

SECTION TWO

CONCEPTUAL FRAME AND WORK PROCEDURES

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INTRODUCTION

1. THE CONCEPTUAL FRAMEWORK

The purpose of the present section is to provide an overall impression of how the work described heretofore might be conducted, and to discuss insofar as is possible at this early stage some methods and techniques of approach that are tentatively being considered.

No firm and unequivocal commitment to a given methodology can be made at this time. The problematique --i.e., the subject to be addressed --that was outlined is extremely complex and must be approached by way of a unifying framework of concepts that will afford it a solid methodological basis. The chosen approach itself needs in some sense to be an invention closely and specifically tailored to fit the needs of the subject.

Viewed in this light, it becomes evident that the work must be conducted not merely as if it were a straightforward investigation into known facts but rather as an effort (1) to uncover new meanings and consequence-patterns that inhere in dynamic combinations of such facts, and (2) to shape such meanings and consequence-patterns into new, more revealing configurations.

To do this we need to meld together two fundamental, but different, logical approaches:

1) a hypothetical-deductive system that provides us with the tool concepts necessary to penetrate and manipulate the facts that make up the situation surrounding us;

2) a cybernetic system by means of which we can create alternative configurations of our findings, both so as to make the latter clearer and to see the various behaviors of newly defined consequences within different time frames.

This is to say that we must on the one hand build an axiomatic, and on the other hand a plan.

Through the melding of these two approaches, it should be feasible to examine our world-wide situation and to develop some ideas about how it can, or ought to be changed, to accord with the value-base of "ecological balance" that we have chosen as the ground of our reasoning.

We should note moreover that to create such a combined system of methods we have to take into consideration the levels of cognition from which the problematique and its components are perceived. Hence the Work Group (and what it represents, namely, the Club of Rome) will enter strongly into the methodological equation because its perceptions will be governing the work.

Having made these basic clarifications we may begin by establishing some procedural assumptions. In doing this we shall alter the order of the above, to basic approaches and begin with a tentative outline of the cybernetic system so that our thoughts can be organized in a logical manner.

2. TENTATIVE PLANNING CONSTRUCT

A. WORKING ASSUMPTIONS

In our attempt to design an initial and highly tentative planning construct, we must begin by proposing certain definitions that can also be considered as working assumptions.*

CONCEPTS	DEFINITIONS
PROJECT	<u>Substantive operations</u> undertaken by the Work Group
GOAL	<u>Results</u> expected from the project; i.e., suggestions, clarifications, insights, reports, impacts.
OBJECTIVE	<u>Directives</u> concerning the goal that the Work Group receives from the Club of Rome.
MEANS	<u>Instrumental inputs</u> that the Work Group receives from or through the Club of Rome, including information techniques, methodologies, ideas, facilities, etc.
EVENTS	Subject of the work; i.e., elements or components of the problematique

TABLE I

* The ideas that will be found throughout this whole section derive from many sources and represent a synthesis of the thoughts of many authors. Unfortunately neither the nature of the document nor the circumstances in which it was written permit individual recognition with respect to every point made.

Among the foregoing concepts, the ones listed below are operational variables that enter into the overall framework as follows :

GOAL	Output
OBJECTIVE	Controlled inputs
MEANS	Controlled inputs
EVENTS	Uncontrolled inputs

TABLE II

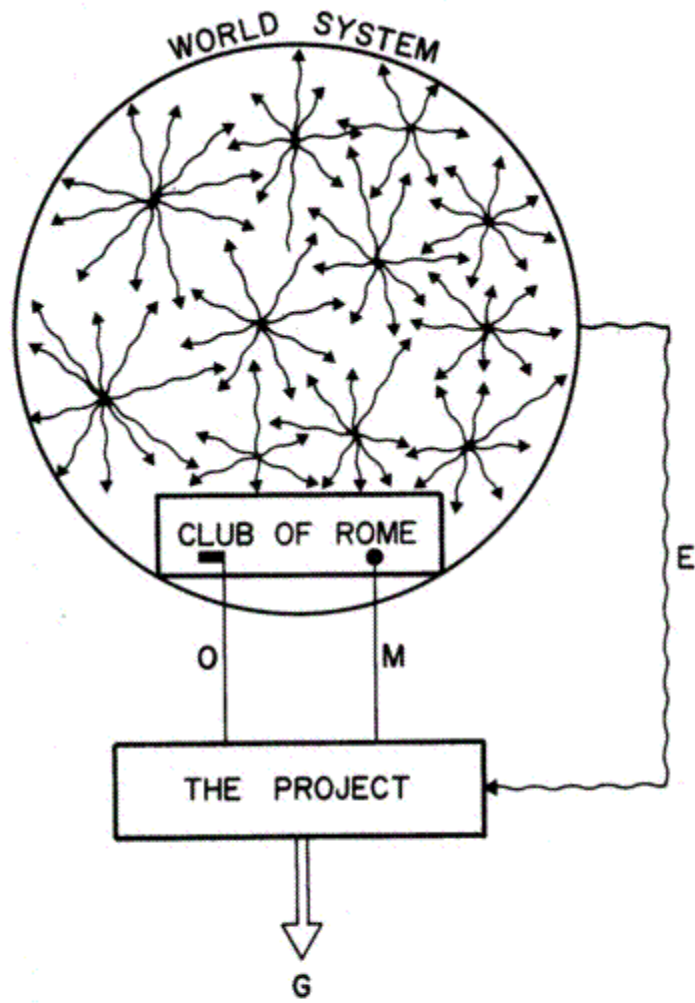
The most simplified and elementary way of visualizing the relationships that will become established among these elements in the course of the work, is shown (Fig. I) on the next page.

It is self-evident that the nature as well as the level of the output are entirely dependent on the nature and the level of the relations we can establish and formulate with regard to the inputs that will enter the system of work. Moreover, these relations are likely to give us some indications of the methods of approach, which might have to be used. Hence the assumptions we have advanced will now have to be looked into somewhat more closely.

B. CONTROLLED INPUTS

The controlled inputs we have defined are objective and means. The precise operational meaning of these words as well as the manner in which they interact in relation to the goal must be determined.

