

THE CLUB OF ROME

THE PREDICAMENT OF MANKIND

Quest for Structured Responses
to Growing World-wide
Complexities and Uncertainties

A PROPOSAL

1970

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SECTION ONE

WORK STATEMENT & PROPOSAL

THE CLUB OF ROME

THE PREDICAMENT OF MANKIND

WORK STATEMENT AND PROPOSAL

I. INTRODUCTION

As in every epoch of its existence, mankind today finds itself in a particular "situation". And as always this situation is created and nurtured by those who live amid the myriad events that comprise it --events that now are in the process of tumultuous and ever accelerating change, events that now increasingly and even violently clash with one another. In some deep sense our situation compels us to animate and perpetuate it almost blindly, and thus to move toward a future whose shape or quality we do not comprehend, whose surprises we have not succeeded in reducing to a rational frame of ideas, whose complexities we are not in the least sure of being able to control.

There are, however, a few basic perceptions that possess both wide currency and increasing persuasiveness, by means of which people in many different walks of life have begun to apprehend the nature of this situation. It is thanks to such perceptions that we have come to recognize the forces that hold us in their grip as arising from what we have long recognized as being the very source of our power and achievement --at least in those countries where the industrial mode of life has flourished and broken the back of age-old scarcities.

The source of our power lies in the extraordinary technological capital we have succeeded in accumulating and in propagating, and the all-pervasive analytic or positivistic methodologies which by shaping our minds as well as our sensibilities, have enabled us to do what we have done. Yet our achievement has, in some unforeseen (perhaps unforeseeable) manner, failed to satisfy those other requirements that would have permitted us to evolve in ways that, for want of a better word, we shall henceforth call "balanced." It has failed to provide us with an ethos, a morality, ideals, institutions, a vision of man and of mankind and a politics which are in consonance with the way of life that has evolved as the expression of our success. Worse, it has failed to give us a global view from which we could begin to conceive the ethos, morality, ideals, institutions, and policies requisite to an inter-dependent world --this, despite the fact that the dynamics of our technologies and of our positivistic outlooks are global in their impacts, their consequences, their endless profusion and, more importantly, in the promises they proclaim and in the promises they imply.

This failure is often regarded as having created a number of separate and discrete problems capable of being overcome by the kind of analytic solutions our intellectual tradition can so readily generate. However, the experience of the past twenty or thirty years has shown with remarkable clarity that the issues which confront us in the immediate present, as well as their undecipherable consequences over time, may not too easily yield to the methods we have employed with such success in the bending of nature to our will. Such apparent resistance could be attributable to many things, none of which must be pre-judged, but about which certain, assumptions might be made. It could be due, for instance, to the magnification of the problems we must grapple with --that is, to the fact that almost all of them are global in scope, whereas the socio-political arrangements we have created are ill-equipped for dealing with issues that fall

outside their strictly established jurisdictions. It could be due to heightened yet often obscure interactivity among phenomena, whereas our manner of solving problems owes its strength and efficiency to the identification of rather clear and direct lines of causality. It may be due to rapid rates of change, especially in the technological sector, whereas our institutions, outlooks and minds are geared by long-time habit to beliefs in slow unfolding and permanence --beliefs which have sustained certain relatively stable concepts of polity, of social order and of intellectual orderliness. In brief, whatever it is due to, the conjuncture of events that surrounds us is to all evidence worldwide, complex, dynamic, and dangerous.

Moreover such a situation can be seen as a new, or novel, experience, for in our long commitment to stability and continuity we have hitherto succeeded more or less, in steering our social evolution toward the known and in avoiding that which, for being unknown, was also uncertain and, therefore, frightening.

Because of the dissonances that inhere in our situation we find that our current attitudes toward life and issues are tending to become rigidly polarized and in consequence, hesitant to the point of paralysis. On the one hand, we take refuge in the comforts of that inertia we believe is going to help us preserve all the attributes of what we have come to call and to accept as "civilization". On the other hand, we tend to seek escape in iconoclastic or utopian futurisms whose feasibility and intellectual worth we know to be questionable, but in whose visions of a wholly new human order we sometimes find solace as well as some fleeting release.

