear at face-value to simply forecast the future weather, but they rely on causal relationships built into the models, that “explain” the operation of the weather system. Such relationships rely on the second, deeper level of assumptions of Causal Layered Analysis. Using this technique it can also be shown that such methods which are attempting to foresee the future are also based on an even deeper, third level, assumptions that relate to our underlying beliefs about the nature of the future and our relationship to it.

The output of methods is often taken at face value as an accurate picture of the future, without any appreciation of the assumptions on which they are based, but both the assumptions and the methods themselves can be considered at various levels. For example, a recent report published by the UK Government Foresight Programme states that by 2011 the level of “non-standard” employment, defined as part-time and

self-employment, in the United Kingdom will reach 44 % of the total<sup>4</sup>. It is made clear elsewhere that, in common with other forecasts in the report, this particular one is based on the extrapolation of past trends. Such an assumption is located in the second level of layered analysis where interpretation is placed on quantitative data of the kind on which this projection is based. The interpretation placed upon the past data is the most crucial and determining factor in the development of the forecast. This forecast implicitly assumes a continuation of the forces that have produced the trend, without any critical analysis of them or questioning of the likelihood that they will continue in the future. In the report itself, no doubt for reasons of brevity, we are given no indication of the forces which have brought about the changes in the past, though the source from which they are taken is given. The forecast is obtained by the application of linear regression, a statistical technique that describes a relationship between two variables, to the past data. The same result could be obtained by someone else repeating these steps but as Yeomans<sup>5</sup> points out, "There is no guarantee that the relationship will continue." The forecast is an invention that will only provide an accurate picture of the future if the relationship and therefore the unstated causes continue to operate as before. It is highly unlikely that most consumers of the report will appreciate the subtleties involved and will take the forecast as an accurate statement about the future.

The study from which this particular forecast is taken exposes in its title, "Britain Towards 2010: the changing business environment" a further third level assumption, that of the worldview in which it is placed. It is clear that not only this report but the whole of the Foresight Programme, which, like those of other countries, is concerned with making the economy more competitive through the application of science and technology, assumes that the future will be based on continued economic growth within the capitalist system. Indeed such a future is regarded, not only as probable, it is also seen as desirable. Nothing other than a continuation of business-as-usual is considered in the body of the study. The only point at which these assumptions are overtly questioned is in some of the closing commentaries. Jon Leach<sup>6</sup>, for example, writes of the entry into a new type of society, "Techno-Feudalism" and in doing so raises the fourth, and most basic, level of cultural assumption producing an image that, as Inayatullah<sup>7</sup> argues, touches the heart rather than the head.

All forecasts are based in the idea that it is possible to gain advance information, or fore-knowledge, about the future. As such they tend to

be essentially passive; the world around us will determine what happens to us and we will have to deal with what it throws at us. By knowing in advance what is going to happen we may be able to adapt, prepare, or lessen the consequences but not change the future itself. We can be forewarned, but can we be effectively forearmed? Such ways of thinking about the future may even regard the future as already existing or fixed. Consequently they focus on analytical, generally backward looking, approaches and consider essentially the inevitable or, at least, most likely future. The future is seen as an extension of the past and present, indeed Rescher argues, "it is only where the future is somehow foreshadowed in the discernible patterns of the past and present that rational prediction becomes possible".<sup>8</sup>