Here, the first point to be made is that neither objective nor means are fixed nor static concepts. They constantly interact with each other, with the project --that is, the work-in-progress --and with the subject of the work, namely, the even



O Objectives
 M Means
 E Events

G goal

Fig. 1

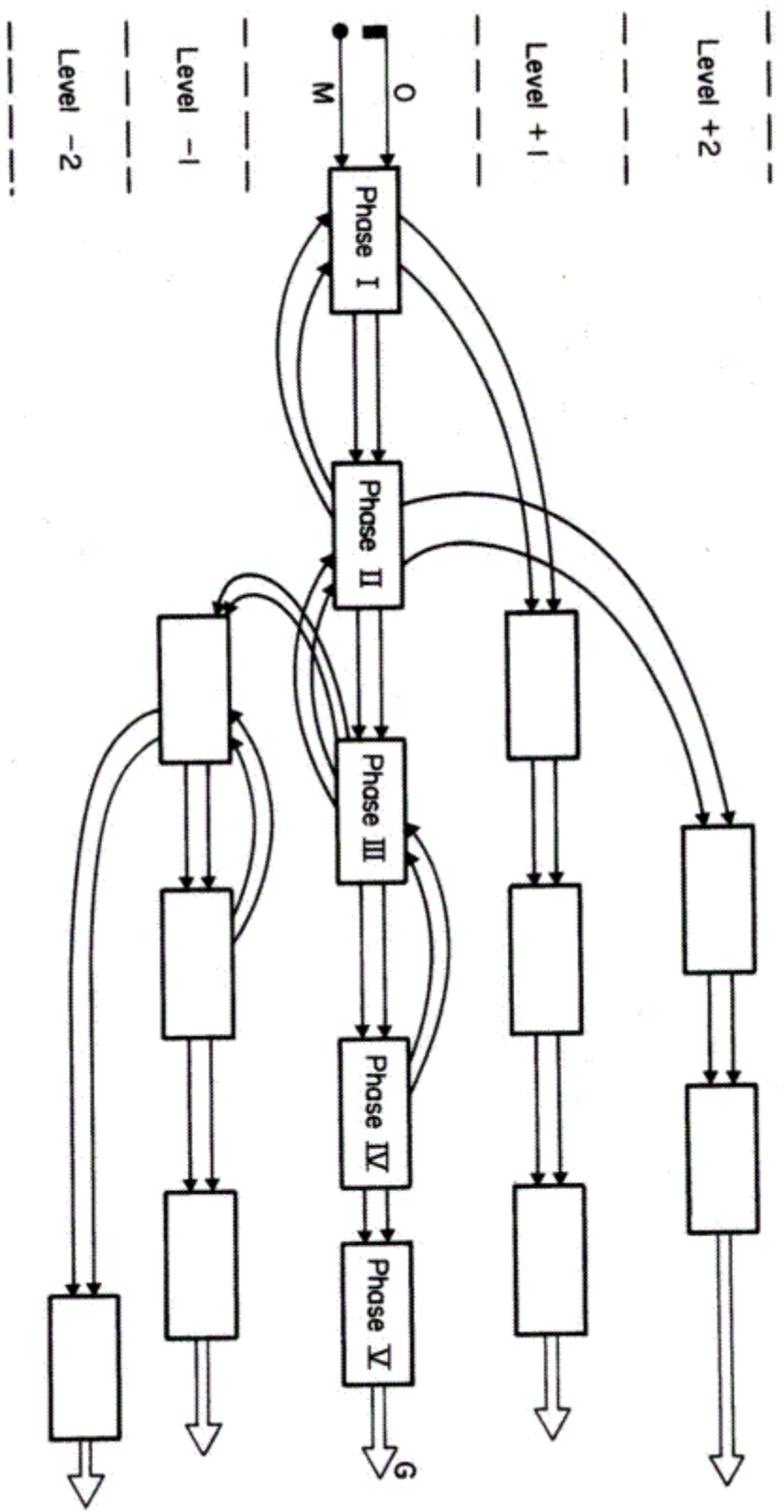


Fig. 2

This interaction need not necessarily alter the direction of the objective (i.e., the nature of the task) or the nature or quantity of the means. But it is very likely to cause changes in the level of goal-attainment.

This is because the time-span of the work envisaged is something in the order of fifteen months and a learning process will set in as soon as it starts. This, in turn, will alter the perceptual make-up of the Working Group. This process can be outlined as shown on the following page (Fig. 2).

There are further reasons, connected with but differing from the learning process, that force us to consider those differences in level that define a relationship of dependency between output and controlled inputs. This introduces two ideas that are fundamental both methodologically and substantively.

These ideas are:

- (1) -"Futurity" or the future dimensions of the events that form the problematique to be investigated; and
- (2) -"normative analysis" in the light of which the value-base that was chosen --i.e., ecological balance --can be made to govern the objective of the work.

The notion of futurity enters into the argument because there are basically two ways of looking at a situation and perceiving its problematic features. Both are grounded in the idea of "differential". Namely: (a) a situation represents a problematique because some of its characteristics differ from the characteristics of a past situation that the people involved agree to define as non-problematic --or as "normal"; and, (b) a situation represents a problematique because some of its characteristics differ from the characteristics of a future situation that the people involved agree to define as non-problematic --or as "ideal".

In either case the first step is to proceed from a general, agreed upon, image. And, in either case, what makes agreement possible is a shared value-base.

In the project being considered we have started from the assumption that the problematique is both world-wide* and new in its configuration; therefore it would be impossible to evaluate its differentiating aspects with reference to a past situation. Hence it was decided to establish differentials with reference to some future state of the world-system of which the defining value-base would be "ecological balance".

To be able to create such an image two things are necessary: (1) an idea or vision of how events will evolve toward the present situation is left to itself or left to evolve with a minimum of tampering; (2) an idea or vision of how the situation will look in the same future if it is normatively conceived in the light of ecological balance.

It might or might not have been noticed that in the foregoing few paragraphs the whole argument was given a somewhat new shape merely by elaborating in a very superficial way various points that are embedded both in the facts we must deal with and in the general methodological philosophy we have adopted at least for a start. Thus we have:

1. OUTCOME PARAMETERS: in the sense that the goal must deal with "differentials" between a present state of the system and a future state of the system.

