Chapter 1

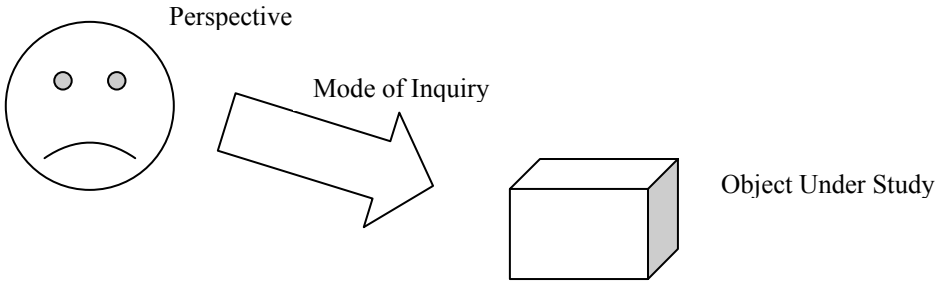
PERSPECTIVAL FORECASTING
An Introduction

THE PROBLEM

The lead author was recently referenced in Armstrong [2002] for having mentioned many of the knowledge claims (principles) he and his colleagues tried to justify. However, it is felt that these knowledge claims, propositions, or arguments do not fully accommodate the different definitions of knowledge necessary to forecast complex social situations, as Armstrong himself implicitly recognises in his chapter on "role playing". The evidence for any scientific knowledge claim, like a weather forecast, to be justified includes objective empirics, logic and/or measurement. These hard won standards need to be rigorously demanded if knowledge claims justified by superstition, religious belief and mythology are to be barred. However, justified knowledge claims about complex social situations, sometimes called value judgements, need to be accommodated within this scientific rigour. For example, when forecasting the likelihood of a mining operation becoming operational on land claimed to be aboriginal heritage, requires some consideration of 'justified' interlocutors perspectives (concerns, viewpoint, interpretation) on who owns the land. It is of little help to the business community for a scientist to say, that's not a scientific issue so it cannot be considered in a 'proper' forecast. The forecasting of complex social issues needs accommodate both scientific (objective) knowledge and interlocutors' perspectives on the physical facts.

Some means of identifying 'genuine' interpretations of (is an important benchmark for fine for perspectives on what knowledge is within the judgemental or subjective forecasting literature. For example, there is one fairly strong school of thought, which is often associated with systems thinking that distinguishes yet combines seeking objective knowledge from seeking new knowledge through seeking new perspectives. Writers like Kuhn, [], C West Churchman, ex editor of the Journal of Philosophy, Ackoff, Argyris, Linstone and Schon, have found making this distinction useful for human activity problems such as business forecasts. Their advice is to use both, the measurement of physical world objects and appreciation of the researcher's perspective of those

physical objects. To use a well known science example, Kuhn [] points out how scientists changed their interpretation (perspective) of the physical world from a clockwork one, to an attraction one, to a relativistic one. Objects such as planets can be observed (measured) within these different perspectives. The relationship between these two types of knowledge might be shown as in figure 1. The perspective is upon some assumed object through some mode of inquiry such as observation.



It is important to distinguish this dual, perspective and objective, approach from the relativistic ones of postmodernism. While new perspectives are sought, they have to be argued in the same way that writers like Popper [1963] and Regh [2002] call for conjectures and refutation in objective-only science. Also, as with objective-only science, perspective knowledge needs to be accepted by what Popper calls a universal audience, which it is assumed includes specialists.

This paper will explore the conjecture that this dual perspectve and objective knowledge approach, labelled 'soft forecasting' provides a useful design for human activity forecasting. 'Soft forecasting' is defined as a critiquing method that draws on the dual perspective and objective epistemology, also found in soft systems methodology [Checkland, 2000; Linstone 1999] and the perspectival thinking literature [Churchman, 1971; Haynes 2001]. The aim is to appreciate and influence stakeholder's perspectives on alternative futures. It therefore involves using a purposeful, mildly argumentative, small group that focuses on constructively critiquing justifications for different stakeholder perspectives. While the author's apologies for introducing the new term "soft forecasting' it does have the advantage of our not having to constantly repeat phrases like 'dual perspective and objective knowledge.' A very viable alternative was multiple perspective forecasting but this term is now associated with 3 decades of Linstone's [1999] pioneering work. As I wanted to put more emphasis on the role of argument, groups, learning from doing, dynamic problems and the dialectic between the object and the perspective, I chose Checkland's term 'soft'. The term 'forecasting' is used despite its statistical inference over 'future studies,' 'fore-sighting,' technological forecasting and 'forecast

intelligence' simply because it is more Saxon than Norman, ie closer to street-speak.