A range of techniques focus around the attempt to foresee the future. Precognition, Prophecy and Astrology may not feature strongly in most Futures work, though Genius Forecasting<sup>9</sup> may be closely related to prophecy. None of these are generally accepted as normal human characteristics but may occur in certain individuals with particular abilities. Precognition suggests a fixed future that is obscured from most but may on occasion be revealed to particular individuals.<sup>10</sup> Should it exist it would challenge many of the basic assumptions of western philosophy, though if, as Einstein suggested, all time exists, it would coincide with some of the theories of modern Physics. Prophecy and Genius Forecasting where they are able to produce accurate predictions of future events, seem again to rely on the special abilities, either innate, or based on the expertise of an individual. Coates, for example, suggests that Herman Kahn was recognised as a genius forecaster of recent times.<sup>11</sup> Astrology plays a paradoxical role in western society, where many individuals express a belief in its predictive powers and regularly read their horoscopes. Except where they are specially prepared for particular individuals or situations they are frequently so generally worded as to apply to many circumstances. Belief in, or dismissal of, the determining influence of astrology, the existence of precognition, or the ability to prophesy, is clearly deeply held, well within the fourth, mythical, level of analysis. Evidence, which either side of the argument may attempt to bring to bear to convince those who believe otherwise, tends to have little effect.

Methods that are based on extrapolation all rely on the identification of patterns in the past and present that it is assumed can be projected into the future. These are initially second level assumptions related to the interpretation given to the data, but themselves rely on deeper assumptions that operate within the existing paradigm. Extrapolation,

by definition, emphasises continuation and can only provide a guide to the future if that occurs. The interpretation placed on the past as indicated by the available data is crucial. The pattern may, for example, be regarded as linear, exponential, cyclical, seasonal or thought to reflect the properties of the growth or S-curve. Any variation from this assumed pattern will invalidate the resultant forecast.

Levels of success, in terms of accuracy, of this foreseeing approach have not been great. In a study of 1,556 technological predictions made between 1890 and 1940 Wise<sup>12</sup> suggested that by 1974 only about 40 % of the developments had occurred. The level of accuracy was lower for social developments. Indeed, Sherden<sup>13</sup> found that most forecasters, across a wide spectrum from demographers to economists, market gurus and futurists performed little better than chance. The most reliable methods of this kind tend to be causal models, but only where there is sufficient data available to develop an explanatory system and the relationships it describes remain stable in the future. For example, Forecasts of Passengers using UK Airports,<sup>14</sup> have performed reasonably well over the last decade. Even here it has been necessary to build in a variety of assumptions about the independent variables, such as GDP growth, in order to create a range of forecasts for the dependent variable, air passengers, within which the actual eventually has a good chance of falling. Very clearly such techniques only exist within a particular worldview. Anything which challenges the second or third level assumptions on which these methods rely, questions the validity of the model. Discontinuities in the relationships between variables or events external to the variables contained in the model invalidate the forecast. The Gulf War, for example, which was not a factor considered in prior forecasts, significantly reduced the number of passengers in 1991, and caused the recorded level of air passengers to fall below the forecast.

One question that these attempts to foresee the future raises is the prospect that as our understanding of systems grows we may increase the accuracy of our forecasts. That we might be able to close the "Forecasting-Gap" between what we now know and what would need to be known in order to make accurate forecasts. Here we are getting into the fourth layer of analysis that is founded in our deep beliefs about the nature of the future and our relationship to it. Our response largely depends on whether we believe the future is by nature unpredictable, or that it is predictable given the necessary resources. In the latter case the current limitations on our ability to forecast accurately may then be seen to derive from our less than complete understanding of the world and/

or the limitations on our ability to foresee. New discoveries and new methods may then be able to improve our performance and close the "Gap". The improved performance of weather forecasting may offer some support for this opinion, coming as it has from better understanding of weather systems and increased computer power. On the other hand if we believe that the future is inherently unpredictable because what happens is subject to random events that cannot be predicted the "Gap" will never be bridged.

### *More Positive Approaches*

Traditional approaches to forecasting tend to stop at this point but there are other approaches to thinking about the future, which assume that we are not passive agents facing an inevitable future but can influence, if not control, it. These contrasting, fourth level, beliefs open up the possibility of different futures, which are either random or may in some cases be contingent on human choice and action. In such circumstances foreseeing the future becomes difficult, even impossible, because the potential variations become so great. It may be possible to discern the direction of broad collective movements and predict that there will be another hurricane in Florida, but very unlikely that we can predict individual decisions or exactly where or when the hurricane will hit the coast.