These contradictory attitudes toward uncertainty are old. However, it bears repeating that the uncertainty, as we experience it today, is new --both in its dimensions and in its extraordinarily complex dynamics and structure. From this fundamental mismatch between the situation, that we still insist on describing as a set of "problems," and our mental and

emotional attitudes, which we continue to feel might give birth to "solutions," we can already make the assumption that our notion of problem is wholly insufficient for us to face whatever it is that our situation proposes both to our intellect and to our conscience. At the same time our notions of solution are equally insufficient to enable us to define those outcomes that could or might result in novel ways of coping with our predicament --namely, of organizing our vision at a higher level where new approaches and attitudes might begin to acquire a degree of immediate relevance.

It is the aim of this particular project of the Club of Rome to turn the above assumption into a positive statement, by trying to cognize and investigate the all-pervasive problematique which is built into our situation, through some new leap of inventiveness. Success in an attempt of this nature would enlarge and deepen both our sensibility and our understanding and open the way for certain new attitudes that eventually might become reflected, concretely and operationally, at those levels of decision making where policy is formulated.

In the making of such an effort the factor of time has acquired the utmost importance, for rapid change which is a crucial aspect of our technological momentum is accompanied by a parallel phenomenon: the similarly rapid and massive crystallization of any corrective action we devise and apply to single problems, to the discrete components of the situation. If our initial surmise that such partial cures are either insufficient or irrelevant is correct, it follows that every such action exacerbates the problematique as a whole and adds certain irreversible features to it. This, then, must lead us to conclude that time is not only of the essence but an absolute imperative that must condition any undertaking which seeks a new approach to the dilemma of our age.

This point is well illustrated by some recent studies concerning "decision effectivity time." Such studies indicate

that any corrective or beneficent effects of present action are dependent on varying time-spans, and that in many instances these time-spans have narrowed down to a critical minimum. A number of types of crisis have been singled out whose flash-points could now be seen as clustered well within the decade of the 1970's. Thus, effectivity margins that apply to general problem classes such as large-scale destruction or change, widespread tensions, continuous and growing distress, tension producing responsive change, etc., are increasingly conceived as probably falling within a 1-7 year range (nuclear escalation, 1-5 years at the outset; institutional insufficiencies, 3-5 years; participatory impatience which is one of the main factors feeding the alienation of our youth, 3-4 years; widening famine, 5-7 years; pollution, housing, education, etc., 3-7 years). These random instances serve to show that if something is to be done it needs to be done now --for otherwise we might be confronted by that ultimate experience: N-E-V-E-R.

Such then is the predicament of mankind, and the object of this document is to describe, in terms that are perforce still somewhat cursory, what can be done now, the issues that must be addressed, the organization of the needed effort, its scope and its program, the methods of investigation that appear pertinent and the outcomes which, a priori, one might hope for.

The document is divided into three parts. The present first section contains an overall description of the above points. The second section is an attempt to discuss in a very general way some of the methods of approach and organization that could be considered at this stage as possibly being useful in an undertaking of this kind. The last section consists of various clarificatory annexes describing, among other things, the aims, plans, and general philosophy of the Club of Rome. A few comments on these aims, which directly relate to the present project, follow.

II. THE CLUB OF ROME

The Club of Rome is an informal, non-political, multi-national group of scientists, intellectuals, educators, and business leaders deeply concerned with the situation just sketched, who among them have decided to face the issues that confront mankind in any way which offers the hope of reaching a new level of understanding and therefore of successful action.

The members of this group have access to considerable sources of information and knowledge. Acting jointly, they believe that they can mobilize enough intellectual and financial support to try to undertake the present project that should be viewed, not as another research study, but as an effort at intellectual breakthrough that promises a fresh vision and approach. It is their belief that only an effort which strives to go beyond "conventional wisdom" and methodological orthodoxy can allow us to perceive the complex dimensions of the problematique of our age, and thus set the stage for the formulation and development of the long-term options and alternative outlooks needed for policy-making. They are further convinced that a group of private persons who while concerned are nevertheless free from the responsibility of day-to-day political decision --and who, as individuals, have no political ambition except the good of mankind and its survival --can contribute in this way to the work of those who are responsible for leadership and action.

With reference to the project under consideration, the major objectives of the Club of Rome are:

- 1) To examine, as systematically as possible, the nature and configuration of the profound imbalances that define today's problematique throughout the world, and to attempt to determine the dynamics of the interactions which seemingly exacerbate the situation as a whole.
- 2) To develop an initial, coarse-grain, "model" or models of this dynamic situation in the expectation that such models will reveal both those systemic components that are most

critical and those interactions that are most generally dangerous for the future.

