Futurology and the Future of Systems Analysis

Forecasting the Future through Systems Techniques

Applied in the future tense, systems analysis takes on new and portentous proportions. When used as the methodology by which to "study," "design," or "forecast" the future, its techniques carry with them all the pitfalls and shortcomings of their applications in the present and the added difficulties attendant on "studying" something that has not yet happened. Lacking knowledge of what is yet to come, social forecasters attempt to achieve a future perfect state by devising a "rational" plan even though, as we have seen, their methods have not contributed demonstrably to a better present. In their endeavor they are, nonetheless, encouraged and abetted by all those who yearn for the orderly future as relief from the chaotic present. For the systems entrepreneur in search of new markets for his reservoir of restless talents, futurism invites unfettered play of imagination.

Just as systems analysis of the conventional type offered an enticing grab bag to practitioners with wide diversity and background, the art of designing the future has attracted an even greater heterogeneity. Arrogating to themselves the task of creating a better world, philosophers, urban planners, sociologists, economists, engineers, and many others have banded together in societies of which the leaders, prone to quote one another reverentially, bask in the glow of mutual adulation. With their conferences proceeding in cybernetic fashion, each one's result causing another to occur, futurists engage in solemn methodological discourse. Uninhibited by time or space, they indulge in simulations...
that range from the presumptuous to the ludicrous, a description the more apt when one recalls its derivation from Latin, *ludi*, meaning *public games and spectacles*. They posit a supranational model in which nations will behave more rationally than the people who populate them. They blithely overlook the eternal struggle for existence that makes coexistence a chimera. The design of the future "one world" demonstrates even more glaringly the gap between the perfection of the system dreamed up by the international jet set intellectuals and the imperfections which are the down-to-earth realities.

The more ambitious the model, the more likely is the fraternity of futurists to ignore fatal flaws and defer to it as a landmark. Such, for example, has been Forrester's computerized simulation of a city.1 Demonstrated here was the fact that only the most arbitrary assumptions, for example, unchanging environment, no suburbs, and external funding, could make the model "work." The procedures used by Forrester to compare alternative policies were, contrary to the systematic and mathematical pretensions of the exercise, intuitive, policy being adjudged desirable or undesirable without elucidation as to the basis for such evaluations. In his comment on the role of computer simulation models in the design and testing of alternative urban policies, one reviewer of Forrester's work observed that

there are risks in the extension of "systems analysis" to social problems: it requires both extrapolation of inadequate behavioral theories and assumptions about subjective values. The impressive combination of confident technician and massive IBM computer must not be allowed to obscure those risks.2

**The State-of-the-Art of Futurology**

In view of the limitations with respect to one simulated city, extension of the technique—in space, to include all cities, the nation, the world, or the universe; and in time, to encompass the rest of this century and part of the next—might seem ill-advised. And yet this is the determined activity of a number of organizations. One of them, the Club of Rome, is attempting to "simulate the reality of the world through mathematical insight." Funded by the Volkswagen Foundation, the group uses the Forrester model as its prototype. Its computer technologists having arbitrarily selected five main values as the ones important in the whole world, interlinkage is made by some eighty nonlinear equations "devised from the best information available in the international organization." The ultimate objective of this ambi-

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tious undertaking is “to find ways to project which institutions and which processes will be necessary if we are to reach the point where there is some global management of the whole world.” Presumably, management is the sumnum bonum, and everyone on the face of the globe will live happily ever after in the computerized paradise engineered with benevolence aforesought.

The systems approach attacks the future in much the same way as it deals with the present. There is the same pseudo-serendipity that “discovers” paths long trodden; there are the same tools and techniques, used now, however, without the few constraints imposed by real-life tests in the present. There are the data banks, which, according to the futurist’s handbook, must be appropriately stocked and organized and related to formal models of important dynamics. The fancy guesswork, with all its technological embellishment, of simulation and gaming. Delphi techniques and scenario construction, will serve to “invent credible paths between present conditions and hypothetical future states.”