* This feature alone would make it impossible to judge it in terms of a shared past value-base.

2. INPUT PARAMETERS: in the sense that the objectives and means must be set at such a level so as to permit:
 - 2.1. A forecast of the normal future state of the present situation (logical future).
 - 2.2. An image of the future state as can be imagined in the light of the value-base of ecological balance (normative future).
 - 2.3. Interim states of the objective for judging whether the difference between 2.2. and 2.3. adds up to a meaningful evolutionary or interim situation be identified and singled out.
3. THEORETICAL FRAMEWORK: which is the value-base (ecological balance) that must be so clearly and operationally defined that it can be used to judge any established relationships as valid or invalid.

From these points certain new conceptions regarding the level of dependence problem can be derived. For example, and solely as an example, we can establish the following levels:

TABLE III

LEVELS	OUTPUT	CONTROLLED INPUTS		UNCTL. INPUTS	
	Goals	Objectives	Means	Events	
				Forecast	Normative
Null	g Ø	o Ø	m Ø	e Ø	E Ø
Low	g 1	o 1	m 1	e 1	E 1
High	g 2	o 2	m 2	e 2	E 2
Ideal	g 3	o 3	m 3	e Ø	E 3

From an arrangement of this sort it becomes --or should become --possible to build various models (which, basically, are pay-off matrices) in which the combined weights of objectives and means can be made to relate to various levels of forecast and normatively determined future events to derive different levels of goals.

It is in turn from such models that corresponding plans will be constructed in which all the concepts that were listed earlier (Table II) can be related to each other in a way that is not arbitrary but optimizing.

The most important consideration in the structuring of controlled inputs is the definition of "ecological balance", which needs to be established as the governing principle of the objective. Such a definition does not exist at present nor can the idea itself be given any kind of operational meaning through mere verbalization --namely, through a simple description of what the expression might signify.

"Ecology", that is human ecology in the sense we have described it in the first section of this document is, itself, a

system of extraordinary complexity comprising both individual entities and multidimensional relationships, some of which have network characteristics. All the component forces and phenomena existing in such an ecology cannot be taken into consideration in a study such as the one being envisaged. Nevertheless a series of them that pertain with particular emphasis to those elements problematique that will be studied has to be selected and developed into indices, in accordance with the best methods extant for the creation of such indicator lists. It is possible that certain interesting ideas being explored in the USA as part of the effort involved in creating Social Indicators might prove useful, in building such lists.

In conjunction with this, simultaneously in fact, the notion of "balance" will have to be reduced to operational significance. Balance, in a system-wide human environment, is ultimately reducible to a finite number of trade-offs. Hence what will be required to make our objective operational is, in all probability, a three-dimensional matrix in which the selected ecological indicators are ascribed trade-off values not only in terms of monetary cost but also of other vital kinds of "costs" and kinds of "worth" pertaining to action and outcome (i.e., to policies and results).

With such indices and matrices at hand it should become increasingly feasible to view the model of a problematic situation in the relatively simple form

$$W = f (I_i , O_i)$$

where

W = the measure of the worth of a particular action (or policy).
I_i = the input variables that control the alternative courses of action.
O_i = the extraneous, non-controlled variables, that affect
action*.

Aside from level relations and adjustments and indices that lend operationality to the objective, the legitimacy of the plan must also derive from its dynamic conception --namely, from the manner in which the foregoing .~ through the system as a whole. For it is evident that the relationships among all operational elements will be constantly changing. Hence it is important to develop from the outset a planning construct that recognizes and accommodates such changes while the work is going on. The rationale for this is that the Club of Rome is not external to the world. It too is part of the situation. Therefore, it follows that ~ inputs must, themselves, be viewed as feeding into the subject of the work.

Since the subject of the work is in a state of continual flux, the work must necessarily be evolutionary and dynamic. Some results, representing clarifications of the problematique's components, will be obtained as the work process unfolds. In consequence it is likely that:

(1) a feedback loop will be generated going from these continuous interim results back to the Work Group, and change the perception of the latter with regard to the interpretation of the objectives to be attained;

(2) another feedback loop generated by such results will affect the notions that the Work Group has concerning the nature

* This general formulation of action variables within the context of an entire system was developed by Dr. A.N. Christakis and Dr. N. M. Kamrany.

of the output --i.e., the goal. These shifts, or renewals, in understanding may change the perception of the Club of Rome concerning the problematique and must therefore be viewed as a source of new objectives as well as of new means --i.e., of new controlled inputs.*

All these feedbacks whether taken singly or in combination will affect the nature of the output and possibly alter it.

Recognition of these processes provides us with a preliminary planning construct which is outlined on the next page (Fig. 3).

Up to this point we have dealt mainly with the controlled inputs side of the overall work plan. In the following pages we shall deal with questions concerning uncontrolled inputs.

*Moreover if such results are very important and dramatic (which is unlikely) they will also create a feedback loop into the situation and generate new events. But because the probability of this is very low it need not be considered presently. (That is the reason for that loop being shown in broken lines in the figure on the next page.)

