

A Case Study of Assessment Applied to the "Cashless Society" Concept

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ABSTRACT

In previous papers [1-3] Mitroff and Turoff have introduced the relationships between technological forecasting and assessment and modern views of philosophical inquiry. This paper transcends discussions of theory and philosophy by providing the reader with a case history description of utilizing these concepts of philosophical inquiry in formulating the approach to a particular problem in technology assessment.

Introduction

It is very rare that those of us practicing in the field of forecasting and assessment ever have a free hand to conduct a technology assessment study as we would really like to. We usually operate in environments where time, effort, and money are primary constraints that place limits on what can be done. Other constraints which also impact are the organizational environment and the expertise available. Still, we may maintain a sense of professional pride in doing the best job possible within the given constraints. However, there is one constraint which we find difficult to bear. This is when the sponsor requesting the work has rigid preconceptions with respect to the fundamental nature of the problem. It is this latter constraint that usually gives the analyst his greatest pangs of conscience and misgivings. By the time he receives the problem it is often so rigidly formulated that the approach is implicit in the statement of the problem and the nature of the results that will be obtained are largely preordained. The choice facing the analyst at this point is whether to let the sponsor remain content or confront him with the possibility he may be seeking the right solution but to the wrong problem. It is sometimes very difficult to get across the concept that in the technology assessment area a major part of the consideration is the determination of what the problem really is, i.e., what is the question for which we wish to generate an answer?

Recently we encountered this situation with an organization that wished an assessment of the "Cashless Society" concept. Confronting the problem directly, we expressed certain misgivings to the sponsor with respect to their formulation of the problem. It was a bit of a shock to us that they, in fact, agreed and in turn provided us with sizeable funding for an initial phase of the study to investigate the nature of the problem.

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At first we were a little at loose ends—never having faced before this rather unique set of circumstances. However, we did arrive at an approach that was quite successful. In fact, it is a description of this first phase of the effort that we wish to share with the readers of this journal. We feel it to be of sufficient novelty to serve of some value to those who may wish to follow in our footsteps. It is, of course, quite rare when one can present a ground breaking endeavor and offer guidance that is not otherwise obtainable.

After due consideration on the nature of our problem, i.e., determining the nature of the sponsor's problem, we concluded that the first issue to face was the type of expertise to be brought to bear on this issue. We finally concluded that what was needed was some philosophical reflection. It is, after all, the philosophers' occupation, or pre-occupation as some would have it, to contemplate the "nature of problems" and the approaches to be taken in determining the approaches to be taken to problems . . . and so on. All of our readers are familiar with the problem of determining who the experts are in technical areas. The same problem is multiplied considerably when one observes the set of living philosophers. Fortunately, we were able to avoid this pitfall due to an opportune set of circumstances. As it turns out, we were able to apply the "test of time" as a selection criterion.

For some minds this is, of course, the only reliable criterion known for the selection of experts; usually, however, it is infeasible to apply. If we may further digress for a moment, our solution may be worthy of some explanation. We found in an obscure research laboratory a completely new and revolutionary communication device—an "Electronic Poltergeist Information Communicator," or EPIC for short, utilizing the latest large scale integrated circuitry and holographic information processing techniques. This device promises to revolutionize communications and represents a fascinating case study of technological innovation. That is not our subject here, but perhaps we will address it in a later sequel. Since this communication unit was a first model, it was quite expensive to use because of excessive power requirements and a rather short time between failures of components (low MTBF). Because of this constraint we instructed all the philosophers contacted via this device to limit the length of their remarks and focus on specifics. This was a bit of a blessing in disguise in dealing with noted philosophers and had the further benefit of allowing us to reproduce for you here the verbatim comments of each of the philosophers without any abstraction and any resulting bias on our part that might therefore creep in. Enough of our bias has already "crept in" anyway. The remainder of this paper, then, is the transcripts of the translation of the remarks from the original Morse type source language recordings.

Transcripts

The first philosopher we called upon via this device was a man who, in our opinion, has greatly influenced the development of the deductive sciences—Professor Leibniz.

