VI.A. Introduction

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Cross-impact analysis is only one of the interesting paths being pursued in the exploration of the frontiers of Delphi. In this chapter we consider other significant prospects uncovered in recent research.

The problem of "reduction" occurs again and again in Delphi as well as other analysis efforts. How similar are the goals, programs, and objectives? Do these items overlap? Dalkey in his article illustrates the use of "cluster" analysis techniques to narrow the number of unique˙ variables making up the "Quality of Life" as viewed by a Delphi panel. It is a *very* real problem in many Delphis to be able to reduce the scope of the items the respondent group must consider. One must carefully weigh the effort to be expected of a respondent group and establish a consistency with what actual time the panelists may have to devote to the effort. Techniques such as the one discussed by Dalkey can be of benefit to many applications.

Another technique to reduce the necessary range of considerations is that of Multidimensional Scaling. Although this technique is widely used *in* marketing research, it has yet to see application in a Delphi study. However, since we feel it has tremendous potential for application in Delphi design,[1] *we* have asked Carroll and Wish to supply a review article on this subject. In essence, this is a method of systematically exposing underlying or hidden considerations (i.e., dimensions) about a set of multiple but related questions. In another sense this technique constitutes the development of a more sophisticated form of cluster analysis.

The third article in this chapter cannot `strictly be subsumed under the label Delphi.[1] However, it introduces' a very novel' questionnaire concept of exploration of the future which may well have significant ˉimpact on the Delphi communication process. In one way it represents a rather pragmatic demonstration of some of the concepts put forth in Scheele's article: Adelson and Aroni use a set of images in `the form of printed pictures rather than ˉwords. The latter are obviously inadequate in communicating holistic insights about complex systems. We fail dismally when *we* attempt to describe Picasso's "Guernica," Van Gogh's "Starry Night," Ravel's *Daphnis and Chloe,* or Olivier's *Othello* in words. Similarly we cannot depict a Soleri city of the future, Skinner's Walden II, Huxley's *Brave New* World, or Bell's post-industrial society satisfactorily by narratives. Holism is lost in a linear communication system. Pictures are not the ultimate answer; we may need life-size "live-in" models (a la Disneyland) to experience the true meaning of a future alternative. But pictorial images are a step in this direction and there is no justification for ignoring them in the development of Delphi as a communication concept.

In the final article John Sutherland constructs a formal process for scenario building which relies strongly *on* Delphi. Both normative (futures-creative) and

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[1] In particular, it does not have the iterative or feedback characteristic.

exploratory scenarios *are* generated through a *very* disciplined use of Delphi. The author considers two means of forming panels: (a) clustering of individuals with similar backgrounds and strong internal consensus in each panel, implying wide differences among *panels, and (b)* stratification *to* obtain high diversity in each panel but small variance among the various collective panel views. *In* the first step of the process desired attributes are elicited; next *a* functional structural relationship is established for them. A series of normative scenarios is thus derived with aggregate subjective indices of desirability and feasibility. In parallel an extrapolative scenario with indices of likelihood or probability of 'occurrence is created. The gap between any of the normative and the extrapolative scenarios is treated by a, process of "qualitative subtraction," isolating differences and successively abstracting isomorphisms. The remaining generic or unreduced problems are then arranged in a causal order and allegorized into either hierarchical or reticulated networks. Such models then lead to action proposals or prescriptive policies which have a high a posteriori probability of facilitating a transformation from an extrapolative and less favorable to a normative and more desirable system state over some time interval. These proposals may be viewed as metahypotheses subject to correction by empirical trial. The process slowly changes the subjective probabilities of the Delphi based normative scenario into objective probabilities.

The present and preceding chapters of the book present a set of papers that rest on reasonably sophisticated ideas and analytical considerations. If this may be interpreted as a sign *of* maturity for a professional endeavor, then Delphi has come of age. From a more serious, viewpoint, many Delphi applications to date have not called for extremely sophisticated approaches to the analysis of responses. In some other cases, however, these techniques would have clearly been beneficial to the exercise.