Embedded in this bill of particulars are many normative, methodological, and unsupported presuppositions. The assumptions are also made that information in data banks is, or can be, appropriate to needs not yet defined and organized according to specifications not yet delineated; and there are formal models both adequate and so future oriented that they anticipate what may at some later point in time prove to be important dynamics. As in the case of conventional applications of systems analysis techniques, where the more the critical observer knows of the specific field, the less convincing he is likely to find the “technically” contrived solution to its problems, so with the assessment of the art of the futurist, the farther away in time and the more widespread the uncertainty, the greater is the ease of acceptance of the grand plan.

Notwithstanding professionalization of the soothsayers’ and seers’ auguries in the form of games and other Delphian devices, or even R. Buckminster Fuller’s “comprehensive anticipatory design science,” the design of the future is little more than an image projection, more revealing of its creator’s Weltanschauung than of the form and direction of social changes ahead. The model he devises, whether he knows it or not, epitomizes the basic philosophical conflict between free will and determinism. The will exercised is, of course, his, for he has made

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a number of important value-laden judgments and choices. Determinism is displayed in the very conception and operation of the model. Based on and extrapolated from a view, however eclectic, of the known present, it has certain "logical" and, therefore, unavoidable conclusions, which, moreover, are in the nature of the closed loop of a servomechanism. The whole process of systems analysis, or social engineering, takes on a decidedly architectonic thrust when applied to the future. Because of the likelihood of prediction feedback and the opportunity for advocacy, open or covert, of a particular course of action, the methodology provides the makings of a self-fulfilling prophecy. Popper reminds us of the influence that prediction may have on the predicted event and calls it the "Oedipus effect." 5

Bertrand de Jouvenal describes the process as follows:

Any so-called "prediction" is always a starting point for examination of what should be done on the assumption that it is true, but always also an outcome of assumptions concerning what will have to be done to make it come true. 6 (My italics.)

Self-fulfillment is bound to come about when the essential components that are selected are organized in such fashion as to make the prediction come true.

Systems analysts and other futurists who have taken upon themselves the task of designing a better future seem to regard the undertaking as their private Promethean burden. Bauer, for example, describes the problem of foreseeing the future as among the most difficult and unsolved as any with which man is confronted. "Yet it is a problem which is inescapable," he avers without, however, supplying the reason for having assumed a task so thankless and hopeless. His exposition comes to the conclusion that a possible solution must be attempted "no matter how poor the result." 7 The assumptions built into the logic here and elsewhere in the futurists' approach are that the future can be "studied" or "foreseen"; that there are methods by which to predict social change; that social change should be planned and controlled, even though the techniques are admittedly crude and the results "poor"; that application of their "rational" procedures will guarantee a better future than some other, perhaps less "rationally" devised.

Unravelling the mystery of the future was once the bailiwick of sooth-

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5 Karl R. Popper, The Poverty of Historicism, London: Routledge & Kegan Paul, 1957, p. 13. In the legend, Oedipus killed his father, whom he had never seen; this was the direct result of the prophecy that had caused his father to abandon him.

6 Bertrand de Jouvenal, "Notes on Social Forecasting," in Forecasting and the Social Sciences, Michael Young, ed., London: Heinemann, 1968, p. 120.

sayers with omens to scrutinize, seers with crystal balls, and astrologers with their charts. The Cumaean Sybil and the Delphian Oracle of antiquity are the old mythology. The new mythology has developed its own shibboleths. The mystique of futurism purports to study the future scientifically, explore alternative futures rationally, and thus design the best of all possible futures. In assuming that that which has not yet happened can be studied, the futurists proceed without acknowledging their intellectual indebtedness. Actually, they follow the footsteps of philosophers of history, especially those historiographers who have tried to discern and analyze recurring patterns of the past as referents for the pattern of the future.

Oswald Spengler traced the decline of many civilizations and foresaw decay and ruin as inevitable. Toynbee’s hypothesis was that civilizations crumbled when they failed to meet certain challenges. The ray of hope that would save twentieth century Western man was the salvation to be achieved through religious penitence. For Sorokin, whose cultural dynamics were derived from a kind of Hegelian dialectic, religion itself was a manifestation of the prevailing social and cultural Zeitgeist, and neither extraneous to nor exerting influence on it. As a result of the inexorable “law of immanent causation,” religion and all other manifestations of experience in the Sensate period, which Sorokin designated as ours, are sensual, secular, and non-transcendental.