- 3) To construct a "normative" overview from the foregoing models and to clarify the action implications --i.e., the political, social, economic, technological, institutional, etc., consequences --that such an overview might entail and substantiate.
- 4) To bring everything that has been learnt as a result of this initial effort, to the attention of those in political authority, in the hope that such findings might stimulate the conception of new lines of policy that would be effective in coping with our situation's overall dynamics and its world-wide dimensions.
- 5) To persuade governments to convene a World Forum,* with whose consent, support, and encouragement an intensive dialogue concerning the findings of the project would be initiated to the end that a much larger and deeper effort could be undertaken. Such an effort would aim at developing the needed operational "macro-models" conducive to endeavors at integrated policy-planning and to the development of new institutions within whose frame of competence such work could be carried out.

These objectives have been set with the full knowledge that many governments and international organizations are beginning to recognize the dangers with which our present situation is fraught. Thus on the international level bodies such as NATO or OECD are now undertaking detailed work on many individual issues, while the United Nations is planning a world conference on the problems of the "Environment" in 1972. These moves are welcome and should add greatly to our recognition and understanding of the grave matters that are facing the whole of mankind.

*For further information regarding this point, please see Annex II in the last section of this document.

Nevertheless, the prime difference between these approaches and the one being proposed by the Club of Rome must be noted. It resides in the fact that most current efforts are directed toward single or parallel problems and do not attempt any consistent and comprehensive study of the totality of the problematic events that add up to our world system; nor do they address themselves to the areas of dynamic interaction or of overall consequences of these events; nor, for that matter, are they explicitly concerned with questions of institutional change, development, and invention which might be necessary to cope with what is confronting us.

The approach adopted by the Club of Rome, on the other hand, derives from the threefold hypothesis:

- a) that the predicament we seek to understand is systemic in character; and that the boundaries of the system encompass the entire planet;
- b) that the real problematique which inheres in the situation has now transcended discrete categories of events --overpopulation, malnutrition, poverty, pollution, etc. -- and arises from confused and obscure consequence- patterns generated by the interactions of such categories of events;
- c) that any desirable, or even acceptable, resolution of the problematique will in all probability entail, at least as outcomes to be seriously considered, fundamental changes in our current social and institutional structures, for the simple reason that these structures were not established to operate in so complex and dynamic a situation as the one in which we find ourselves.

III. THE PROBLEMATIQUE:

AN OVERVIEW OF THE SITUATION

I. THE IDEA OF "PROBLEMATIQUE"

It is in the nature of our languages, hence of our manner reality, to see and call the dissonant elements in a situation, "problems".

Similarly, we proceed from the belief that problems have "solutions" --although we may not necessarily discover these in the case of every problem we encounter. This peculiarity of our perception causes us to view difficulties as things that are clearly defined and discrete in themselves. It also leads us to believe that to solve a problem it is sufficient to observe and manipulate it in its own terms by applying an external problem-solving technique to it.

Although it is true that there are certain problems (mostly in the field of technology and engineering) that can be dealt with in this way, it is also becoming quite evident that such problems are no longer the most important ones with which we must deal.

When we consider the truly critical issues of our time such as environmental deterioration, poverty, endemic ill-health, urban blight, criminality, etc., we find it virtually impossible to view them as problems that exist in isolation --or, as problems capable of being solved in their own terms. For even the most cursory examination will at least reveal the more obvious (though not necessarily the most important) links between problems. Where endemic ill health exists, poverty cannot easily be divorced from it, or vice versa. Certain kinds of criminal behavior often, though not always, seem to be related to poverty or slum living conditions. Furthermore, if we try to solve any such problems exclusively in their own terms we quickly discover that what we take to be the solution of one category of problem

may itself generate problems of another category (the reduction of death rates in developing areas and the resultant increase in poverty, public unrest, overpopulation, etc., is a good example of this single avenue approach).

Another unfortunate consequence of the preference we display toward orthodox problem-solving is the misapplication of effort and energy. Thus many agronomists devote a great deal of ingenuity toward increasing the yield per acre of our crops without seeming to realize that the particular solution called "agriculture" may possibly no longer represent the single, feasible resolution of the problems clustered under words such as "hunger" or "malnutrition" when the latter are considered in their world-wide dimensions. It seems reasonable, therefore, to postulate that the fragmentation of reality into closed and well-bounded problems creates anew problem whose solution is clearly beyond the scope of the concepts we customarily employ. It is this generalized meta-problem (or meta-system of problems) which we have called and shall continue to call the "problematique" that inheres in our situation.