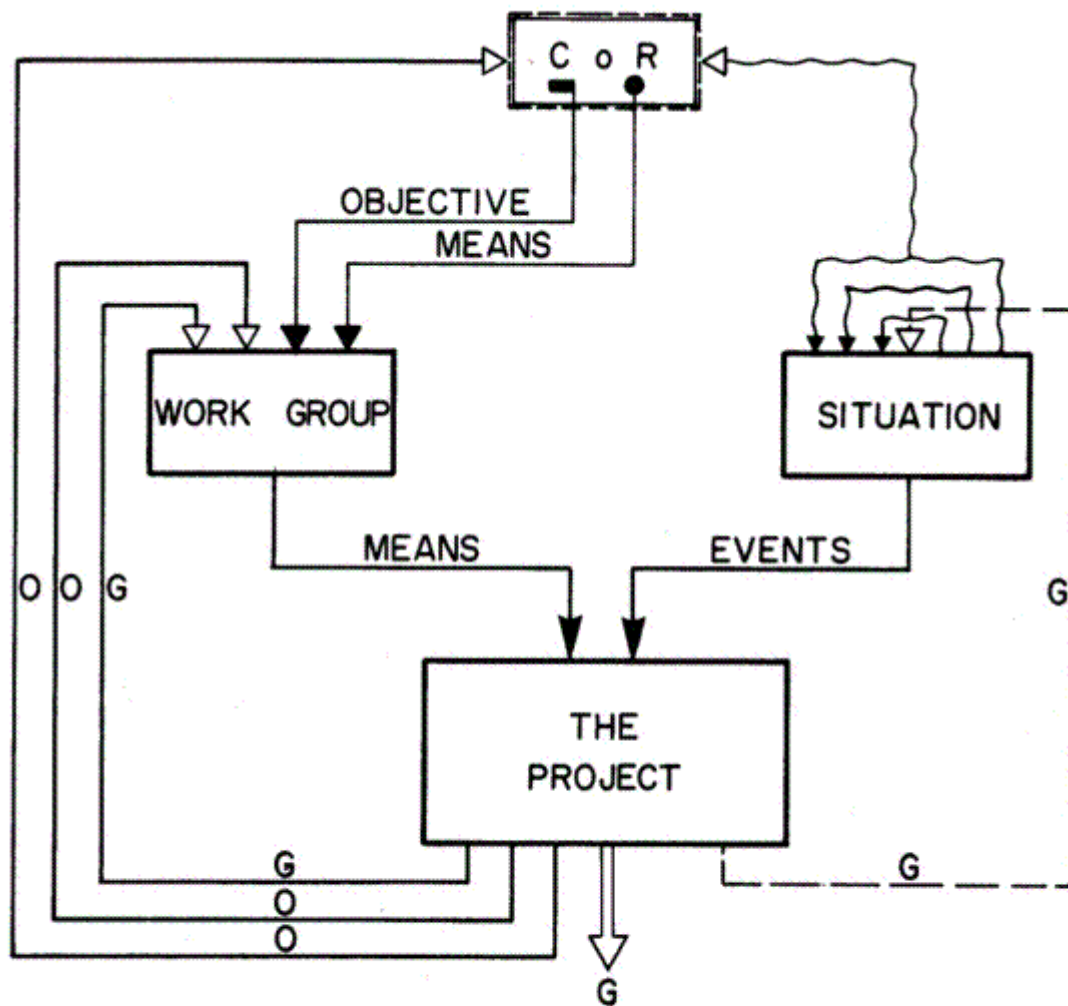


Fig. 3

C. UNCONTROLLED INPUTS

The uncontrolled inputs with which we shall concern ourselves have been qualified as "events". Events are the substantive elements of the situation; therefore, they describe all the components of the problematique including what we have called the Continuous Critical Problems.

The controlling issue with reference to events --insofar as the proposed study is concerned --is that they must be understood in their essence, in their structure, and in their dynamic behavior. Hence our approach to them must be hypothetical-deductive in character; and our aim, the creation of an axiomatic.

This is obviously very difficult because today the configurations of the very important events that are constantly occurring around us are blurred. We have no precise feelings concerning their nature, no real way of formulating ideas about their future implications, no appropriate methods to trace the causal connections between what we sense to be symptoms and what might be the central illness. Linkages that were clear when our minds operated within the framework of determinism have become obscured and confused. Empirically we are able to describe numerous problems-- but this approach does not really help us to penetrate the essence of the situation. What seems needed is to proceed, mainly, through heuristic, inventive approaches, using almost any technique in the hope that we might sufficiently disarrange what is obvious so as to be able to penetrate a little further into what might be real.

Once these facts have been clearly recognized and admitted we can start by establishing a number of hypotheses, which will underlie as well as guide the study. These hypotheses obviously derive from many sources and represent a particular manner of cognizing the nature of the reality that surrounds us --they are, nevertheless, consonant with the value-base of ecological balance we have chosen as the governing objective of the study.

1. The events to be considered are crisis-related components of our situation.
2. In their totality these events represent a problematique. Problematique is not defined by its component events as an aggregation that is analogous to a "set" --in the mathematical meaning of the term --but as a system.
3. As such, the events to be studied are in themselves and in their attributes, dynamic, interconnected, and interdependent and that "operate together ...in such a way as to produce some characteristic total effect".*
4. These dynamic relationships do not appear to be either regular or stable; they are akin rather to evolutionary "jumps" that create imbalances throughout the system.

* In this hypothesis the definitions of Hall and Fagen and that of Allport have been paraphrased somewhat and combined. See: A.D. Hall and R.E. Fagen.. "Definition of System" in Modern Systems Research for the Behavioral Scientist, WW. Buckley (ed.) Aldine Publishing Co., Chicago, 1968. And, F.H. Allport, Theories Of Perception and the Concept of Structure, John Wiley and Sons, New York 1955.

