

MODELLING STUDY FOR A POLICY PREPARING PROCESS

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INTRODUCTION

This report presents the results of an attempt to model a policy-preparing process (P.P.P). The process is a sequence of events or operations which develops systematically an intended course of action. A methodical p-p-p has become a necessity by now, since the complexity of social systems and the dynamism of social change would otherwise get out of control and lead to chaos. The careful preparation of social policies, therefore, is a field that needs much study and reflection.

The present study develops a basic framework and method for such policy preparation. Much more work is necessary to fill in all the details of this complicated process. Moreover, policy-preparing has to be coupled with decision-making in order to complete the policy-making process. Thus, this particular study is only covering a small segment of a broad and deep space which the policy sciences are trying to fill.

From the opposite end of the spectrum, policy-preparation follows another developing field, that of future studies. As policy science arose from the challenges of social complexity; so did future studies reflect the acceleration of history. In both cases, human institutions are trying to increase their knowledge and control their destiny.

The report which follows is divided into two parts. The first presents a conceptual framework of the proposed model which in essence, responds to the problem and sets the scope of the inquiry. The report then outlines the dimensions of the system within which we shall operate. The second part operationalizes the framework of the first part by presenting a model procedure for policy-preparation. This procedure is shown in a diagram and explained in the text on the basis of a simplified systems approach.

1. CONCEPTUAL FRAMEWORK

We shall begin this exposition by making some brief comments on the conceptualization of (p-p-p). This outline will relate p-p-p to the larger policy-making process, which is itself part of the overall systems theory currently utilized in the policy sciences. This section will accordingly present the rationale, the definition and the systemization of p-p-p.

1. RATIONALE: Problem-Preventing

The basic thesis of this study is that policy-making and social-forecasting are logically and pragmatically related processes, therefore, they should be explicitly and operationally linked. In general, this close relationship holds true between future studies and policy sciences thus, it should be promoted to their mutual benefit.

The basis for this thesis is that the acceleration of social change along with the sophistication of social systems necessitate longer lead times for making social prognoses and planning public policies. The combination of these recent historical trends demand a readjustment of human reactions to future possibilities. Not only are forecasts and plans in the social scale more important than ever before, but they must also be performed in conjunction with each other. Forecasting without planning is futile, while

planning without forecasting is utopian. Only together can the two processes maximize their usefulness to society and contribute to the improvement of human knowledge and control of the future.

More specifically, the changing conditions accompanying historical acceleration and social complexity increase the value of prevention over that of cure. As events move faster, and human power increases, the effects of our actions upon nature and society become critical. Under such circumstances the repercussions of human decisions take on a much longer and wider scope. Therefore, decision-making can no longer be a trial and error operation, and neither can society muddle through its problems.

Simple prudence dictates that whenever possible one should try to avoid trouble, rather than wait until confronted with it. So far, neither our forecasting abilities nor our environmental imperatives made avoidance either possible or necessary in most cases. The halcyon days of simpler societies and laissez-faire policies, are gone and in their place we have fast-moving chain-reacting events. Thus, to wait for the effects of these events to become critical could be fatal. Increasingly, a wait-and-see attitude becomes impractical.

Taking into account these developments, policy-making should now emphasize crisis-avoidance rather than crisis-management. Only when avoidance is impossible, should we fall back on handling crises as best as we can. Unfortunately, when crises arrive it is often too late to resolve them in the best possible way. Thus, we have to make do with various improvisations.

Naturally, we can never be so omniscient and omnipotent to avoid all problems. Given our limitations, all we can hope for is to be able to see ahead clearly enough to prepare for the most important eventualities. The development of social-forecasting should provide us with alternative probabilities of the future so that public policy can come up with sufficient options to avoid some problems and meet others. It is in this sense that the human capacity for problem-solving should now be supplemented with a systematic effort for problem-preventing.

This supplement can only come about by increasing the foresight as well as the control of public institutions over social change. One must be cognizant that increasing social control presents grave dangers to individual freedoms. All social control should therefore, be undertaken with great caution and only if it has been shown to be the lesser evil in the prevailing conditions. It is precisely this assumption that we are making in this study. The dangers of collective suicide and natural catastrophe are becoming too great to be given second priority to individual freedom to act irresponsibly and short-sightedly.

This study then is an attempt to rationalize our capacity for foresight and control of social change. By improving this capacity, we shall be in a better position not only to know where we might be going but, to prepare for such eventualities, if not determine ourselves where we should be going. Creating our own future in a conscious and planned way will mark our coming of age. As a result of the forecasting study, we assume that improved foresight is possible and with it we are given a chance to do something about the future. Since social futures are rarely inexorable, the usefulness of forecasts lie in our response to them. Once we have arrived at some idea of what the future might be, it is our duty to act accordingly. Preparing for such action is what we shall consider next.

2. SCOPE: Policy-Preparing

From what we have discussed thus far, it would seem that one of the most crucial functions of government is the preparation of policy to meet future events. Foreseeable and controllable social change requires well-prepared public policies, so the civil organs of society must be geared to do the job.

