

# Chapter I: Introduction

---

## I.1 Argument and research question

This thesis documents the development and evaluation of an integrated process of foresight, based on scenario planning. The process has been labelled Scenario Network Mapping (abbreviated to SNM). The thesis presents evidence in support of the argument that this process amounts to a new, comprehensive, and flexible approach to anticipating the future, and that the process can be usefully applied to a wide range of social futures, including those of organizations and geographical areas.

Most theses focus on the content of their subject matter: typically, they set out to explore the relationship between a set of concepts, testing hypotheses and forming theories. This thesis is different, because its purpose is to document the development of a new, scenario-based method for anticipating the future. Scriven's (1967) division between formative and summative evaluation is relevant here. Summative evaluation answers the question "To what extent was the hypothesis supported?" while formative evaluation answers the question "How can this situation be improved?" In most theses using empirical research, the approach is summative. This thesis takes the formative approach.

Thus the central argument is simply that:

**a viable Process for Scenario Network Mapping has been developed.**

Since the approach is formative, the argument is not assessable by simply saying "Yes, the Process was viable," or "No, it was not viable." (Note the use of "Process" with a capital P to refer to the particular process being developed in this thesis.) In practice, viability was determined by exploring the literature of foresighting and social inquiry, extracting from that literature a set of criteria for a method of studying the future, and monitoring the extent to which the developing Process met those criteria. The focus is more on the improvement of that viability through an iterative dialectic between cases and the conceptual framework that supports the Process.

At some stage in its development, a Process may become viable enough to be usable by others without requiring modification in each case; thus a corollary argument is that, following seven case studies, this stage has now been reached.

Following the main argument as above, the central research question is:

**What are the characteristics of a scenario-based anticipation process that best meet emerging needs that were identified from the literature of foresighting?**

Given such wording, the answer to the research question will not be a Yes/No response, nor a numerical estimate, but a description of the method that was found most viable.

## **1.2 Scope of the study**

As “the future” is limitless, the process described in this thesis circumscribes the scope of its study of the future in three ways: in terms of time period, in terms of the object of inquiry, and in terms of scale.

**In terms of time:** The Process uses a time scale extending over a period of (approximately) 1 to 20 years. In general, for a period of less than a year, either linearity can safely be assumed or extrapolative forecasting is adequate. As for the other limit, when a study period exceeds 20 years, there are so many imponderables that only the broadest generalizations can be made in the context of the object of inquiry of this process. The Process developed in this thesis has no inherent restrictions that prevent it from being used outside this time range (in fact, the time range covered in one of the case studies was designed as less than 6 months), but those were its design parameters.

**In terms of the object of inquiry:** This Process takes an avowedly constructionist view: it is concerned with human futures, not the futures of physical phenomena. Its focus is on “future as current perception” rather than “future as eventual reality.” Even though the futures of humans are clearly affected by the futures of their physical environment, the argument here is that (in all but rare cases) the human influences of change overwhelm environmental influences. For example, should there be a huge volcanic eruption in Japan, the focus of this Process would be on the future of the residents of that area, not on the future of that volcano as a geological structure.

**In terms of scale:** Unlike some other well-known futures studies projects (e.g. Mesarovic and Pestel’s *Limits to Growth*, 1972), this Process is not designed for studying the future of the entire human world. It takes a fine-grained approach, focusing on the futures of a relatively small social unit: a city, a region, a local industry, an organization – but not, perhaps, an entire country, or transnational organization. At the other extreme, it is not designed to anticipate

the future of, say, a work of art, one person's career, or a marriage. At its minimum extent, it might usefully be applied to a family or a building, while its largest scope might be, for example, the study of a single industry in a geographical region. Those were the design parameters; though the Process may be more generally usable, this was not tested, except by a one case study using secondary geopolitical data.

Thus the Process developed for this thesis has been tested only at an intermediate level: neither very small nor very large, over neither a very long nor a very short period. However, the conceptual framework of the future developed to underpin the process is not by its nature restricted to a particular time period or scale.

### **1.3 Potential contribution to knowledge**

For thousands of years, going back to the earliest recorded times (Lewinsohn, 1961), humans have tried to anticipate the future, partly from curiosity, but mainly because knowledge of the future – even imperfect knowledge – may help to improve decisions in the present. Evidence of the strength of this desire can be found in the many publications on this subject. For example, the OECD Futures Group database (OECD, 2001) has some 9,000 abstracts, but is far from complete; many of the pre-2001 references used in this thesis are not included in that database.