The situation is complicated by our beliefs about different levels of influence that operate in different sectors of our existence. Brand argued in *The Clock of the Long Now*<sup>15</sup> that they range from fashion, which we can change very quickly, through commerce, infrastructure, governance, and culture, which change progressively slowly, to nature, which he suggested changes slowest of all. It needs to be included in our consideration of the future, or in his terms, the Long Now, because of the influence we may now be having on it. Nature can also, of course, change very rapidly with catastrophic results. Nature may be thought of as a system, to which we humans adopt different attitudes that are anchored in the very depths of our beliefs. The traditional western view, derived from the Judaeo-Christian heritage regards nature as separate from humanity and provided for our use. It encourages the exploitation of non-renewable resources and recognises no limits to production and consumption. Other cultures such as the Buddhist are often said to take a different approach." A Buddhist approach to economics would distinguish between misery, sufficiency and surfeit. Limitless growth and con-

sumption would be disastrous. A Buddhist economics would be based squarely on renewable resources."<sup>16</sup> A philosophy that regards humanity as an integral part of nature would in consequence promote very different attitudes to both the present and the future; attitudes which are to a degree reflected in the relatively new approach of Ecology. Regarding nature as a system, of course, itself influences the way we approach it.

Our underlying beliefs about the way we relate to the planet on which we live have an impact on our understanding of both our current situation and our future. The acceptance of the idea that we appear to be affecting the very natural systems of the planet in some ways, such as through global warming, suggests a belief that humanity has developed for itself powers that traditional mythology has reserved for gods. It is quite possible to justify such an argument that both human impact on the future and our ability to influence it is increasing. With human numbers at the unprecedented level of 6 billion and in some estimates reckoned to double by the end of the 21st century the impact of humanity on the planet is also likely to be unprecedented. Add to this the technology that at least a proportion of us have at our disposal and that impact is multiplied. Our technology is based on a growing, but still limited, knowledge both of the world in which we live and of ourselves. This gives us an unprecedented ability to influence the future direction of both the earth and its life forms without the ability in many cases to predict what the impact of our actions will be. That challenges many of the attitudes and beliefs that we have developed, both the traditional, such as those enshrined in many of our religions, and the more recent on which the Industrial Society and its emerging successors are based. Traditional beliefs are questioned by the power that science now gives us and those of the Industrial Society by the very implications of our technology that challenge our assumptions about the Earth as a limitless source of resources and a bottomless pit for our rubbish. The realisation of this developing situation has crystallised only in the final quarter of the 20th century as we have come to terms with images such as the Earth in space from the Apollo Missions. In turn it imposes on us a responsibility beyond anything previous generations have had that questions the very basis of our ideas about humanity and its place in the cosmos.

In such circumstances we need ways of thinking about the future that provide the facility for alternative assumptions about our relationship to it. They are not necessarily any more reliable than those that assume we are locked into an inevitable trajectory and can only hope to foresee what is going to happen before it does, but being based in differ-



ent belief systems provide other perspectives with which to consider our condition.

### *Managing*

Management is essentially concerned with dealing with present concerns in order to influence the direction of events. It may vary between concentration on the immediate as implied by concepts such as crisis management, reacting to events as and when they occur, or be concerned with longer term matters which stretch into the future in such approaches as strategic management or management by objectives. In the way in which it is used here the approach accepts that the future is to a degree unpredictable and that we are consequently not able to forecast with certainty. The central concern then is to explore possible and probable futures and as far as is feasible manage change in directions considered favourable to those involved. One particularly graphic image that fits this approach was suggested by Dator<sup>17</sup> when he talked of riding the tsunamis of change.