Comments of Leibniz

"Gentlemen, the problem and its approach is quite clear cut. I have many disciples in the current society that can address this issue. I could recommend to you any of a number of competent operations researchers and even certain members of the new school of system dynamics as typified by the work of Forrester and Meadows. However, it is quite flattering that you have invested the time and effort to call on me personally so at least let me undertake to point you in the right direction and alert you to one possible pitfall.

"I observe the initial work statement prepared by your sponsor placed a large emphasis on the concept of cash. While it is true that the formal structure underlying the flow of money in the society is one of the fundamental concepts necessary for an understanding of the society, this has been carried by some disciplines to the point of being thought of as the only component. The emphasis on structure and relationships governing the flow of money has become a mirage preventing a true investigation of society's structures. In dealing with the concept of a cashless society you should take care to remember that money transactions are only, in many instances, a virtual representation of the structure that physically underlies the movements and transfers of goods and services in the society. Avoid becoming intrigued with the many data representations that the flow of cash can take on. If you wish to understand the impact of the cashless society, you must seek to build up a formal model of society which deals with the fundamental physical parameters such as energy and materials. With such a model you will be able to reflect changes in the handling of money in terms of the impacts on the more fundamental parameters governing the society. Within the framework of this model you will be able to construct alternative structures to represent feasible forms for the 'cashless society' of the future. Until you do make explicit the relationships governing the structure of the society, you cannot expect to do assessments and planning for the future, regardless of what topics you address.

"Many of the current alternative approachers are mere conveniences brought about by an inability to handle the true complexity of any model which would in fact represent our current society. However, the current emergence of computers provides a tool with which you can create and process models of sufficient richness to account for the multifacet aspects of such a complex dynamical system as the society in which you now live. This is a considerable advantage over the technology available in my time. Over the years a great many great minds have deduced the structures underlying various micro components of this system and it only remains to deduce the overall structure into which these may be placed. You have a challenging problem here and an obvious approach to be taken. Thank you for your time and this opportunity to converse with you."

We found Leibniz's view of the problem very encouraging and somewhat pleasing in its rather straightforward, clear guidance on what had to be done. Rationalists are always straightforward; it is the nature of their nature, i.e., how they think about anything. We were at this point, ready to actually tackle the problem. However, we would not have been accomplishing the objective of our initial contract if we did not seek other views. We next called on a man who has had considerable impact on the development of the inductive sciences—Professor John Locke.

Comments of Locke

"Ladies and Gentlemen, while my distinguished colleague Leibniz has certainly made some interesting points, I'm very much afraid he would send you down the wrong path. It is certainly true that economics, as limited to the observation of money flows and transactions, has not lived up to its expectations of providing a sufficient understanding of the society. However, it has not been because of its lack of models, but rather because of a lack of data and the ability to process the data properly. In the past data has been costly to collect and process; financial data, however, by its nature, is recorded in volume and regularity. The emphasis on this type of data has therefore been a result of its availability. Until the advent of computers, this served as a convenient workable represen-

tation of society to the extent we were feasibly able to observe the data generated by the society. Now the costs of gathering and processing data in electronic form are so minimal, relative to benefits, that we can obtain all the data of significance to the understanding of society. This is a considerable advantage over the technology available in my time. Certainly this view is well represented by those of my disciples who are now concerned with the subject of 'social indicators.' There is no pretention today, even on the part of most economists, that financial data alone is sufficient.

"If you therefore wish to address the questions of the 'cashless society' in a productive manner, then I would recommend a collection of all major social indicators into one computer system, so that various alternative data representations and statistical analyses methods can be utilized. Based upon this data resource you may then seek to utilize Delphi procedures to obtain the best judgments of the relationship of the data to the issues your sponsor wishes to address.

"You see, it is *hard facts, data, information* in its correct representation, that humans can judge and relate to their concerns. In particular, it is quite clear from the data *now* available that the society has already moved into the initial transition phase to a 'cashless society.' Those structures that Leibniz would wish to model are already in the process of change; therefore, *it is only by observing the data and its resulting trends that you will be able to detect what is really taking place. You now, gentlemen, have two data points in your analysis of this problem, and I wish to suggest that you will need a significantly greater number to obtain a consensus on the truth of the matter.*"

This result led us to question the wisdom of ever consulting with two philosophers on the same question. We no longer had a clear-cut approach. Perhaps we should have expected the discrepancies between the approaches offered by Misters Locke and Leibniz. This of course, necessitated the seeking of a third view. For this we went to an individual who had in his time the opportunity to reflect on the philosophies of both Locke and Leibniz—a Mr. I. Kant.