That no one true pattern of social change has emerged from attempts at systematic study of the past is manifest in the internal inconsistencies within the divergent theories, the contradictions among the theorists, and the generally Procrustean treatment of intractable events of history resistant to the pre-set mold into which the historiographers tried to cast them. Hindsight seems to suggest that the clue to predicting most accurately the shape of things to come lies in the rare and brilliant intuition that identifies a key dynamic aspect of the social order and perceives its potential developmental significance. James Bryce for his time, Gunnar Myrdahl for our time, and Alexis de Tocqueville for all time exemplify the durability, if not permanent verity, of forecasting based on the combination of social insight, experience, and judgment. Their approach may not have been necessarily right, but because it made no pretensions to “rational,” “scientific,” or “logical” methodology, it

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could be readily evaluated and assessed, accepted or refuted, whichever seemed reasonable.

Such is not the case with the social forecasting performed by today's futurists whose expertness has not been demonstrated convincingly with respect to understanding the past or present. Their scholarly conferences and compendia of papers having bravely thrashed the straw man of conventional statistics for being unreliable and inadequate, they try to develop "social indicators," which will somehow provide macro-insights into the multiplicity of changes still to come. Ignoring the perils of linear curve extrapolations, they repeat old mistakes by establishing their conception of a firm and reliable data base which then becomes their springboard into the future. Their literature stoutly affirms that the indicators need not necessarily be quantitative, and, in fact, that it is desirable that the qualitative be considered. But their focus and emphasis belie their heroic assertions. They start ambitiously with the universe or Planet Earth but soon whittle out a few variables which they and their computers can handle comfortably.

The mythology of systems analysis accompanies its forward march into the future. Presented as though it had accomplished wonders and taken the guesswork out of planning, the technique is represented as the key and clue to the salvation of mankind on this planet. Those who sell this notion believe their own sales story and they are finding buyers among decision-makers in the far flung corners of the earth. What is new and portentous here is that invocation of "scientific" tools and techniques, which provide a dutiful and convenient rationale for whatever cause of action seems politically expedient, may stifle thoughtful research and experimentation. Heady with heterogeneous facts and shy of theory, the futurists may be directly or indirectly abetting the anti-intellectualism that has already gained considerable momentum in this country and abroad.

Through propagandistic promotion, iteration, and reiteration, the tools borrowed from technology and the techniques derived from a heterogeny of disciplines are not precasting the shaping of the future. As the accepted means for controlling and directing social change, they have transformed futurism from the cynical game of the men under the Iron Mountain,10 and others in "think tanks" secret and not-so-secret, into a game plan for the social order to come. The players are experts, entrepreneurs, and social engineering buffs who have persuaded themselves and a gullible public into believing that the future can be studied, that their methods should be used even though "crude" and leading to

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"poor results," and that the future designed through "rational" procedures will be better than its much maligned, disorderly, democratic alternative, arrived at through the presumed anarchy of social forces without vector.

Systems Analysis in Social Perspective

It is important that we concern ourselves with systems analysis as it appears in the future tense; it is imperative that we keep our focus on the self-fulfilling prophetic propensities implicit in its present usage. We first must recognize systems analysis as more than an assemblage of techniques and methods but rather as a social phenomenon fraught with social significance, perhaps all the more because it is characterized by contradictions, internal and external. Even though its assumptions and presumptions lack empirical confirmation, it has, within a remarkably short time, developed into a pervasive methodological ideology. The state of its art paradoxically less advanced than that of many intellectual streams from which it has derived form but neither content nor discipline, it has been accorded a prestige not earned and a respect not demonstrably deserved. Its mentors the military and its models econometric, its credibility has somehow managed to survive the defrocking of McNamara and the plunge of his methods to the nadir of their popularity in the Pentagon as well as the disenchantment among economists over preoccupation with the technique that has won international kudos for their professional brethren. The very durability and resilience of the systems approach is a factor worthy of note in a review of its phenomenology.

Supposed to overcome the piece-meal fragmentation of other, more specialized approaches, the systems approach has provided a language that talks of total embrace of social processes and dynamics but delivers methods that reduce wholes to their arbitrary and often least important common denominators. Supposed to solve social problems, it has merely served to redefine them in a way amenable to the technical treatment. If, as we have observed in so many cases, an initial error was attributing to certain categories of events more precision than was warranted by their nature, then a cardinal sin was committed in the case of events that were human and social. Experience has shown that the orderly and predictable factors may, in the final analysis, be those of least importance in the dynamics and direction of social change.