The job of policy-preparing should be distinguished from that of policy-making as a whole. Policy-making could be seen as the entire process of policy-preparing and decision-making. It is therefore made up of two segments: the former being primarily technical and the latter political. Wise decision-making requires proper preparation. Hence, in order for political decision-makers to arrive at the best policy, they must receive professional advice from specialists in the policy sciences.

It is this function of policy-preparation that we shall outline here, i.e. the pre-decisional stage of policy-making. We have chosen the term policy-preparing to emphasize the close relationship between social forecasting and public policy. As we mentioned in the previous section, policy-making must become much more future oriented than before and in doing so it has to approach and utilize social forecasting. We thus, assume the indispensable coupling of these two procedures which results from the fusion of anticipatory and future policy studies.

In this brief report we shall not go into any detail of either process. Social forecasting has already been treated as part of the overall process, thus, it shall be taken as an input to policy-preparation. As for policy-making, it has enjoyed widespread attention from political scientists, so it will not be treated here.

Because there exist a multitude of studies on planning, we shall assume their main findings and try to synthesize their salient points into an eclectic model. In this way, we join the relevant aspects of the decision-making process into an overall forecasting-controlling framework. P-p-p will thus follow and complete the forecast-generation and assessment process.

We have chosen here the term policy-preparing to that of policy-planning as a more general concept. Planning, of course, is an integral part of policy-preparing, but so is programming and budgeting. In this sense, policy-preparing includes the entire PPBS and takes it as our point of departure. Recognizing the obvious limitations of the original system, we shall go beyond it to develop our policy-preparing model.

Utilizing PPBS as the skeleton of our model, we shall divide policy-preparing into three main phases:

1- Planning:

This is the substantive process of designing a particular system for a particular purpose. Policy-planning involves the systematic creation of alternative responses to future conditions. These responses require certain structures to perform certain functions. Planning uses the components of matter, energy and space to organize a functional mechanism for a future event. Planning, therefore, draws the blueprints for a possible future activity so that the form and content of the design optimizes the utilization of resources in relation to the requirements of the operation.

2- Programming:

This is the process of scheduling a series of operations called for in the plans. Programming thus, introduces the time element into planning. It is, in effect, the strategy by which the plan could be put into action. This temporal nature of programming tries to find the best method to reach the particular objectives of a plan, and overcome any obstacles in between. Working within the parameters of the plan, the program orders the variables so as to optimize the operation of the project. It thus provides the necessary means to fulfil the given ends in the future.

3- Budgeting:

This is the normative process of determining the costs and benefits of the plan. Such determination requires pricing the human and material resources needed in the plan and comparing them with the values which the plan will enhance. The calculation tries to minimize the costs and maximize the benefits so that there is a positive pay-off to the operation. In this sense, budgeting must take into account more than just material elements in order to arrive at the plan's true value. This broad interpretation of budgeting weighs the pros and cons of the plan and provides the net rationale for it.

The above brief descriptions should suffice to indicate the way these terms will be used here, which is not necessarily their definition in other contexts. What should be emphasized in this connection is that PPBS could become more sophisticated thereby taking into account human and other intangible elements even if they cannot be precisely measured. In this way, we hope to produce an improved and humanized PPBS particularly suitable to the policy-preparing process.

The following page illustrates the basic elements of the system as they have been explained above. To clarify the essential operations of these processes, the drawings have been kept at their simplest level.