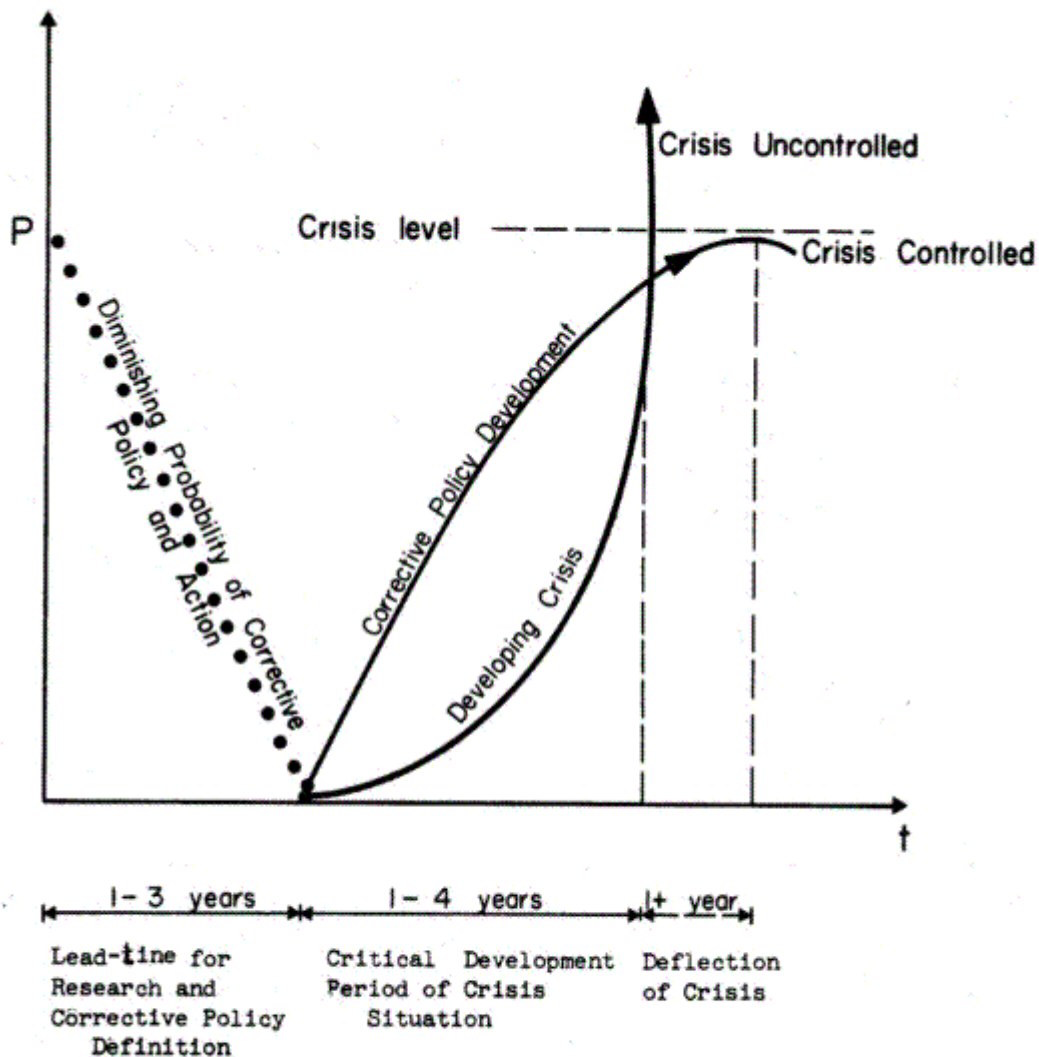


Fig. 4

Note: We shall assume in the study that critical events behave approximately as shown above. Namely, there is a crisis level at about 4 years hence beyond which most of the events we must consider will become uncontrollable, unless they have been deflected by newly developed corrective policies. The deflection period must be conceived as short to be effective (1+year). The lead-time for projects such as the present is generally set to 1-3 years. These figures represent an averaged-out consensus of those working in Crisis Research in the USA. They were obtained from Dr. John Platt of the University of Michigan at Ann Arbor.

5. Such imbalances seem to have two major characteristics:
(a) their time-scale of occurrence is relatively short and might be getting shorter; (b) they are, or appear to be, a-causal inasmuch as each imbalance has impacts that resonate throughout the system, although in varying degrees of intensity. These characteristics will have to be operationally probed in terms of the fundamental criteria that apply to ecosystems:

Temporality	Complementarity
Spatiality	Mutual-determination
Quality	Competitiveness
Quantity	Synergy

6. This might suggest the presence of various kinds of impingement effects within the system that generate new events. These effects could be phenomena like: interface, mismatches, intersensitivity, clusterings, overlaps, synergies, functional dissonances, time-phase dissonances, etc.

It is in terms of these six basic hypotheses that the study will be conducted. The main thrust of the effort will be directed at identifying:

- 1- The "events" within the system --namely, the components of the problematique.
- 2- The "attributes" of the events --namely, the components' functional characteristics.

3- The "relationships", "interconnections", and "interdependencies" among the events and among their attributes.

4- The "characteristics total effect" that results from all the above and that we have called the "situation".

In the course of the project the greatest emphasis will be given to the first three points noted above, whereas point four is to be viewed as the subject of later efforts that have been mentioned in the opening section of this document.

III. GENERAL COMMENTS ON METHODOLOGY

It is not possible to delve deeply into the methodologies to be used in this project because:

(1) a priori decisions about methodology might prejudice the outlook of the Work Group to a degree that would reduce its effort to an arbitrarily slanted, academic exercise ;

(2) although there are a number of methodological approaches that have been evolved in recent years all of them, almost without exception, are still highly experimental --so that it is impossible to judge their operational worth especially in relation to a large-scale problematique such as the one we shall have to consider.

In the light of the above the best strategy would seem to be that of remaining free of methodological commitments and pre-conceptions and to choose the apposite approaches as we go along and as the work dictates.

This obviously does not mean that the effort will be entered into blindly. On the contrary, it means the circumstances are such that the greatest freedom of action and flexibility of invention must be preserved. The specific methodological field within which we shall be able to make the needed choices is

large, but it can be described if we outline the project's operational evolution, as is done in the flow chart (Fig. 5) on the following page.

This chart shows the step-by-step development of the project starting with the given value-base that leads on the one hand to the creation of a normative image of the future and on the other hand to the setting of the correct objective/means level. From this ground (which satisfies the normative and some of the strategic requirements to start the work) the project proceeds to the identification of "events", namely, the uncontrolled inputs, and advances through self-evident logical steps to the goal.

Each of these steps will require one or more methods or methodological approaches. Decisions with regard to such approaches will have to be made in the course of the work. There are, in fact, several levels of methodology that will have to be closely considered at each stage. A number of these are shown, by way of example and illustration (in Table IV on the page 58) as they pertain to the work in process when such work is broken down into the three fundamental planning categories which are: the Normative, the Strategic/and the Operational.