Comments of Kant

"Ladies and Gentlemen, and my noted fellow philosophers. I have been most disturbed by what I have heard here today. How can you propose approaches when it is unclear as to what is even meant by an assessment of the 'cashless society.' What objective do you in fact seek to meet? If you merely wish to observe the transition to the cashless society, then perhaps the program outlined by Locke is appropriate. If, however, you seek to influence the course of events, then Leibniz's approach may be more fruitful. In any case, it would be dangerous in this situation to rely on *one* approach. When you have clearly defined your objectives then you must undertake alternative approaches. You will quickly discover that, in the process of examining the relationships of your approaches to your goals and objectives, the separation of data-oriented efforts and model-oriented efforts is an unworkable artifice. Neither Leibniz nor Locke can ever do an effective job without borrowing from each other's philosophy, either consciously or subconsciously. I would note that even to observe the data one has to presuppose some model. Therefore, Leibniz is necessary, but not sufficient.

"The collection of social indicators always implies an underlying model for the structure of society that is being considered. Some model is always used to guide the data collection effort. Neither can one build a model to apply to an objective without having some concept of what data is available or can be collected. A model for which there is no

data has no content for a specific issue or objective. I would strongly urge you to require your sponsor to lay down a specific set of objectives and that you undertake aspects of both the approaches outlined by Locke and Leibniz within the context of those objectives. You will observe in such an effort alternative combinations of models and data which will impact on any specific issue. You will then be able to observe out of these alternatives which is the best for your purposes. From a practical standpoint, any attempt to look at the future offers a greater number of alternative model and data approaches than is feasible to carry out in any reasonable time. We humans are very versatile in terms of the perspectives we can create. It is only when you hold your objectives in view and require a recognition of the inseparability of data from models that we can focus in on what is meaningful. You can easily find today a great many of my 'students' in the schools of policy science, cost-effectiveness, and normative assessment techniques who are perfectly capable of carrying out such an effort for you. I would even recommend the use of Delphi, but not necessarily to generate a consensus, but rather for the contribution of alternative and/or diverse views on your topic."

Apparently, one or three philosophers can be useful. With the remarks of Mr. Kant I felt we had tied the pieces together rather effectively. However, there was still some money in the budget for this phase of the study and the sponsor of our effort would lose face with his peer group within his organization if we did not expend all that he had requested. After some consideration, we decided to call upon an argumentative old crotch by the name of Mr. Hegel.

Comments of Hegel

"Thank you. It has been of great disappointment to me over the years to observe the movement of western society away from the conflict between opposing views. There seems to be a mistaken belief that there is something illogical, chaotic, impolite, and/or nonproductive about an approach that is founded on structured debate. I am therefore quite pleased at this unique opportunity to illustrate for you how a new vista on your problem may be brought forth by the use of a philosophical approach that is dependent on conflict.

"From the comments of my fellow philosophers and the work statement you have provided me, it would seem all of you are working under a hidden premise. This is that the cashless society is merely a transition from the current financial structure to an electronic form for the transfer and accounting of the associated information for the exchange of funds. It has not seemed to have occurred to anyone that an electronic form for the exchange of money allows a completely different and opposing approach to dealing with the exchange of goods and services. In principle, the electronic form of accounting (in the broad sense) could allow the abolition of the very concept of money. With data in electronic form it would be possible to move the society to a complete "bid and barter" system. Individuals and organizations could hold wealth based upon goods and services directly and each exchange could be carried out in an auction and bidding procedure. It could very well be that in such an environment problems such as inflation might very well be minimized. I do not mean, in any sense, to pre-judge this alternative as the desirable way to go. Rather I recommend that you examine on a comparative basis the current plans and this opposing alternative. If you do this in a manner such as to arrive at the strongest position for each, then you may very well find another alternative, representing a synthesis of the two, which incorporates the best of both. At the very