3. SYSTEM: Factor-Processing

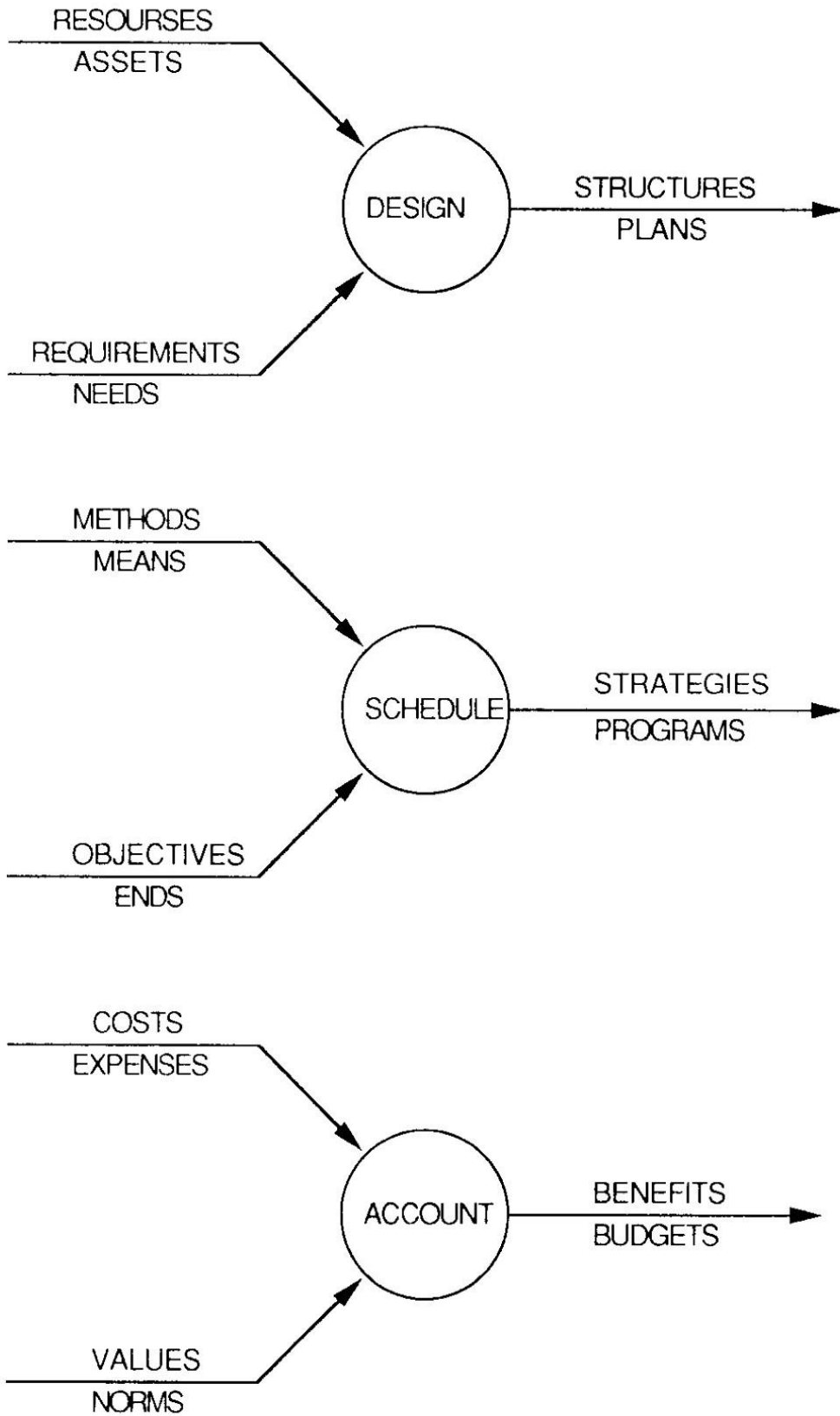
Although we have used the term "system" before, we have not yet defined it properly. For our purposes, a system is a structure - an ordered group of elements- which is meant to perform a function. In this sense, a system may be linked to a mechanism or an organism. On the basis of this simple analogy, there has grown a whole systems theory to describe and explain the common elements of all structures and functions.

We shall use here the main principles of this theory in order to construct our model. In the most general terms, a system exists within an environment with which it may interact. This is the case with open systems which exchange inputs and outputs with their environment. The overall purpose of these systems is to transform inputs into outputs. In that sense, they are converters of something into something else. This something is a set of factors selected by the system, processed therein and reformulated as another set of factors. These factors are independent constants and variables provided by the environment, which through the intervening process within the system become the dependent constants and variables released into the environment.

This cause-effect process is triggered by some environmental stimulus perceived by the system, which thereby forces it to produce a response. The process between the stimulus and the response may range from the very simple and automatic to the very complex and considered, depending on the degree of sophistication of the system. The type of systems that we are dealing with here are rather sophisticated to the extent that they are often treated as "black boxes" of unknown conversion processes.

The PPBS which we have elucidated thus far shows one aspect of looking inside the black box. We shall now introduce another aspect of this complex process. From this perspective we can discern three types of inputs entering the system being somehow woven together within it, and finally emerging as a single synthetic output. The produced output for our system is of course the proposed policies. As for the received inputs, we shall divide them into three categories: dynamic; informatic; and cybernetic. The first two are relatively direct and independent environmental inputs; whereas the third is the feedback from the system.

P. P. B. SYSTEMS



In the case of the social system as a whole, these three functions are preferred by the economy, society and polity. In general, however, they are handled by equivalent structures. We shall take each of these inputs and follow their flow within the system by which they are then converted into an output. In that sense, these processes may be considered as sub-systems which interact with each other within the overall policy-preparing system. Let us then see how these sub-systems can be described:

a) Dynamic:

This is the basic thermodynamic or matter-energy transformation process. All open systems must receive some energy from the environment in order to operate; often they must also receive raw materials and other resources which they can convert into finished commodities. The system through its intervention acts in a certain way to rearrange one configuration of matter and energy into another; naturally, losing something in the process. In the case of social systems, of which the policy system is one kind, these inputs are both tangible and intangible, thus compounding the problems of analysis. In any case, the quantity and quality of these inputs form the parameters of the system's production and impose the constraints of its operation.

b) Informatic:

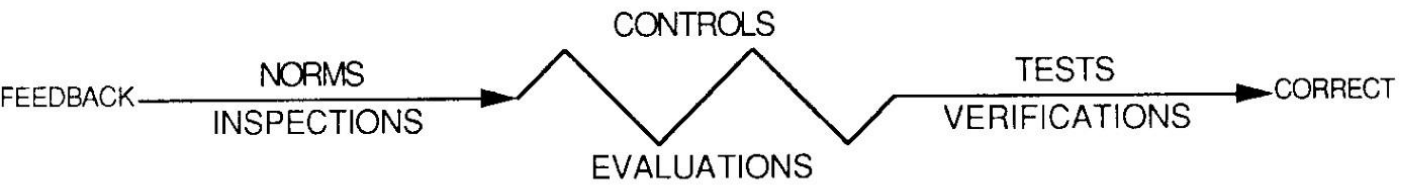
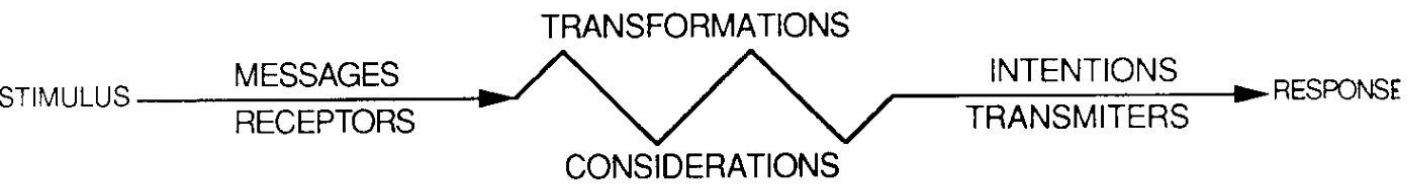
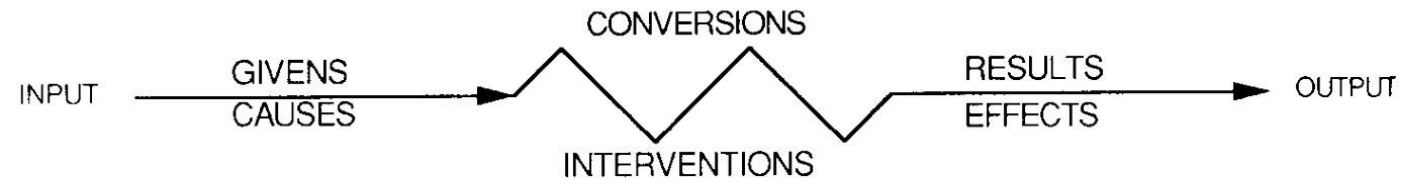
This is the data-providing process upon which the system operates. The informatic process carries the messages from the environment through the system and thus determines the form and content of the final product. Unlike the thermodynamic system, the information system is not entropic; thus the spread of information does not diminish its intensity. It is the information inputs that provide the stimulus for the system to produce a response. If the response is to be a good policy, then the input and treatment of information is very important; that is why in the policy-preparing system the information process is paramount. The processing of information should be done in such a way as to minimize the distortion and to maximize the meaning, thus optimizing its utility in policy-making.

c) Cybernetic:

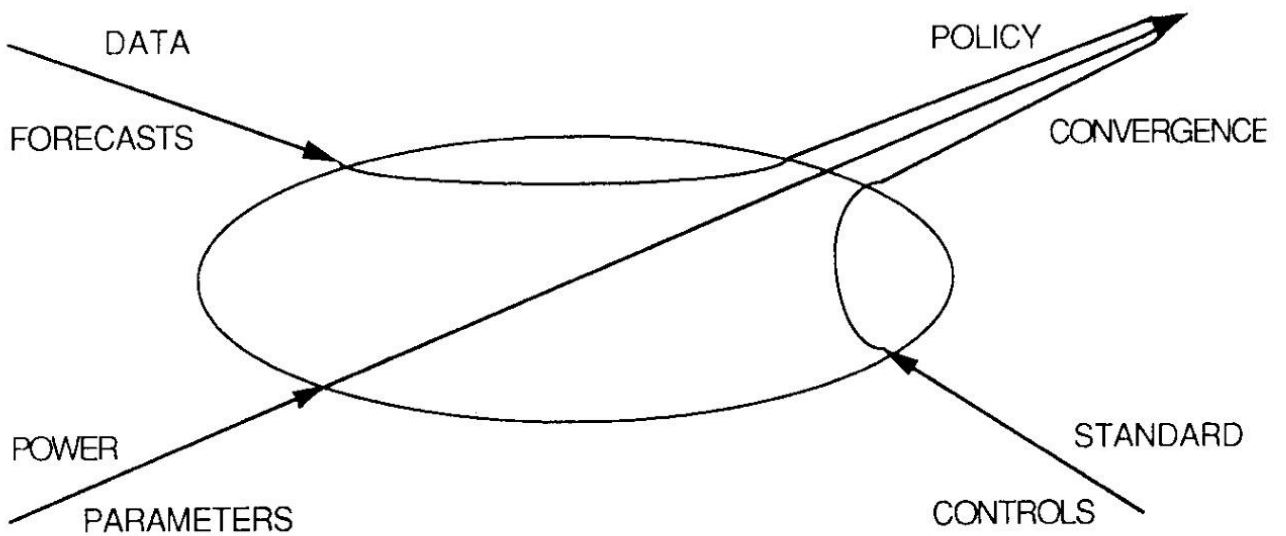
This is the normative process of the system, through which various standards of performance are maintained. This process assures the evaluation and control of the system's operational level. One of its main functions is to keep the system in a steady state or equilibrium with the environment. The inputs to this process are the experiences of the past coupled with the given norms of performance. On this basis, the cybernetic process monitors the information sub-system and assesses the dynamic operations to ensure their stability. If there is any deviation from the acceptable performance, the control mechanism feeds back corrected instructions to re-establish the given course of action.