FORECASTING AS A LEARNING PROCESS

Before directly considering how to design a 'soft forecasting system,' it may first be worth reflecting on forecasting as a group process rather than as a single act. It is useful not to focus on accuracy as the sole purpose of human activity forecasts. The target shooting metaphor of econometric-type forecasting can be replaced by the herding-cats metaphor, where forecasting is seen as an act of managing chaos, rapid networking, ritual, group commitment and designing common futures. To forecast a loss of $20m and be 100% accurate is less use than to have a process with stakeholders to effectively respond to an a-priori $20m loss, making the forecast error large but the actual loss small. In this age of complex interdependency of corporations, stakeholders may see forecasting as aligning a preferred common future or of determining a collective optimal flexibility. Accuracy is not the only activity of a forecaster who sees him or herself as a co-ordinator of a group of powerful stakeholders. Agreement on a collective response to surprises and an improved appreciation of underlying social and economic forces may be a more strategic view of forecasting. Human activity forecasting in an environment too complex to model maybe more about co-ordination, appreciating other people's perspective and their likely responses that the individualistic non-dynamic model common in traditional forecasts. Forecasting becomes one of being about managing stakeholder's processes rather than a solo mathematical calculation.

In order to achieve any sort of perspective of the stakeholders in an environment that is constantly changing, a very good 'many to many' communications system is required. Although a little extreme a 'interesting' example of a system for dealing with an uncertain future, in turbulent times, was developed by the German army in World War II. This multiple level, decentralised and dynamic system, called 'blitzkrieg' was very successful. Tank commanders were given a very broad sense of purpose and freedom to constantly re-develop their own localised forecasts and action plans based on events as they rapidly unfolded in the field. This was only possible with a very good, networked communications system.

This is the logic behind the Internet where there can be many to many communications, all shared across the network, in a non-hierarchical manner that still operates if one 'node' goes down. The project owner, on demand from the field officers, provided a very good centralised logistics service to provide

back-up resources. A more commercial example (if far less interesting) of this approach was used by the lead author in the anticipation of the day-to-day usage of a slaughter-house in New Zealand. It was decided, after an extensive analysis of the historic records, that the daily arrival of animals for slaughter was random. Therefore, the organisation was restructured to be able to re-plan the production resources required on a daily basis. This required the redesigning of labour contracts and production scheduling systems. These soft forecasting systems are 'reactive' rather than prescriptive. They dealt with the uncertainty rather than try to predict any present cause and future effect. They also do not try to impose a method of practice in the direct sense, rather using constructive criticism of present practice to improve learning about that practices and the assumptions that guide it.

SOFT FORECASTING

Armstrong (1985) presents a lot of experimental evidence to show that a small group of all low-experienced managers will out-forecast one very experienced manager. One explanation for this is that the low-experienced group will be more open to criticism from other each other. The one experienced manager has no argumentative system except with him or her self. While Armstrong presents this as an accuracy and cost improvement advantage, it can also be seen as evidence that reinforces the effectiveness of discussion, argument and questioning in the creation and validation of knowledge. The soft forecasting approach focus on the use of reasoned argument to appreciate stakeholder's perspectives.

Drawing on the principles of systems thinking [Ackoff, 2000] the overall characteristics of a soft forecast include:

1) The setting of purpose rather than outcomes or targets. The group trying to deal with an uncertain future need to collectively set their purpose, so as to be able to assess the impact of change on their group. This also acts to motivate the group and determine important relationships.

2) The boundary of their interests needs to be set. This defines the forecast horizon, what concerns them and what does not, and whose activities concern them and whose do not, plus why.

3) Your act of appreciating and maybe influencing the future will be part of someone else's efforts to do much the same thing. It is important to think about the wider perspective on your forecast attempt.

4) The relationship between participants in the system is considered critical, it needs to be mildly but constructively argumentative. The participants need to be carefully selected for their prior experience. They also need to have an

interest in the forecast topic. This defines them as stakeholders. These attributes will now be discussed further.

Purposeful group

It is suggested, drawing mainly on Ulrich's work (1983), that a forecast attempt be set up with the 'means' being given a higher priority than the 'ends' provided it is fully integrated with the decision making of the stakeholder group. There is a strong tradition [Locke,] in management literature of thinking you are doing the right thing if you talk of outcomes or goals. The perception of forecasting as being one of guessing a point estimate, regardless of how complex or turbulent the environment, is seen as a consequence of this perspective. Establishing a group consensus on its purpose and then letting it set appropriate goals aligned with this purpose, is an act of genuine trust in their expertise, an approach essential when dealing with senior managers grappling with a novel and complex problem. As Ulrich [1983] and others point out, establishing the purpose for the forecast can be intrinsically motivating in a way the goal literature [Locke, 19] suggests externally set goals are not. Moreover, in system term the purpose of a system equated the inputs with the outputs while goals only focus on outputs. ImportaH4ly, the systems purpose determines which relationships in a system are essential for transformation of

Mildly Argumentative

It is advised that the stakeholders need to create a discussion atmosphere that encourages equitable, well reasoned, open, uninhibited, debate. (Haberma's cited in Ulrich (1983)) Without this there is some risk that learning and idea creation will not be at its optimum. This communication needs to be 'many to many' with all stakeholders having direct one on one access to all other stakeholders. The group should not be hierarchical, but have a champion and a rotating person responsible for due process. Too much argument or criticism is analogous to quarrels and often counter productive although some well-managed criticism of the group's actions has been found to be very productive. Put another way, an insufficiently argumentative group can slip into 'group think' (Janis 1972). The purpose being to use a competitive but controlled debating system as the guarantor that useful ideas and action plans are being produced. Mitroff and Linstone (1984) also outline the essential role of argumentation in complex planning and decision-making.