2. TOWARD A GENERALIZED RATIONALE

The fragmentation of reality caused by our conceptual and linguistic makeup notwithstanding, it is still necessary to talk about the situation and to communicate ideas concerning it. Since we have no new language for doing this, we can only approach the notion of the problematique in terms that are familiar to us. We can break down the problematique into its major components and we can list such components, both for purposes of their tentative identification and of creating a referential base, under the title of Continuous Critical Problems. The listing that follows represents a general statement of the most commonly recognized problems of this sort.

CONTINUOUS CRITICAL PROBLEMS:

AN ILLUSTRATIVE LIST

- 1) Explosive population growth with consequent escalation of social, economic, and other problems.
- 2) Widespread poverty throughout the world.
- 3) Increase in the production, destructive capacity, and accessibility of all weapons of war.
- 4) Uncontrolled urban spread.
- 5) Generalized and growing malnutrition.
- 6) Persistence of widespread illiteracy.
- 7) Expanding mechanization and bureaucratization of almost all human activity.
- 8) Growing inequalities in the distribution of wealth throughout the world.
- 9) Insufficient and irrationally organized medical care.
- 10) Hardening discrimination against minorities.
- 11) Hardening prejudices against differing cultures.
- 12) Affluence and its unknown consequences.
- 13) Anachronistic and irrelevant education.
- 14) Generalized environmental deterioration.
- 15) Generalized lack of agreed-on alternatives to present trends.
- 16) Widespread failure to stimulate man's creative capacity to confront the future.
- 17) Continuing deterioration of inner-cities or slums.
- 18) Growing irrelevance of traditional values and continuing failure to evolve new value systems.
- 19) Inadequate shelter and transportation.
- 20) Obsolete and discriminatory income distribution system(s).
- 21) Accelerating wastage and exhaustion of natural resources.
- 22) Growing environmental pollution.

- 23) Generalized alienation of youth.
- 24) Major disturbances of the world's physical ecology.
- 25) Generally inadequate and obsolete institutional arrangements.
- 26) Limited understanding of what is "feasible" in the way of corrective measures.
- 27) Unbalanced population distribution.
- 28) Ideological fragmentation and semantic barriers to communication between individuals, groups, and nations.
- 29) Increasing a-social and anti-social behavior and consequent rise in criminality.
- 30) Inadequate and obsolete law enforcement and correctional practices.
- 31) Widespread unemployment and generalized under-employment.
- 32) Spreading "discontent" throughout most classes of society.
- 33) Polarization of military power and psychological impacts of the policy of deterrence.
- 34) Fast obsolescing political structures and processes.
- 35) Irrational agricultural practices.
- 36) Irresponsible use of pesticides, chemical additives, insufficiently tested drugs, fertilizers, etc.
- 37) Growing use of distorted information to influence and manipulate people.
- 38) Fragmented international monetary system.
- 39) Growing technological gaps and lags between developed and developing areas.
- 40) New modes of localized warfare.
- 41) Inadequate participation of people at large in public decisions.
- 42) Unimaginative conceptions of world-order and of the rule of law.
- 43) Irrational distribution of industry supported by policies that will strengthen the current patterns.
- 44) Growing tendency to be satisfied with technological solutions for every kind of problem.

- 45) Obsolete system of world trade.
- 46) Ill-conceived use of international agencies for national or sectoral ends.
- 47) Insufficient authority of international agencies.
- 48) Irrational practices in resource investment.
- 49) Insufficient understanding of Continuous Critical Problems, of their nature, their interactions and of the future consequences both they and current solutions to them are generating.*

It should be evident that these Continuous Critical Problems are meant merely to serve as general labels under each of which entire trees or clusters of issues that appear analogous, can be classified. Further, neither their rate of occurrence nor their intensity is uniform throughout the world. Therefore, the causality structure that underlies such a listing is obviously of extreme complexity and actually impossible fully to ascertain through mere observation for, even on direct empirical evidence, it is clear that the true list must be many times larger than what we have given.