All together, these three subsystems overlap and eventually merge to form the policy-preparing process. In the next page, we have drawn first separately and then together, the above three processes. In reality these are loops rather than lines, because part of the output into the environment returns after certain alterations to become a feedback input for the system. These processes then interact both inside and outside the system to produce a sequence of policy cycles in consecutive time periods, thus perpetuating a series of different policy generations.

D. I. C. SYSTEMS



POLICY MODEL



II. OPERATIONAL PROCEDURES

The diagram from the previous page shows the essential components of our policy-preparing process outlined above. This highly stylized drawing is made up of three lines which begin at different points which eventually merge towards a new point. The merger occurs within the oval which represents our system. Thus, there are three arrows going into the system and a single one coming out. The three arrows of course correspond to the informatic, dynamic and cybernetic processes of the system and the composite arrow corresponds to the policy response.

On the basis of this structural presentation, we are now in a position to provide the operating procedures. To do so, we shall enter the "black box" and show the most important centres of activity along with their inter-connections. We shall thus highlight the main foci and loci of policy preparation. The diagram in the following page illustrates a more detailed policy-system model showing the operating junctures and the communication paths of the various processes. We shall, therefore, spend the rest of this study explaining the different aspects of this policy-calculus.

Perhaps, the first thing that we should notice in the diagram is that it has three points of entry: each one corresponding to the above mentioned sub-systems. On the upper-left corner enter the inputs of the informatic process; on the lower-left corner enter the dynamic factors; and on the lower-right are the cybernetic inputs. All these ultimately exit at the upper-right corner as the policy synthesis.

It is obvious that so far the diagram corresponds to the essential features of the Policy-Systems Model. In addition, the calculus diagram incorporates the PPBS components. Thus, the three diagonal (lower-left to upper-right) lines represent the main elements of the planning, programming and budgeting process respectively. In this way, the diagram overlaps the DICS (dynamic-informatics-cybernetic system) with the PPBS on the same skeleton. Even though these different processes may be going on at the same time and place; we shall have to separate them for purpose of explanation. Consequently, we will next take each of the entry points and indicate the principal steps of its development throughout the maze keeping in mind that in reality they are not so easily distinguished.