Stakeholders

The composition of the stakeholders is also important. The main selection criteria 'will bring a diverse perspective." For the study of the impact of emergent technologies on a corporation, stakeholders may be found from the corporation's product engineers, customer groups, legislators, suppliers, social commentators, and/or financiers. Issues such as intelligence, or differing thinking styles is not important, appropriate experience maybe.

However, the size of the group is critical. Armstrong (1995) and Metcalfe (1995) summarise the extensive management and psychology literature that argues that the optimum size for the performance of managerial inquiry type projects has been found to be about five; less for high ability/experienced managers, more for low ability/experience managers. Despite all the cynicism about committees being a waste of time the empirical evidence is that small groups outperform a single person and a large group. This is measured by the quality of the ideas and in their successful implementation rather than the conventional measure of the time taken to make each decision. One of the arguments for the number five being the optimum size is evolutionary. It is close to a family size and therefore we have a genetic disposition to thinking within this group size. This size offers the maximum group size that can still allow direct communication between all members. With three members there are three one-on-one communications channels possible. With four members there are six possible one-on-one communications channels. With five members there are 10 channels and with 6 members there are 37, requiring the imposition of some formalised communications protocols (such as talking through the Chair) to avoid subgroup conversations.

There is also supporting evidence for the optimum group size of five in the socio-metric network literature with sub-cliques being seen to develop whenever a group much larger than five is formed. Executive sub-committees and 'task forces' are well known examples. All this leads Hare (1976) to conclude that all group members having direct communications with the other members, with no cliques or 'go-betweens,' defines an effective management team.

Seeking Perspectives

The essential difference between soft forecasting and hard forecasting is that soft forecasting is about learning from various perspectives on the problem domain. For those unfamiliar with this approach an example may help; consider a simple four-legged coffee table. That such a table has four legs is now so well

socially constructed that if someone said it only has three, they would be considered 'mistaken'. We can act as if there is "a" truth about the number of legs. This is called objective knowledge because it does not appear to be open to further interpretation. However, if I asked "why" the table has four legs a variety of perfectly valid interpretations are possible. A cynic may say because the carpenter simply copied the design from the conventional design of a table. An economist might say it is a cost to stability trade off. An engineer, however, may disagree and believe it provides a compromise between stability and unobstructed sitting positions, an artist may propose that it is in tune with nature and the elegant form of an antelope. It would be a mistake for a table designer to set about seeking which of these is "the' truth. Rather, it would be better to seek many interpretations (multiple perspectives) in order to be better informed and hopefully improve future designs of tables (or systems). In the process of interacting with those individuals who hold alternative interpretations the designer is altering or socially constructing theirown interpretation. This is likely to transfer into their future decisions and designs.

Mitroff and Linstone (1993) represent the mainly US, strand of perspectives thinking in systems design. Working more from within the strategic management of technology arena, and trying to avoid the formalism of a prescribed methodology, they recommend that the stakeholders not only bring their functional role perspective (eg customer) but that a process be followed to ensure that what they call the technical (T), organisational (O), and personal (P) perspectives are made explicit. The 'technical' perspective is for the physical, logical, rational level of analysis. Mitroff and Linstone (1993) believe this aligns with Freud's 'professional' anxieties. If there are numbers that can be extrapolated or regressed then they should be in the normal positivist and quantitative manner, which is well documented in many forecasting books. For example, future processing speed or disk storage costs might be 'calculated'.

Mitroff and Linstone equate the "organisational" perspective to Freud's 'political' anxieties. This is very much about groups, their influences, scheming, and the social pressures they can bring to bear on any plans for the future. Any intelligent attempt to forecast for a complex social situation cannot ignore the context, culture, and/or local politics.

The 'personal' perspective is about ethics, beliefs, bias, motivation and an individual's concerns. It is how they alter a perspective that is important. Acceptance and interpretation of a forecast is determined by the background or personality of those involved. It helps if these are made as explicit as possible.

Mitroff and Linstone's perspectives, however, are not the only way perspectives can be encouraged by the group. For example, Morgan's metaphoric analysis thinking of organisations as, like a machine, like adaptive organism and so on, might also be used to gain insights into the impact of a emerging technology. Other perspectives are outlined by Metcalfe (2001). These include a social critical approach to thinking about how human concerns get made into institutions, an evolutionary perspective asking about the rules of selection (you cannot understand the caterpillar without knowing about the butterfly) and the related 'underlying forces' perspective, which asks what are the underlying social forces that have made this technical artefact appear.

CONCLUSION

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