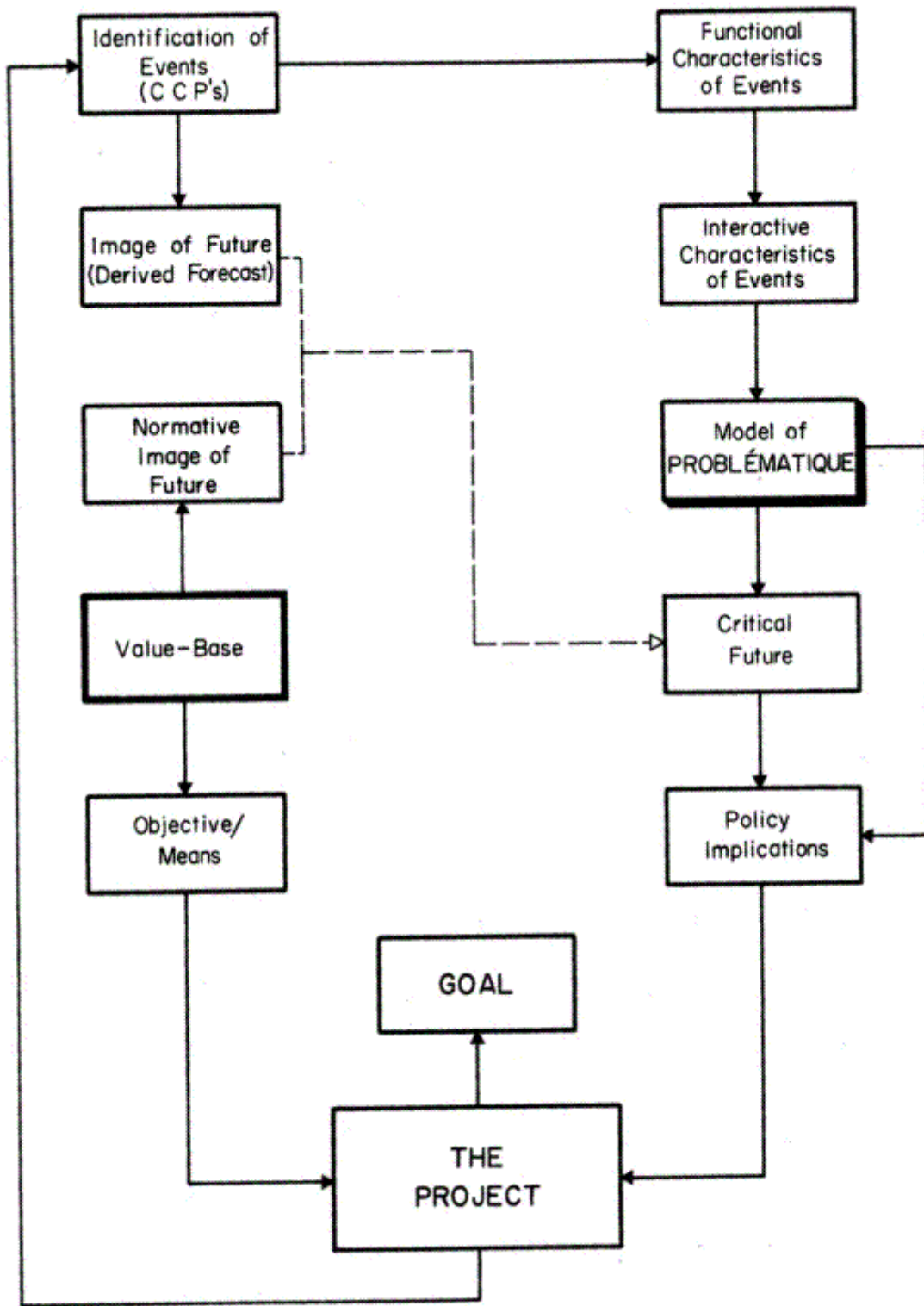


Fig. 5

As a final comment on the contents of the preceding table it might bear repeating that the methods which will be used for advancing the work as a whole are not yet fully known. Their elaboration is itself a part of the project. For instance, it is felt intuitively that many developments in cybernetic logic, in multi-valued logic, in generalized logic, in meta-ethics, in economic analysis, in coding, in structural morphology, in biotechnics/and in many other areas of knowledge have a great deal of relevance for the effort as a whole. Naturally, they will be introduced into the work process whenever a need for them becomes manifest. Moreover, the present feeling is that no single method or technique will suffice for the purpose before us. Hence combinations that are heuristically conceived will have to be created almost constantly, and experimented with. This applies to the methodologies we have noted as well as to those we have not. All these points are made once more to underline as clearly as feasible that the project as a whole is one of invention and that whatever comes to hand to advance it --with the requisite intellectual validity and honesty --will be used, by itself, in combination, or with appropriate modifications.

IV. MODEL OF WORK PROCESS AS PRESENTLY ENVISAGED

Having outlined the manner in which at present we intend to deal with controlled and uncontrolled inputs that are part of the structure of the project as well as work process, we can now complete the model that is descriptive of the whole insofar as we are able to visualize it at this time.

This model is envisioned as a rather simple cybernetic system in which the types of inputs we have discussed are

transformed into outputs that are consonant with the objectives of the Club of Rome, as these objectives were set down in the first section of this document.

Our views of the overall work process are now much clearer, as can be seen in the general model provided on the next page (Fig.6). Into this model we have further introduced an indication of our expectations beyond the execution of the project itself. This was done solely to show how the total idea that inspired the Club of Rome might be viewed in its unfolding during and after the assumed successful conclusion of this particular project. It is in this sense that the prospective possibilities shown below the broken line that divides the diagram ought to be interpreted.

Ob. 1. The prime objectives ascribed to the project by the Club of Rome.

Ob. 2 First changes in Ob. 1 as a result of interim findings by the Work Group.

Ob. 3 Final changes in Ob. 1 as a result of the definition and configuration of the Problematique.

Changes in Ob. 1, Ob. 2, Ob. 3 result in firm objectives (O) and required means (M).

M Means provided by the Club of Rome to the Project.

E Situation existing in world system as perceived by Project.

E The uncontrolled inputs from the Problematique on which Project will work.

E Adjustments in the perception of the Problematique as a result of its definition and configuration.