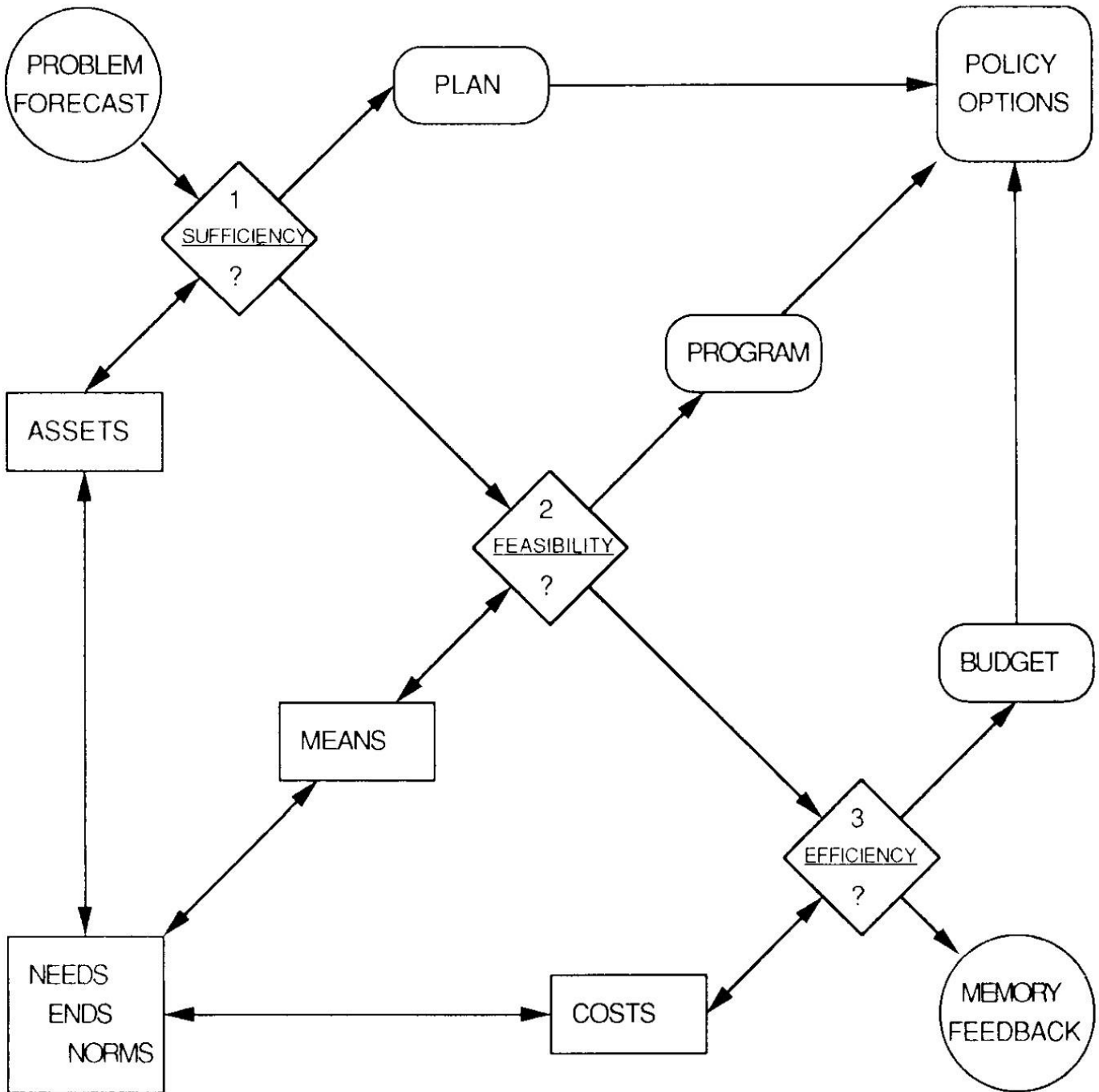
1. SYSTEM INPUTS

P-P-P may be said to begin when the social-forecasting process ends. As such, the output of the first process becomes the input of the second. We may then consider forecasts as the triggers of policy-calculus and thus, indispensable to systematic decision-making.

For forecasts to be useful in policy-preparation they must possess the following characteristics:

- a) credibility: they must be considered as valid, probable, or at least plausible by the policy planners;
- b) significance: they must be likely to affect the subject-actors in some important way, either positively or negatively; and
- c) alterability: they must be subject to human intervention or at least there must be something to do about them.

P. P. P. CALCULUS



PROCESS MODEL

At this point then, we assume that forecasts acceptable to the policy process must be realistic, important and operational. If they do not have these necessary and sufficient traits, they will be useless from the very beginning. For example: the forecast that "the sun will rise again", although credible does not pass the test of relevance. Similarly, the opposite forecast that "the sun will not rise again" although quite important, is hardly credible. Both of these kinds of forecasts will therefore not trigger the policy process.

More difficult to handle are forecasts whose credibility and significance may be acceptable, but their alterability is in question. For example, the forecast that "there will be a major earthquake in the region of the San Andreas Fault before the end of this century" is both plausible and crucial for the people of that area at least, but it boggles the mind to think of how the policy process can begin to work on this problem at this time.

Another type of moot forecast is that "if recent trends continue, the average income gap between the rich and the poor countries of the world will widen continuously for their foreseeable future". At present, this forecast enjoys wide support throughout the world and thus can be said to fulfil all of our criteria of acceptability for policy-making. The major problem here is to whom should this forecast be addressed for action. In other words, who is responsible for policy preparation at this level. The only theoretical answer at this point is the United Nations system; which of course raises a number of practical problems.

We will not analyze any of these problems here. All we will do is emphasize the necessity for a responsible policy-making system to exist at the level at which the forecast is significant and operative. If not, problem prevention becomes impossible as is the case with the "increasing rich-poor gap", which although undeniable, is still in search of a competent system to be dealt with.

For policy purposes, therefore, a forecast must contain specific information as to:

- a) justification: the data and other bases upon which the forecast is made or assessed (statistics, intentions, opinions);
- b) impact: the particular interests or values likely to be affected if the forecast comes true and the people involved thereby; and
- c) responsibility: the specific actors who may be willing and able to do something about the forecast in some way.

Of course, the ideal case would be for a perfectly justified forecast to be addressed to a willing and capable policy-maker who is particularly affected by it. Thus, a strong forecast would have to be proven by scientific methods or other authoritative means. The "rich-poor gap" forecast may be said to be adequately supported by various means. The problem however, is that the interests affected by it do not coincide with those who can or want to do much about it. That is: the poor suffer from it, but they can do very little about it, whereas the rich who are not affected by it, could if they wanted, reverse the situation.

In order to explain the model, let us begin with the assumption that the "rich-poor" forecast affected enough vested interests so that the powerful forces of this world were ready to take action to correct this trend. In such a case, a sufficiently powerful system would have to analyze the forecasted situation and calculate the various options opened to it in this regard. For it to do so, the system would have to be provided with the following specifications:

- a) Needs: what demands must be met by the system or what standards does the system have to fulfil by its policies;
- b) Ends: what are the overall objectives of the system or what goals have been set for the system to achieve; and
- c) Values: how much are particular pay offs worth to the system or what does it expect to get by its policies.

If, for purposes of illustration we take the United Nations as our system and the "rich-poor gap" as the forecast; then the demands upon the UN could be defined as the "fulfilment of basic human needs" for all people everywhere as the minimum requirement for the stability of the system. In that case, the objectives of the UN could be the reduction of inequalities between haves and have-nots, both as an end and as a means of fulfilling human needs.