Carried to logical extremes, emphasis on quantification could so limit and bias perspectives as either to distort and violate the essential nature of social problems by forcing them into a tractable soluble state or to

18 Bauer, op.cit.
institutionalize and legitimize neglect of them or their vital parts. All but forgotten in the methodological game-playing is the fact that the systems approach was supposed to encompass in its comprehensive grasp all facets and not a limited aspect of the matter under consideration. Merchandised as a Space Age specialty, a precise and sophisticated set of tools, systems analysis has become the stock-in-trade of practically any individual or organization seeking a government grant or contract or engaged in a project. Its language is the life line of everyone who aspires to make his work appear systematic or technically sophisticated. Deeper probe reveals how thin lies the veneer of glossolalia over fuzzy conceptualization and hyperkinetic data accumulation. With emphasis of both buyers and sellers of systems on quantity, qualifications are nebulous and quality control of output nonexistent.

As an instrument of public policy making, techniques of systems analysis have encouraged emphasis on the wrong questions and provided answers the more dangerous for having been achieved through a "scientific" or "rational" means. The ultimate result is a systematic foreclosing of promising avenues toward possible improvement and reform. Contrary to being an instrument of innovation, the systems approach is essentially reactionary. By defining problems in terms accessible to the tools, systems analysis has encouraged systematic neglect of facets and variables which could be crucial in both their generation and amelioration. In most social problems, even those attributable in large part to technology, aspects amenable to technical treatment are likely to be less important than those which are culture-bound, value-laden, and honeycombed with a political power network.

Cost-benefit ratios, program budgeting, and other procedures have forced preoccupation with only limited and arbitrarily delineated facets of public affairs, with the objective more likely to be bureaucratic self-justification than the general social welfare. Supposed to produce economies in cost of government and efficiency in operation, the technology of systems analysis with its hardware and software has burdened government decision-makers with elaborate mechanisms which use vast resources of money, time, and energy without demonstrably cutting costs or improving efficiency. Despite the exquisite calculating capabilities of computerized accounting, there has been no serious attempt at a cost-benefit study of systems analyses conducted at government expense. No one in government can tell how much is being spent on information systems and cost-benefit studies nor how much is involved in the frenetic nationwide switch to often unworkable and possibly already obsolescent program budgeting. And even if the costs could be enumerated, the benefits would be nebulous.

The application of the techniques may yet result in game-plan gov-
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Government relevant primarily to its simulated and skewed model but unresponsive to a fast-changing society. While administrators may have become peculiarly susceptible to and satisfied with symbolic solutions, the public at large is becoming more acutely aware of its rights and could demand more tangible evidence of concern for its welfare. Perhaps herein lie the seeds of a coming social revolution, one in which the technologically contrived and perfected image of a well-being never experienced will be the prime target.

Dazzled by the panoply of "Space Age tools" and overcome by the panegyrics of systems analysis enthusiasts who have made public problem solving their business, administrators have been put on the defensive vis-à-vis their managerial efficiency. They have been captivated by the sophisticated techniques touted to be so potent elsewhere and try to improve performance, however ill-defined, by hiring outside experts as consultants. While use of outsiders to perform specialized tasks is not new, what is noteworthy here is the growing incidence of government-by-contract that removes from public officials responsibility of the decisions made. Because consultants are never held accountable for bad advice, the arrangement shields everyone from criticism. There is already substantial evidence of dependence on the strategem of hiring outside experts to perform systems studies as a political ploy to convey the notion of official attention even when action is not politically feasible or desirable. Moreover, because of the way in which systems analysis can be crafted to suit the occasion, the use of hired specialists may serve the politically useful purposes of masking bureaucratic ineptness and inadequacy, of providing support for a course of action already decided upon, or of working as a red-herring, diversionary tactic. Whatever else it accomplishes, the team of outside systems analysts, pre-empts function and funds which might otherwise have enabled professional research. "Captive by contract" research blunts the edge of justifiable inquiry and criticism and militates against exercise of intellectual autonomy that should be encouraged to make and keep government responsive to social and human needs. What is ominous is that there will always be willing mercenaries, some of them academic and all with an entrepreneurial bent interested in using closed-book, mission-directed analysis as a vehicle for personal fame and fortune. That this is happening at the very time that universities and institutions of higher learning are feeling the backlash of public disaffection may have significance the full dimensions of which are not immediately discernible.