Though many predictions are unsuccessful (as demonstrated by Schnaars, 1989 and Sherden, 1998), much money and time is expended in attempting some degree of prediction. Since the 1950s, after the limitations of quantitative forecasting were recognized, various methods for anticipating (as opposed to predicting) the future have been developed. Scenario planning has been the most widely used of these methods, because of its flexibility and comprehensibility. However, as found in Appendix 1, standard methods of scenario development tend to produce scenarios that reflect their own time better than they do the future. The major purpose of the Process developed in this thesis is to enable views of the future that are both more inclusive and more flexible than is easily possible with traditional scenario planning. If the Process works as designed, it should enable human groups to envisage their possible futures more clearly, so that they can then work towards their preferred futures. The method being developed is a foresighting method rather than a planning method: it is not intended to produce a strategic plan, or any action plan. However, such planning would logically follow the application of SNM, and would be informed by it.

The gap in knowledge addressed by this thesis relates to a different kind of knowledge from most. Umpleby (2002), following Churchman (1971) and Ackoff (1981) argues that knowledge in management can be constructed in the form of methods as well as theories; and Ghoshal (2005) makes a similar observation. Thus the planned contribution to knowledge for this thesis was a different type of knowledge from that found in most theses, which contribute substantive knowledge within a discipline. This contribution is intended to be in the form of methodological knowledge, so that one might claim “Here is a well-founded foresighting method that can be used to develop specific views of the future in a wide variety of situations.”

#### 1.4 Structure of this thesis

The thesis is divided into two main parts (not including this introductory chapter). Part 1 (the groundwork: chapters 2 to 8) summarizes the literatures involved and sets out the theoretical basis. Part 2 (the review: chapters 8 to 10) reports on and reviews the empirical investigation. As the structure is not completely linear, Figure 1.1 below should help readers to understand the sequence. The diagram shows the funnel-shaped flow of the argument between chapters, with arrows headed with the letter L denoting input from existing literature. (Instead of a single literature review chapter, a separate literature stream is considered in each of the earlier chapters. Chapter 1 is not included in the diagram, because it is an introduction to all chapters.

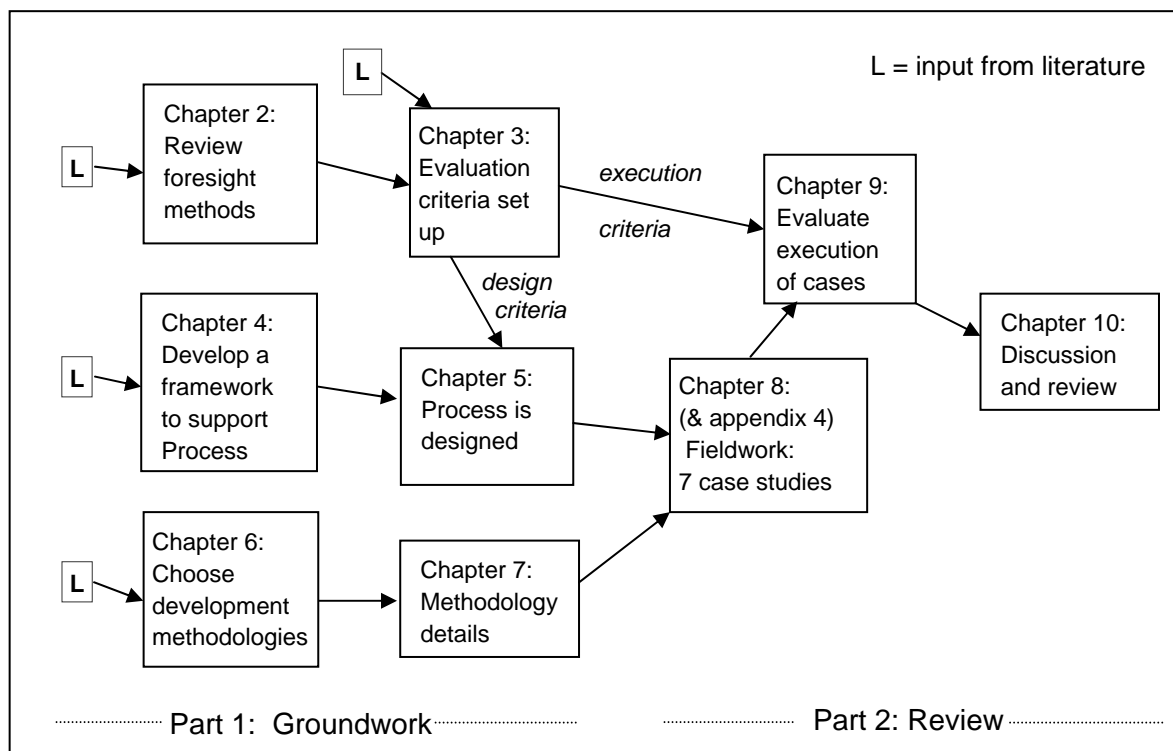


FIGURE 1.1 FLOW BETWEEN CHAPTERS IN THIS THESIS

Since one of the secondary arguments of this thesis is that, in influence diagrams such as the above, the meaning of the arcs (arrows) is at least as important as the meaning of the nodes (boxes), the following table summarizes the 13 sets of content transmitted from chapter to chapter. These are the labels for the arrows in Figure 1.1.