Given these needs and ends for the UN, nation-states and other powerful institutions would have to decide whether it is worth for them to keep the UN system functioning. This means that the international system as a whole, of which the UN is a sub-system would have to place these requirements somewhere in its list of priorities. If that place were high enough, it might be willing to make certain sacrifices to promote the needs and goals of its sub-system; if not, it could try to find other alternatives for resolving this issue or learning to live with it.

This oversimplified example was given only as an indication of the necessity for explicit standards of action without which policy cannot be prepared in a rational way. In order to operate, the system needs the information of hard data on the one hand and the norms of subjective values on the other. Only then will it be able to calculate its policy response and evaluate the priority of its various options.

2. CONVERSION PROCESS

On the basis of the given facts and norms, the dynamic process of the system may be asked to prepare a certain policy. This policy will serve as a response to some forecasted problem which is conditional to the system's behaviour. This is the case with the "rich-poor" forecast which is conditional upon the continuation of recent trends. If the values of the system demand a reversal of these trends, then the policy-preparing process must come up with a way of doing so.

To that end, the system has to formulate alternative policy proposals by engaging in the following tasks:

- a) planning: the design of the necessary systems or structures which will function to attain the desired objective;
- b) programming: the strategy by which the proposed system will come into operation at a certain time; and
- c) budgeting: the account in which the above activities will be optimized so as to make the whole project worthwhile.

In order to draw up a plan of a mechanism that will perform certain functions, we have to organize the necessary resources in such a way as to meet the given requirements. This means that we must know what needs are to be fulfilled on the one hand and what resources are available for the job on the other hand. The policy-planner has to balance in the best possible way the available supplies with the actual demands and come up with various systems that would fit these specifications. Assuming that the function

to be performed is the reduction of the "rich-poor gap"; the planner must calculate what resources are required to do so.

Various studies have already been made to calculate the transfer of resources from the rich to the poor necessary to reduce the gap from one ratio to another. Obviously, the greater the reduction, the larger the required resources. Different rates of reduction therefore demand different plans of action which the UN has been proposing.

Transfer of resources, of course, is not the only way of reducing the gap. Other plans individually or in combination have been worked out on this matter. Nevertheless, every plan requires some production and distribution of certain resources in a particular way that will satisfy the requirements of the problem at hand. It is the task of the good policy-planner to find many possible ways to meet a given challenge.

Along with a plan there should be a program for future action. These two processes should evolve in conjunction with each other so as to strengthen them both. The programming process involves the preparation of a schedule in which certain steps will lead to a desired objective. On the basis of a given objective, the programmer has to determine alternative methods which will attain it. The task here is to find various ways to balance different means with a particular end.

Given the "rich-poor gap" reduction as the end, the policy-programmer must trace various paths which the world may move from here to there. These paths should specify how to overcome the obstacles along the way, as well as tell us how long it would take to do so. The New International Economic Order, for example was a plan for which there was a Program of Action to complement it. This together with a Development Strategy for the Eighties were supposed to provide the "when" and "how" of closing the gap.

Whether plans and programs are sufficient to do the job of course, is another matter altogether. They may very well be necessary, but they do not seem sufficient for such a task. What usually appears to be lacking is the political will to carry them out. Consequently, this brings us to the problem of budgeting in the broad sense of cost/benefit analysis. Budgeting, here, refers to the activity of optimizing the ratio between the inputs of resources and the outputs in value received. A good budget should maximize the net pay-offs after all the costs have been accounted for.

In the case of the "rich-poor gap", it is clear that the calculated costs of reducing it are far greater than the expected benefits of such a reduction to those who will have to foot the bill. The costs of the required resource transfers far outweigh the benefits that the rich expect to gain by the proposed policy. As long as this is so, no manipulation of these plans and programs will come to any better end.

For any change to occur, either the costs will have to be lowered or the benefits raised. In any case, the imbalance between the two must be resolved in favour of the benefits. This can happen if the costs of non-performance becomes so high so as to make acceptance of the plan the lesser evil and hence its benefits greater than its costs. This means that the rich will have to be convinced that the growing gap will result in such damage to their interests that it would be preferable to pay the costs of prevention. So far, the budgeting of the gap has not been successful in bringing about such conviction.

We should emphasize that this budgeting process should not be limited to the calculation of material costs or immediate benefits, but must include the so-called intangibles or externalities. Only then will it reflect the true picture in all its complexity. Naturally, such calculations will be extremely difficult to

make, but in spite of that they should not be ignored altogether. They have to be taken into account one way or another, qualitatively or quantitatively, implicitly or explicitly.

A complete accounting of gap-reduction would therefore, have to consider what weight to give to a "sense of justice" or "fair play" on the part of the rich and a feeling of "solidarity" or "self-respect" on the part of the poor. These and other intangibles contribute to the balance between costs and benefits and may determine the outcome of the policy when the material costs and benefits cancel each other out.

3. OUTPUT CONTROL

This is the final stage of our system and as such it involves the policy synthesis and evaluation process. It is at this point that the three separate activities of PPBS come together to form an overall policy. It is also here that the DICS converge into the considered response.