The trend at all levels of government toward increasing involvement with private consultants has deeper implications than the sometimes mentioned threat to the Civil Service posed by circumvention of regulations through occasional hire of an outside specialist. Emerging as a
factor in policy-making processes are the constituency of research institutes and corporations which, individually or in tandem, are becoming a kind of shadow government. Allocated contracts to execute the planning, design, implementing, and even evaluation of projects costing millions of dollars and thousands of lives, these techno-corporate entities have been seen as a force undermining the very form of government prescribed by the Constitution. Ready with a façade and made-to-order proposals designed to infuse confidence in their “systems capability,” far-ranging consortia sometimes compete for and sometimes cooperate in transportation systems in the Northeast, low cost housing in St. Louis, rural development in Uruguay, and agricultural reform in Nigeria. Hired by and under the mission direction of regulatory agencies, consultive experts are in a position to perpetrate a kind of advocacy planning that has stunning potential for circumventing the checks and balances protective of the democratic process and influencing the shape and direction of domestic and foreign affairs. The selective examination and evaluation they perform lend the authority of technico-logical justification to regulations which may serve certain industries better than the commonweal. As adjuncts to advisory bodies, they are likely to be called on even more frequently in the future as public issues encompass considerations which are increasingly technological in nature. As they apply their skills in such situations, outside experts bring their own prejudices and predilections. In areas of social policy planning, consultants chosen for their “systems competence” could prescribe courses of action which could lead to a certain, but democratically unsafe and unsound, social order.

The game of musical chairs has long been played in government circles. Admirals and generals retire to become top potentates in industries that advise and sell their wares to the military. With every change in administration, the top echelons of appointees move out in a body. In recent years, many have joined research institutes, where they accept the commission to take on tasks which, as bureaucrats, they proclaimed were impossible. The advantage they distinctly enjoy in the new location is the freedom from the responsibility to provide workable, implementable, and realistic plans. As civil servants they had to fulfill certain obligations and meet some expectations; as freelance operators they have no such constraints and their output is subject not even to the modicum of quality control that may have been applied in the bureaucratic setting.

With the exodus to the consulting sidelines, there is the periodic influx of industry’s best, armed with the latest tools and techniques for ensuring efficiency of operation. But, in the resulting blurring of lines between the public and private interest, the public’s welfare receives
low priority. The coalition of special interest and corporate power can influence decisions of far-reaching importance, with the pertinent considerations tailored to fit better the needs of certain select groups than the public at large. The role and function of government to protect the interests of the public become more and more attenuated as the key points in the decision-making apparatus are relinquished. Many regulations which should be enforced for the social good may be clearly uneconomical and not good business. But, when government accepts business as its model and economics as its decision-making means, and depends for guidelines on experts whose techniques have a strong bias, its goals are calculated with measuring devices of limited scope. In accepting and applying systems techniques, government planners have allowed the medium to become the message. The technique dictates the desiderata and assigns the priorities according to the pre-fabricated scenario.

While remarkably successful in becoming entrenched as the Space Age nostrum for society's ailments, systems analysis has not served as a likely cure for the aerospace industry's failing health. Having recognized its failure as a diversification tactic to supply job opportunities for the thousands of displaced workers, at least one representative has acknowledged that the systems management developed to such a high degree of sophistication in his business has little relevance in social concerns. To suggest that systems analysis should not be hailed as the prime spinoff of the national space endeavor is not to belittle the accomplishments of the National Aeronautics and Space Administration nor any other bodies, public and private, that have engaged in the gigantic undertaking of getting men and instruments to the moon and beyond. Systems techniques, in myriad forms, may have played an important part in these activities. Certainly, the organizational skills displayed have been spectacular. But experience has shown that the methods are not universally applicable. Systems management, as applied in the Department of Defense and National Aeronautics and Space Administration, has little direct relevance in the social arena; social systems resist management. Social systems, as Lockheed's engineers discovered, are "complex, conflicting, and indefinable." Their components cannot be treated like little black boxes and their goals are prismatic—a shifting mosaic of the society's values.