TABLE 1.1 CONTENT TRANSMITTED BETWEEN CHAPTERS

Input	Output	Content transmitted
Literature	Chapter 2	Literature of foresighting
Literature	Chapter 3	Evaluation criteria for a futures method
Literature	Chapter 4	Theories of futures, change, history, and causation
Literature	Chapter 6	Literature of social inquiry methodology
Chapter 2	Chapter 3	Characteristics of a likely new futures method
Chapter 3	Chapter 5	Design criteria for the Process design
Chapter 4	Chapter 5	Input to Process design from conceptual framework
Chapter 6	Chapter 7	Characteristics of the development methodology
Chapter 5	Chapter 8	The operation of the Process
Chapter 7	Chapter 8	Case selection and evaluation method
Chapter 4	Chapter 9	Execution criteria for the Process
Chapter 8	Chapter 9	Evaluation data from case studies
Chapter 9	Chapter 10	Conclusions from evaluating the Process

Several appendixes add material too detailed to be presented in the body of the thesis. In particular, appendix 1 reviews scenarios for 2000, providing additional input to chapter 3., and appendix 4 contains the bulk of the material from the case studies, with the corresponding chapter 8 containing only the background and outcome for each case study. To complete the chain of argument, a manual for the Process in its revised form has been included as appendix 5. This draws on chapters 4, 5, 8, and 9.

## 1.5 Summary of content

This section summarizes the thesis content, in terms of the two divisions shown in Figure 1: the groundwork (chapters 1 to 7) and the case studies and evaluation (chapters 8 to 10).

### Part I: Groundwork

Chapter 2 is an analytical literature review of methods of anticipating, using the latter term in the broadest sense. It discusses the problems with methods of foreseeing the future, and the historical improvement and refocusing of those methods as they have attempted to cope with

social and technological change. The central argument is that a new type of social environment requires a new type of anticipation, and that the current world social environment, with its increasing multiplicity and uncertainty, requires a method that satisfies different criteria from the methods that have been used previously.

Appendix 2 reviews 15 published scenarios for the year 2000, with a view to revealing deficiencies with the various types of scenario planning by comparing the published scenarios with the actual outcomes. Though the appendix is fairly long (hence its relegation to the back) its findings are concise. Several distinct problems were found, of which the most relevant for the development of the Process were: (a) that technological change was expected too quickly, while social change was overlooked; and (b) that many of these studies failed in foresight because their scope was too narrow.

Chapter 3 (with contributions from chapter 2 and appendix 1) selectively reviews the theoretical literatures of futures studies and social inquiry in order to develop a set of criteria against which a new method of foresighting can be assessed. More than 230 criteria were found in the literature of futures studies and qualitative research. These were reduced by grouping and critique to a more manageable number, of which some evaluate the design of a Process and others its execution.

Chapter 4 critically examines the concept of the future, forms a set of axioms, and from those develops a basic conceptual framework. This was both used to guide the development of the Process, and was itself modified by that development.

Chapter 5 uses the theoretical framework from chapter 4 to outline the basis of a new Process, and demonstrates how it fulfils the design criteria developed in chapter 3. In brief, the Process is a variant of scenario planning; one that extends beyond the normal “chain” and “snapshot” scenarios to create network scenarios. To use the metaphor of a road map: if a chain scenario describes the route taken to a single destination, and a snapshot scenario is a set of potential destinations, then a network scenario is a map of the entire network of roads passing through the departure point.

Chapter 6 reviews the literature of social science methodology, seeking a suitable means of developing a social inquiry method such as this Process. No precedent having been found, this chapter then forms a sequence of questions, the answers to which determine the most appropriate methodology. The possibility of a field experiment is explored, but rejected: on the

grounds of time, cost, and likely lack of insight provided. The most suitable method was found to be one that draws on empirical data, mainly (but not solely) from primary sources, using a qualitative, formative method; one that is evidence-based rather than hypothesis-based, and that incorporates multiple sequential cases.

Chapter 7, following from the findings of chapter 6, fleshes out the development method. This is a form of participatory action research, broadly based on the original concept of Lewin (1946), but with highly explicit use of repeating learning cycles. The empirical research design was a series of successive case studies, after each of which the Process was reviewed and modified. In the second part of chapter 7, a sampling frame is developed, based on the population of possible futures. The purpose was to abductively exercise the process being developed by applying to in a wide range of futures situations. From that sampling frame, a number of aspects of particular interest were selected, against which the sample was matched.