The most important function at this stage is the quality control of the prepared policy. This control is provided by the cybernetic process throughout the system so that standards can be maintained all along. More specifically, however, the evaluation is performed on the basis of three criteria:

- a) Sufficiency: the optimization of the demand/supply ratio or the balance between resources and requirements;
- b) Feasibility: the optimization of the means/ends ratio or the balance between methods and goals; and
- c) Efficiency: the optimization of the benefit/cost ratio or the balance between inputs and outputs.

The test of sufficiency applies to the planning process where the form and content of the policy structure is being designed. It is here where both human and material resources are organized to fulfil a need. In trying to optimize this activity, the controller has to ensure that the resources planned are neither too few nor too many to do the necessary job. In the case of the "rich-poor gap" it is obvious that the resources that the rich countries intend to transfer to the poor are not sufficient to even keep the gap from widening, let alone from closing. The needs of the poor are simply too great to be treated by the available supplies.

The test of feasibility specifically applies to the programming process where the various strategies of policy implementation are worked out. Here different methods are covered to reach the objectives set by the system. Control at this point means ensuring the adequacy of the means in relation to the ends; only then can the program be said to be feasible. Development strategies thus far, although theoretically adequate, have proven to be unrealistic because the means for their implementation were not able to overcome the obstacles along the way. The resistance of vested interests has been so great as to preserve the inertia of the system and defeat any attempts to change it in a rapid or radical way.

The test of efficiency applies particularly to the budgeting process where both the pros and cons of the proposed policy are being calculated. It is the rationalization of gains and losses which provides the justification for the policy project. The greater the benefits and the lower the costs, the more efficient the operation. At this stage, one wonders whether the massive effort required to close the "rich-poor gap" is worth the imputed benefits. The necessity of raising the costs, political and economic, for bringing about a redistribution of wealth may well surpass the resulting pay-offs. A policy of "let justice be done even if it destroys the world" may not be the most efficient way to solve our problems.

In this case, a re-evaluation of the proposed policies is in order. If the sufficiency, feasibility, and efficiency of a project is in question, or even if one or two of these tests fail to produce a positive answer, the plans and programs must be seriously reconsidered. Perhaps, transfer of resources is not the way to reduce the gap; or perhaps "reducing the gap" itself is the wrong objective under the circumstances. In such cases where there is a large discrepancy between means and ends, we must either change the plans and strategies, or the values and goals we are trying to achieve. In any case, a continuous process of evaluation and testing is indispensable to provide a correction feedback to further policy preparation, thus hopefully improving the results each time.

CONCLUSION

We shall now conclude this study with a synoptic summary of the model and some implications for further research. We have constructed the matrix on the next page in the clearest and simplest possible way to show the basic elements of our model. The two dimensions of the matrix correspond to the two systems (PPB & DIC) we have interfaced, in order to show in a categorical manner what the calculus diagram shows in operational terms.

Evidently, the three procedures of each system (dynamic-informatics-cybernetic and planning-programming-budgeting) cross-cut each other to produce nine categories of interstices. Each of the nine boxes represents a salient point where a specific activity takes place within this two-dimensional process. Of course, the divisions between these steps are not as sharp as these boxes indicate; as such, they should be interpreted in a fairly flexible and pragmatic way.

Generally, such an attitude is necessary when preparing a policy. The whole model is constructed on this assumption since it is basically qualitative. At this level of generality, the terms and operations mentioned are necessarily vague because they are so inclusive and overlapping. In a sense, this study really covers the pre-modelling stage of these systems, since it only provides the general framework and macro-operations of this complex process.

For a complete modelling operation, one would have to go into further depth and detail with respect to each of the above nine points. Every one of them requires a separate study describing the internal workings as well as the external relations of its sub-system. Certain in-depth studies of this nature have already been made but, they are not methodologically comparable and there are still gaps to be filled in order to complete the entire scheme. This work of completion and synthesis, therefore, remains to be done.

On the horizontal level, the next stage in this process is that of decision-making. This follows logically from the policy-preparing stage and completes the policy-making process. It is at this point where the policy-science experts give way to the political decision-makers. Thus, the terms of reference and criteria are different in the two stages, as they are between the policy-preparing and the social-forecasting stages. This, however, does not mean that the political art of choosing cannot be made more systematic. Consequently, further attempts to model political decision-making are still needed. Only then will the usefulness of this policy-preparing process find its maximal effect.

SYNOPTIC MATRIX

PPBS DICS	STRUCTURAL <u>PLANNING</u> DESIGNS	PROCEDURAL <u>PROGRAMMING</u> STRATEGIES	NORMATIVE <u>BUDGETING</u> ACCOUNTS
<u>DYNAMIC</u> VARIABLES FACTORS	RESOURCES Human-Material Assets	METHODS Means-Tools Limitations	COSTS Effort-Time Prices
<u>INFORMATIC</u> SPECIFICATIONS DATA	NEEDS Pressure-Wants Requirements	ENDS Goals-Targets Deadlines	VALUES Risk-Worth Rationale
<u>CYBERNETIC</u> CONTROLS CRITERIA	SUFFICIENCY Supply-Demand Capacity	FEASIBILITY Means-Ends Function	EFFICIENCY Cost-Benefit Purpose

P.P.P. TABLE

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