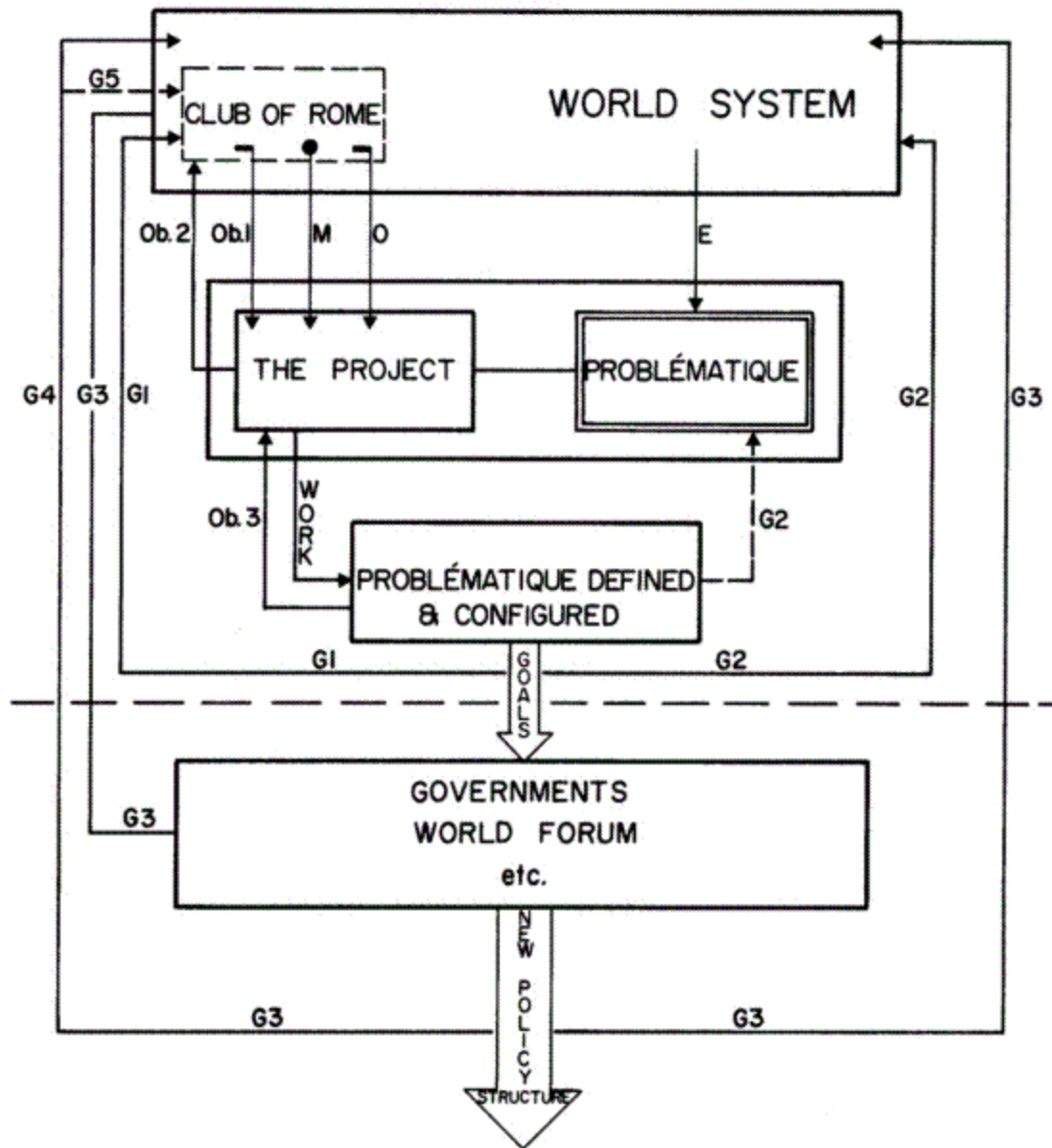


Fig. 6

Goals Expected outputs from the definition and configuration of
the Problematique.

G.1 Changes affecting perception of the Club of Rome in expected
outputs as a result of interim attainment of Goals.

These will be expressed in the new formulation of firm
objectives (O) and required Means (M).

G.2 Minor possible impacts of interim outputs on World System --
affecting E and El.

G.3 If World Forum materializes and continues work; new
perceptions will be fed into World System.

G.4 If the work of the World Forum results in new policy
structures, World System will be affected.

G.5 Similarly perceptions of the Club of Rome will change.

G.3 and G.4 are viewed as the major "change" agents.

SECTION THREE

ANNEXES

ANNEX I

THE CLUB OF ROME

ANNEX I

The Club of Rome was started following a meeting convened in Rome in April 1968 by the Giovanni Agnelli Foundation and the National Academy of Lincei to discuss new approaches to the problems of world society. At the end of this meeting a number of those present, increasingly concerned about the symptoms of breakdown of our society that are appearing simultaneously with higher levels of prosperity and the ever-quickenning application of new technology, decided to continue to work together, and called their group "The Club of Rome" after the city of its origin.

The Club of Rome is an informal, multinational, non-political group of scientists, economists, planners, educators, and business leaders. It is non-political in the sense that its members are not involved in current political decisions and that it has not itself any ideological or national political commitments. Its vocation is the good of mankind --which in its opinion subsumes also the good of any nation or people in a world that is rapidly emerging as a whole, integrated system. It believes that a rethinking, rediscovery, and reformulation of values consonant with the realities of our time is needed; that broad goals for man and society must be defined; that a new set of institutions and instrumentalities is required to conduct human affairs adequately; and that to organize human society at this higher level we must first understand the present exceptionally dynamic and dangerous world situation and the kind of futures that may eventuate from it. Its overall objectives were thus formulated as follows:

- "(a) To contribute toward an understanding of the problems of modern society considered as an ensemble, and to the analysis of the dynamics, interdependencies, interactions, and overlappings that characterize this

ensemble, concentrating particularly on those aspects that concern all or large sections of mankind;

"(b) To heighten the awareness that this complex of tangled, changing, and difficult problems constitutes, over and above all political, racial or economic frontiers, an unprecedented threat to all peoples, and must therefore be attacked by the multinational and transnational mobilizing of human and material resources;

"(c) To make the results of these studies and reflections known to public opinion, in scientific, intellectual, and political circles, and to centers of decision at all levels, in order to influence to the utmost extent the conduct of the world's affairs in a more rational and human way."