However, even from this limited listing we begin to sense that these large problem-areas are system-wide, interdependent, interactive and intersensitive; that they transcend national frontiers, or even regional boundaries; and that they are seemingly immune to linear or sequential resolution.

This, in turn, suggests that when the problem-trees have grown to world-wide proportions their branches intertwine --or, if we use the image of clusters, we can say that the clusters overlap. Such areas of overlap then create new problem-areas

* These Continuous Critical Problems are not listed or grouped in any particular order; nor is the list to be regarded as complete.

whose description (hence our understanding of them) escapes the boundaries of the original taxonomy. Therefore, the line of approach to be taken must first aim at clarifying the systemic character of the problem-areas, and secondly, must re-state them in a way that will make their most critical synergies visible.

The five frames that will be found on the following two pages are an attempt to give a graphic portrayal of this dynamic and interactive growth of the problematique. In each of the frames the problem-areas are symbolized by differently shaped shaded spaces.

Fig.1 merely represents an arbitrary and random positioning of such problem-areas, with the aim of describing a situation wherein the visible interactions among the conjuncture of problems is patently weak or, even probably, non-existent. Such situations have often been experienced in the past especially if they were being viewed in terms of the whole world as the context within which the singular problem areas were evolving.

It is with reference to this type of situation that our problem-solving methods were developed. And they consist in attacking each of the problem-areas separately and in attempting to find discrete solutions in each such area. This analytic habit continues to hold sway over our minds, despite the fact that we have, by now, recognized the existence of certain contiguities among the problem- areas. Such contiguities have become manifest some time ago, and are no doubt due to the growth of the problems --although this growth has displayed different rates in its momentum, and has occurred along different vectors (Fig.2). The continuation of these trends would seem to have turned such contiguities into clusterings and overlaps (Fig.3), which we may perceive superficially but whose real structure and dynamics escape us. In actual fact the situation tends increasingly to appear as a single complex system whose internal relationships, interactions, fields of force, and overlaps are extremely confused (Fig.4) and impossible to delineate without a very serious attempt to model it in its entirety. Such a modeling