In a Futures context the approach is more positive, assuming that human action is able to influence the direction of events by managing change or acting in the present with the future in mind. The division between Foreseeing, Managing and Creating is far from exact. For example, this approach emphasises the role of judgement in the Delphi technique, but it is clear from the discussion of extrapolative methods above that judgement plays an important part in the identification of the patterns on which forecasts are made. It is therefore a matter of emphasis and primary focus rather than exclusivity. The same is true of the focus on analysis as a concept that underlies many of the methods that focus around managing. Analysis is initially a second level concept being based in the idea that observable effects have identifiable causes. In a Futures context these techniques usually operate within the existing worldview though awareness of this does allow the deeper assumptions involved to be examined. The scenario method, in particular, offers the clear potential for alternative paradigms to be considered.

An assumption that underlies a number of the methods is that of path. The utility of Scanning, Content Analysis and Issues Management is founded on the idea that emerging issues tend to follow a common trajectory from birth to maturity. Scanning, which is often regarded as the first stage of Issues Management, relies on the idea that the early

identification of change provides a positive advantage. It allows "a stitch in time to save nine." This is, of course, only true on the basis of the assumption that had the matter been allowed to develop it would indeed have followed on its assumed trajectory and the eight extra stitches would have become necessary. As it is often not possible to both intervene early to prevent a situation developing and also allow it to develop in order to compare the different outcomes, proof may not be attainable. Some evidence may be drawn, however, from situations in which different actors adopt different strategies in response to a perceived emerging issue. Choucri,<sup>18</sup> for example, argues that firms that anticipate the legal requirements of environmental legislation as a result of active scanning, and act before they are forced to do so, will maintain an advantage. Such growing concern for the environment could be regarded as a sign of a shifting worldview. If that were to happen the benefit to those who recognised the shift and adapted to it rather than remain with the old outdated view would be considerable, but it would not necessarily be financial. The same is probably true of the identification of changes throughout business as companies that anticipate and adapt survive and those that do not die.<sup>19</sup>

Techniques such as Impact Assessment, Cost-Benefit Analysis and Risk Assessment are based on the observation of past experience where the effects of prior actions have been seen to create undesirable results. Arising from this experience is the assumption that if the effects of intended actions can be identified before the event it is possible to make more informed, and therefore better, decisions and to take action to avoid or reduce the undesirable effects while maximising the benefits to be gained. Such techniques also rely on the ability to foresee the effects of actions yet to be taken and the relevance of past experience to current decisions. The few before and after studies that have been done question the validity of such assumptions.

Two methods that have often been regarded as fundamental to Futures work are Delphi and Scenarios. Both are founded on the idea that where the traditional methods of attempting to foresee the future are inappropriate they are able to offer help. Delphi is centred around collective judgement without the perceived disadvantages of committees or group-think. In its original form it assumed that value would be obtained from the ideas of several experts rather than one individual and that a useful consensus would emerge by sharing the ideas without attribution. Whether or not these assumptions are reasonable Delphi remains a popular method in Futures work. It will usually be used within

an assumed, and probably unquestioned paradigm, but it could be used to explore the implications of alternative worldviews or even to bring together the ideas of individuals with different approaches at this level who would normally not communicate with each other.

The Scenario approach starts from the assumption that accurately predicting the future is not possible but that benefit can be gained in dealing with the resultant uncertainty by imagining and rehearsing alternative possible futures. The aim, as with scanning, is to reduce the element of surprise, in this case by considering the possibility of the occurrence of potential situations before they happen.<sup>20</sup> Depending on how they are used scenarios can examine the implications of alternatives at both the second and third levels of analysis. In most examples quoted in the literature they have been used to examine alternative futures within the dominant worldview but as Inayatullah<sup>21</sup> points out they have the potential to explore deeper assumptions.