To carry out this design, the Club of Rome has to spread its action in various directions, including the carrying out of studies and research as indicated in the present Proposal. So far, it has established a number of contacts with key people in Ottawa, Moscow, Washington, Tokyo, Buenos Aires, Stockholm, Berne, Vienna, and other capitals, as well as in international organizations; and it is expected that this activity will be continued also during the execution of the project herein.

The Club of Rome was incorporated on March 1970 in Geneva as a non-profit private association under the Swiss Civil Code. Its Secretariat is in Rome; and representatives or offices will be established in various parts of the world, the first two being in Geneva c/o the Institut Battelle and in Tokyo c/o the Japan Techno-Economics Society. By its Statutes, its membership is limited. At present, there are (25) ordinary members and the total number envisaged is 60. New members are co-opted with the approval of the Executive Committee.

ANNEX II

THE IDEA OF A WORLD FORUM

ANNEX II

The present project, as emphasized in the proposal, constitutes but a stepping stone which, it is hoped, will lead to further, more elaborate, in-depth studies based on the preliminary morphology of the problematique that the project will endeavor to construct. These in-depth studies cannot be attempted within the framework of the Club of Rome. Such an undertaking requires anew form of cooperative effort among industrialized countries. The Club of Rome tentatively advances the idea of a World Forum as the under-pinning of this effort. This idea should not be understood as a rigid, fixed, or sine qua non prescript for future effort, but as the subjective formulation of what the Club of Rome feels would be an adequate framework for a profound and action-oriented study of the predicament of mankind.

As envisaged, the World Forum would be created by the governments of industrialized countries through an act of political will. The direct involvement and responsibility of governments in this venture seems essential, for policy challenges of a world-wide nature can no longer be met unless they are integrated with policy considerations of a regional or national character. The Club of Rome recognizes that one of its basic tasks is to act as a catalyst in bringing about such acts of political will. To this end, contacts have been made with international organizations as well as with governments whose positive responses are considered vital to the initiation and the carrying out of a study program under the aegis of a World Forum. The Club of Rome has also accepted as its responsibility the need to provide a rationale for structuring the work of the World Forum, and to offer it a suitable body of methodology as well as

tentative models of mankind's dynamic but unstable situation. It is to meet this particular responsibility that the accompanying project has been proposed.

The conception of a World Forum cannot be elaborated in full detail at this juncture. That would be the initial task of those governments who engage jointly in the effort to create such a Forum. However, in line with current thinking in the Club of Rome, the World Forum might be conceived as an ad hoc organization, separate from any other agency and established with the sole purpose of executing in-depth studies of the various critical aspects of the human situation. It should be kept slim, flexible, and adaptive to changing needs. It is likely that the period of its duration should be limited, say from three to five years.

Since it is hardly possible that the necessary scientific brain-power could be marshaled and shaped into inter-disciplinary teams for a temporary assignment of such magnitude, it would be more feasible to set up an effective method of organizing and managing inputs that could be obtained mainly from the intellectual resources now available in "think groups", consulting firms, research institutes, academic institutions, industry, etc.

A three-fold multi-national organization might be envisioned that would consist of:

An International Board of perhaps 10 to 12 members of the highest international repute to work full-time at the of the World Forum, aided by a small administrative staff.

A flexible arrangement of scientific panels and workshops,

to guide the work of the various groups undertaking differing but consistent patterns of individual study, and to provide the "fine-structure" of the rationale; such scientific panels and workshops might operate in an intermittent way and convene at the seat of the World Forum or elsewhere according to need; members would be selected from scientists of renown who would be able to devote a large fraction of their energy and time to this task;

A flexible group of external contractors, ranging from individual experts to large inter-disciplinary research institutes and academic centers, to whom specific tasks would be assigned.

The thrust of the World Forum study would be directed to creating the elements of a world policy and to devising means for its subsequent enactment in the form of new, world institutions and their corresponding instrumentalities. The working out of operational plans having world scope might hopefully follow. However, the principal goal of the World Forum study, as the Club of Rome sees it, would be to convey to policy-makers and to the public at large a dramatic "state-of-the-world" message supported by proposed policy responses. In other words, it would serve to clarify our fears and give focus and direction to our hopes. This might in turn give rise to a massive public prise de conscience that would pave the way to action by enlightened governments and world leaders.

ANNEX III

THE EXECUTIVE COMMITTEE

ANNEX III

The Executive Committee is in the process of being formed, hence a listing of its members cannot be given at this time. Such a listing will be communicated to the full membership of the Club of Rome as soon as possible.

ANNEX IV

THE WORK GROUP

ANNEX IV

It is tentatively felt at this juncture that the effort described in this document will require a Work Group of Senior Scientists and a Support Team of Junior Researchers.

The competences envisaged as necessary are the following:

- 1 project director
- 3 planners with general system analysis and cybernetics backgrounds
- 1 mathematician specialized in topology
- 1 senior statistician with operations research background
- 2 senior computer programmers
- 1 social scientist with experience in morphological analysis
- 1 economist with knowledge of general systems theory
- 1 political scientist with experience in international relations.

The team of junior researchers will come mainly from the areas of computer programming, logic systems, data retrieval, file composition, formatting, etc. It is also one of the aims of the Club of Rome that through exposure to work with the main task force, the team of junior researchers will undergo an intense educational and formative experience.

It is expected that the work can easily be handled by available computer capacity, i.e. Honeywell 632 (Battelle) or CDC 3800 (Geneva University) .

ANNEX V

CONSULTANTS

ANNEX V

It is deemed to be of the greatest importance that a strong roster of Consultants be created to support the Work Group during the course of the project.

At this stage two categories of consultants are being contemplated:

1. Specific individuals capable of providing knowledge and skills in various disciplines such as, for instance: Political Science, Law, Economics, Sociology, the Hard Sciences, Life Sciences, Ethics, Anthropology, Psychology, Education, etc.
2. World leaders in various cultural fields --Religion, the Arts and Humanities, etc. --who will be consulted as to their opinions, ideas, and views.

Geneva, March 13. 1970 H0/myg/ns

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