The variegated experts who have chosen to invade the market for systems studies and designs have been slower to acknowledge the inade-

18 Ibid.
quacy of their tools for the job to be done. With technique their sole repertory, they ply their trade wherever there is a willing customer. And there still will be many. In the move into the systems field they have come from a heterony of intellectual backgrounds, in all of which certain bodies of theory and reservoirs of accumulated knowledge kept them within bounds. The farther from home base the experts have roved, the more attenuated has become the discipline. In fact, the less acquainted they were with the problem areas, the louder have been the pronouncements of the value of objectivity, the quality they were substituting for substantive knowledge. On this point, Popper’s wisdom is especially cogent. He stresses the fact that scientific objectivity is not a product of the individual scientist’s impartiality but rather an outcome of participation in a particular scholarly community based on the inculcation of standards of discourse and investigation as well as the public disclosure of methods and results. 19 So far as an individual scientist’s objectivity can exist, it is not the source but the result of social or institutional arrangements governing the discipline. What passes, in the systems approach, for interdisciplinary effort turns out to be undisciplined activity, a game almost anyone can play. Nonetheless its advocacy assured through interest now vested, systems analysis and its surrounding methodology have become the prevailing style in public and private affairs. Even though fulfillment lags far behind iterated promise, proponents will entertain only those questions having to do with technical niceties.

Adherents of the approach usually counter critical review with an offensive: “What technique would you propose as an alternative to systems analysis?” “How would you improve systems to accomplish socially worthwhile purposes?” “To what better uses would you put systems analysis?” These questions, like the logic that prompts the technique, are inappropriate in the context in which they appear. The fact that they are raised at all indicates the extent to which the technological imperative enters into the phenomenology of the systems approach. They might appropriately be countered with, “Why should we use systems analysis in these matters at all?” “Why not explore means and methods better suited to the problem at hand instead of slavishly invoking techniques just because they are available?” Muddling through is probably safer in the long run than the wrong cure. Just because we have an arsenal of hydrogen bombs and powerful delivery systems need not mean that we search out a potential enemy to eradicate from the face of the earth. Similarly, we need not feel impelled to provide ex post facto justification through utilization of every technological device and development that springs from Aladdin’s lamp. A technical

19 Karl Popper, The Open Society and Its Enemies, pp. 405-406.
approach that may have served a useful purpose in one context may not be viable in another and may actually be detrimental.

The question we have asked in this research study is, "Are the techniques of systems analysis appropriate when we are dealing with problems which are essentially human and social?" The findings indicate that in their present condition they are not. And the direction in which they are developing promises little improvement. Refinement of methodology has led only to greater preoccupation with abstraction while the mythology that social problems can be solved remains unchallenged. In fact, this false assumption plays an important part in the perpetuation of the magic spell which promises a technology to solve social problems.

This is not to say that systematic approaches do not have a contribution to make to the understanding of social process and improvement of the social condition. The problems besetting mankind are plentiful, complex, and multi-faceted enough to provide challenge to and invite the commitment of professionals from a variety of disciplines. The clearly non-linear, normative, and value-laden dimensions of these problems need deter the efforts of only those experts who approach with predetermined solutions. The systems approach, if it is ever to become conceptually sound, must be a genuine multi-disciplined endeavor, in which contributions from the pertinent fields of knowledge are meaningfully synthesized, and not merely homogenized into a synthetic and symbolic language.

Based with some degree of confidence on the empirical evidence, the rebuttal to assertions of defensive support for current systems analysis as the answer to society's problems could state the known truth that, despite the methodological, systematic, and systemic pretensions of systems analysis and systems analysts, there is no single method for all problems for all people at all times. There is no cosmic scale solution. The appropriate approach is a function of the particular problem, the particular researcher, and the attendant circumstances. Each analyst must seek out, develop, and apply the particular set of tools required for the task at hand. The outcome of his work will probably not be perfect, but he will not feel called upon to rationalize his results or justify his course of action through manipulation of technicalities. Amendments and improvements will occur, if ever, on the real-life scene and not on the shadow screen reflecting the playing out of a scenario. To the oft-iterated counter argument that one should not criticize systems analysis unless one can supply something better, there is an answer—competent research and experimentation, with conceptualization first, technique last, and professional judgment always.