### *Creating*

The third group of methods operates at the opposite end of the spectrum from those assuming a fixed future that we may or may not be able to foresee. At their most developed they may be based on a set of assumptions at the deepest level about the position of humanity in the cosmos and the relationship of human society to its future. Anything is possible because the future has yet to be created and is completely open. In relation to the future of humanity and the world in which we live some commentators see the emergence of a completely new relationship in which we now, or soon will, have effective control over evolution and even the natural systems of the planet. Others do not go so far but contend that within the constraints imposed by natural forces humanity does have effective choice over its future and is not restricted to a given worldview imposed by currently dominant interests. Yet others assume the continued dominance of the "Pax Americana" and seek only to create solutions to problems within that paradigm. Creative methods can then be used at each level depending upon the assumptions about the context within which they are operating.

Underlying all of them is the idea that it is possible to imagine and create things that never were.

They assume that within the level at which they are being applied the future has yet to be created, that it is not pre-ordained but is subject

to human choice and action. As such they are positive and proactive rather than passive and reactive. Decisions can be made with the intention of bringing desirable or preferable futures in to effect and the critical faculty required to initiate this process is imagination. Although this is more obvious in those methods focused on speculation and imaging, it is also part of the more traditional techniques of problem solving and planning. Although these may usually be regarded as grounded in rationality even the most traditional problem solving approaches require the generation of alternative solutions from which the chosen course of action may be selected. Indeed for perfect, if unattainable, rationality it is necessary to generate all possible solutions, compare the outcomes that would occur if they were implemented and choose the best solution. Only in this way could the truly rational solution be reached but as we are unable to forecast the outcomes with certainty rationality must always be limited. Imagination may be critical in starting the creative process but to be effective ideas and plans once decided upon also have to be implemented. Throughout this decision-making process a series of assumptions will be made at various levels, for example, that a particular action will lead to a given effect and at a deeper level that the economic and political system will either remain the same, or to enable more radical actions some form of transformation will occur. Some, for example, would argue that sustainable development can never be obtained within the growth orientated western worldview but only if a major shift of basic values occurs.

The role of imagination can be illustrated by reference to urban planning. In common with many towns and cities in the United Kingdom, Leeds was encouraged to mark the passing of the millennium. Although the completion of its commemoration will fall part way through the year 2000, perhaps a compromise solution to the argument about when the 21st century actually starts, the Millennium Square project has relied on the exercise of imagination at several stages. Firstly, when the idea of commemorating the millennium was first raised it was necessarily some time in the future, in the imagination. Then there were a number of competing and imagined schemes before the idea of developing the Square was selected. This was based on the assumption that the changes to the part of the city in which it was to be located could be imagined. Imagination no doubt then played a role in the design of alternative schemes for the site before the final decision was made. At each stage of this process it had to be possible to assume that something which at the time did not exist could be created in the future. At the time of writing

the imagined project is being implemented.

Those techniques which are more obviously based on creative imagination may themselves question some of the aspects of the accepted worldview of western culture. Creative imagery, for example, has a distinctly New Age feel about it, raising ideas of the existence of different levels of consciousness that would generally be dismissed as unrealistic, or distinctly questionable, in conventional society. In other cultures they may be regarded as normal, but their application in western society can be prejudiced simply because they run counter to accepted, if unquestioned, attitudes. Any of the techniques of creativity that explore different levels of consciousness may challenge the implicit assumptions of those brought up in a western culture and make them feel uncomfortable about using them. Only where those using the techniques can let go of some of their deepest beliefs can the potential of the such techniques be fully realised.

### *Conclusions*

All techniques are based on assumptions at several levels. The techniques that are used in Futures have built into them assumptions about our relationship with the future and our ability to influence it. The application of causal layered analysis to a range of the methods available for thinking about the future can help to reveal some of the deeper levels at which these assumptions are made. Being aware of these assumptions may enable the use of these methods at different levels, help in finding the most appropriate method to use in a given situation and provide insights into the implicit approach we take, not only to the future, but to the past and present as well. The choice of an effective method may depend more on carefully assessing the circumstances we are in and the purpose of employing the technique, than the apparent characteristics of the technique itself.

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