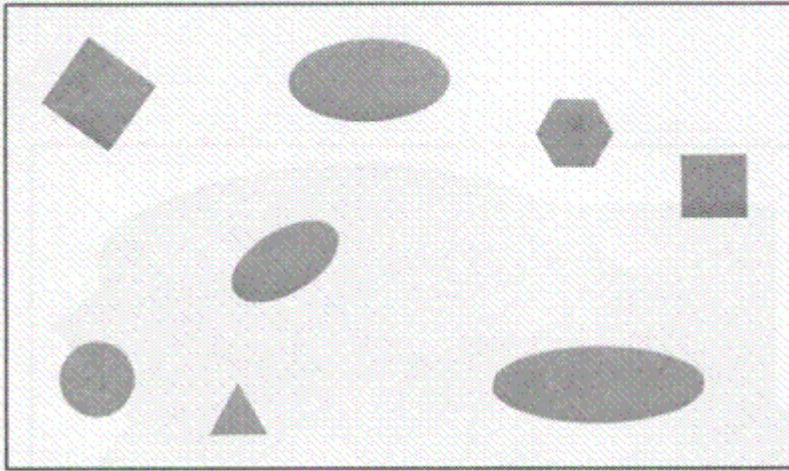


Figure 1

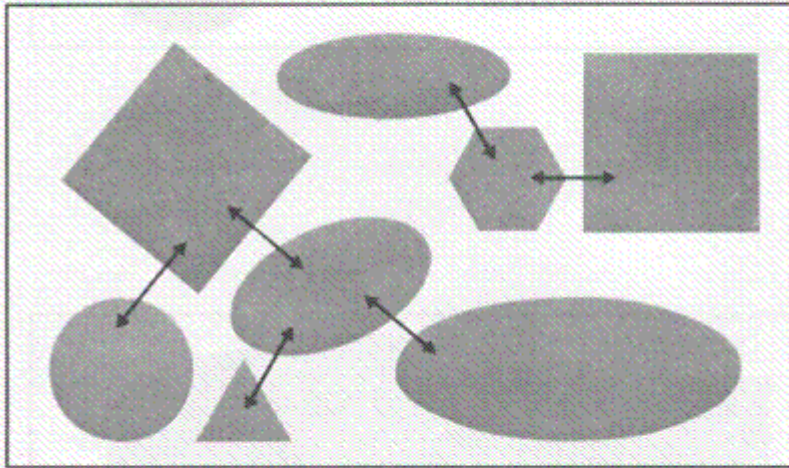


Figure 2

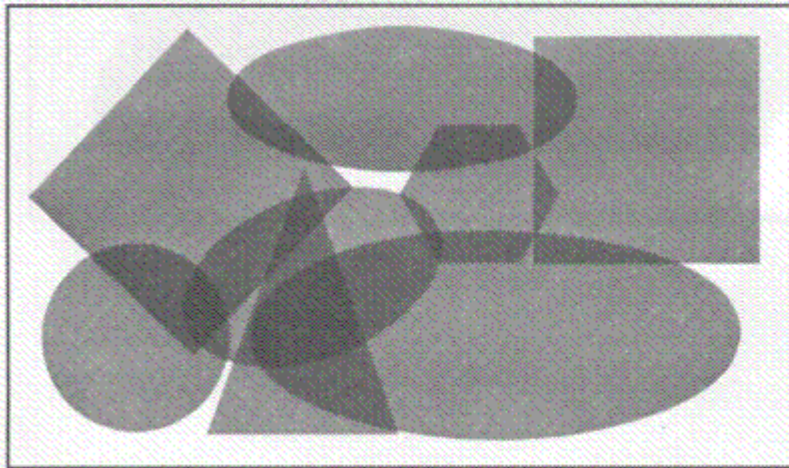


Figure 3

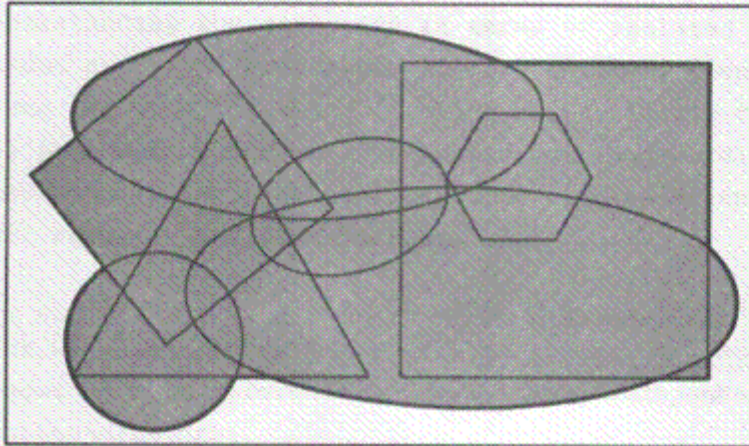


Figure 4

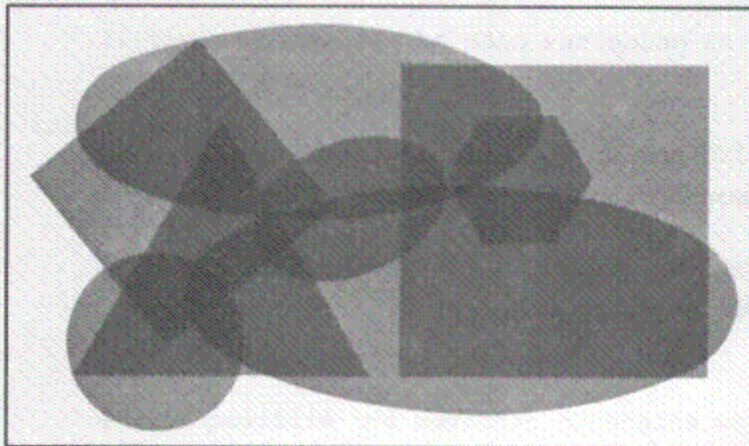


Figure 5

effort could, for example, reveal the morphology of the situation as resembling what is shown in Fig.5 --namely, as having a composite dynamic core, and differing intensities of interfaces and relationships, all of which must be identified and organized into a unified frame of perception and understanding.

Such an approach --which can only incompletely be communicated in two-dimensional drawings --is clearly needed and clearly important for it now appears possible to surmise that attempts at understanding the situation in terms of isolated problems have gone almost as far as they can. If this be true, then, greater effort along the same lines should teach us but little that is new about the phenomena which make up the issues, and hardly anything at all about the living, changing, dynamic texture of the interconnections that actually create a "situation".