## **Part 2: Review**

Chapter 8 draws on the three main input strands developed in Part 1: the evaluation criteria set up in chapter 3 (based on the preceding literature reviews), the process outlined in chapter 5, and the methodology described in chapter 7. Chapter 8 (with the associated appendix 4) describes the data collection cycle for each of the seven cases studied. For each case, the background is described, and reflections are formed, resulting from the application of the Process to that case. These reflections are used to modify the Process in subsequent cases.

Chapter 9 reviews the outcomes of the Process, considering each case against the execution criteria in chapter 3, using analytic induction to arrive at conclusions about the Process. The development of the method is reconsidered, with a view to improving the Process: what are its remaining weaknesses, and how might they be overcome? What was the reaction of participants to the Process, and what was the outcome, for each case, of the follow-up research? This chapter also explores the extent to which the findings might be safely generalized.

Concluding the thesis, chapter 10 reviews the development process. It compares the evidence presented in chapter 9 with the literature review in chapter 2. It critically reviews the work carried out: not only the Process itself, but also the evaluation criteria used, the conceptual framework developed in chapter 4, and the development method developed in chapter 7. It discusses the limitations of this research (the sample, possible investigator bias and possible placebo effect), and concludes by clarifying some outstanding issues needing further research.

Appendix 5 provides an initial handbook describing the current version of the Process, for use by others who may be interested in applying it. Until it is used independently, and considered effective by those users, it cannot be regarded as complete.

## **1.6 Literatures consulted**

Two main groups of literatures were used for this thesis: one set of literatures was used to develop the Process, and another to monitor and evaluate its development. The Process was derived by drawing ideas from a wide range of sources and discipline areas: foresighting methodology in particular, but with contributions from operational research and systems thinking, sociology and social psychology, cognitive mapping and visualization, participatory development, and the philosophy of causation.

For the method of evaluating the process, the literatures used most extensively were those of social research methodology (particularly qualitative research and action research), management (focusing on organizational learning), and evaluation (particularly logic modelling and formative evaluation).

## **1.7 Why this topic?**

Why did this thesis develop a method of foresight? This arose from my professional work, which over several decades, has been mainly in media research. From 1989 to 1999, I was the audience research manager for the Australian Broadcasting Corporation, in its Strategic Planning and Research Unit. In that position I planned, managed, and reported on a wide variety of audience studies, as well as developing two new methods of qualitative inquiry, the consensus group technique (List, 2001a; List and Metcalfe, 2004) and the co-discovery conference (List, 2002c and 2004c). During that time I became increasingly aware of the limitations of standard social research methods, particularly survey research; these methods, though time-consuming and expensive, often did not provide helpful information for decision-makers, and were focused on the past rather than the future.

Having long been interested in futures studies, when my research unit was disbanded I embarked on a doctoral thesis with the intention of developing a third method of qualitative inquiry, based loosely on scenario planning. The output format of this method – the concept of scenario networks as a map-like metaphor – had occurred to me several years earlier. My initial intention was to identify an accepted standard procedure for developing a research method, and to use that procedure to develop a process for producing scenario networks.

Having already developed two research methods in an unsystematic and ad hoc way, I hoped to find a rigorous and widely accepted procedure for the development of research methods. It was only after an extensive and ever-broadening search of the literature of the social sciences that I finally realized that not only was there no standard procedure, but also that almost nobody had systematically set out to develop a research method – either in a PhD thesis or in another context. Thus, well into the thesis period, I realized that I was faced with not one task but two: (a) to develop the futures method, and (b) to develop a method for developing that method. Perhaps the magnitude of this dual task was the reason why I found almost no prior theses developing a method. The length of this thesis reflects the fact that two entwined development procedures were involved.

## **1.8 Publications arising from this thesis**

At the time of completion, several papers relating to this thesis have been presented at conferences and later accepted for publication, two of them published in multiple versions: the first (the bases of chapters 2, 4, and 5) as List (2001b and 2004a), and reprinted in Sisodiya (2003). The other paper to be published in multiple versions was on the hemispherical model in chapter 4, section 4.7 (List, 2002a and 2003b, and in Inayatullah, 2004). One of the case studies from chapter 8 is being published by the organization that funded it (List, 2005), and a paper relating to chapter 7 is in press with the journal *Futures* (List, 2006). Several further papers are planned and under way, as well as a monograph extending the conceptual frameworks presented in chapters 4 and 5.

The following other peer-reviewed papers and book chapters on topics related to this thesis (though not directly part of it) have been published, and presented at conferences:

- List (2001a) and List and Metcalfe (2004) on the consensus group technique;
- List (2003c) on a conceptual framework for human communication systems;
- List (2003d) on scenarios for the globalization of Australian media;
- Corkindale and List (2003a and 2003b) on an empirical evaluation of the Bass model;
- List (2004b) on a method of combining program logic with scenario networks;
- List (2002b and 2004c) on the co-discovery conference.

Several further papers flowing from these topics are currently in preparation.