If we are to learn something new it would appear, therefore, that we need to create one or more situational models which might reveal --with reference to, but almost independently from, the problem-clusters:

- 1) the identity of the most critical and sensitive components of the situation;
- 2) the main or major interactions that exist among the various variables contained in the situation;
- 3) the behavior of the main variables in relation to within the situation;
- 4) the time-dependent ordering of the chief possible outcomes and of their present consequences for action;
- 5) the presently invisible critical connections that operate systemically within the present situation and that situation's future configuration;
- 6) the positive and negative synergies that must exist among various alternative consequences and options.

Factors such as the above can be explored because, by means of modeling the situation correctly, it becomes feasible (1) to penetrate the areas of interdependence among problems and clusters of problems; (2) to manipulate the models artificially --so as to observe the behavior of the situation's components under differently structured configurations. After the modeling work has been completed it should be possible to elaborate

suggestions for curative or corrective action that might prove helpful in developing policies. However, to be taken, all these steps require that a ground be established upon which the entire modeling effort can be made to rest. Such a ground is what we shall refer to as the "value-base."

3. THE VALUE-BASE

The primary aim of modeling is to give the subject a shape, a structure, a configuration that is determined by an objective which, itself, is external to the subject. Hence the clarifications or insights that might be obtained from a successful modeling effort are never reached in terms of the subject (i.e., a problem or a situation) but in terms of the external objective to satisfy which the modeling was undertaken in the first place. Such an objective always entails a value, and the setting of it must therefore create the particular value-base that gives meaning and direction to the whole endeavor.

A value-base explicitly stipulates certain assumptions about what is "good" and what "bad."* In the past, it was not always necessary to make such a stipulation because a problem could be recognized clearly and singularly as a problem and therefore fell automatically into a negative value category. This is not the case nowadays when we must deal with the problematique of a whole world-wide situation. In so extended and complex a problem area the value premises reveal themselves as being so confused that it becomes imperative to define a value-base that will govern the work from the very outset.

The value-base to be selected must satisfy certain

* This manner of proceeding is actually implicit whenever we say that something represents a "problem". When we call occurrences such as hunger, or over-population, or lack of education, "problems" we are in fact defining them in this way because according to our value system they represent a state that is bad, in comparison to an alternative possible state --which we call "solution" --that we accept as being good.

fundamental criteria. First, it must qualify as a heuristic tool-concept that can be used throughout the study. Secondly, it must be consonant with the initial perceptions and beliefs that have triggered the work. Thirdly, it must support, and in some sense justify, the outcomes that are expected from the effort. The second and third criteria have already been elaborated throughout the preceding pages; nevertheless, it might bear repeating here that the ground of pre-suppositions from which we shall start is the belief, backed by considerable empirical evidence, that there are strong interactions among the events which create our situation and that, while it is impossible fully to isolate the former, it should be feasible to identify, through modeling, some critical aspects of their temporal and spatial morphology. And, moreover, that such identification might also permit us to anticipate a number of dissonances which may not exist at present, but whose developing conjuncture could well be forming those new issues and problems which will define our future.

It is on this ground of perceived fact and belief that we must now evolve the value-base of the work, as a heuristic tool-concept that will satisfy the first criterion stated above. This can be done with reference to the nature of the problematique itself, that is, with reference to the most general attributes we find in those component elements of our situation that we have called Continuous Critical Problems. When we review these (even superficially) we find that all of them are problems in relation to something else --either other problem-clusters or a particular state of the system in terms of which we look at them, or values we take for granted because they are embedded in our current culture. Thus, for example, uncontrolled population growth is a problem when viewed in relation to a particular state of the environment that we are now experiencing. It was not a problem when we experienced the environment differently; namely, in a different state of the overall system. Such examples can be multiplied, and if they are we shall notice that in every

instance the problematic element derives from an imbalance that affects the relationships existing among situational components. This observation cannot but remind us directly that imbalance is a state which defines the pathology of an "ecological" system, which, in fact, our situation, seen in its entirety, represents. Ecology, as one hardly needs to note, is the study of the equilibria and the dynamics of "populations" of living entities within given environments. The notion can be extended and generalized to comprise the equilibria and the dynamics of all entities, for every dimension of contemporary experience is a definable population of facts and concepts: biological, physiological, physical, psychological, ethical, religious, technological, economic, political, national, international, communal, attitudinal, intellectual, institutional...; the full list is no doubt finite but very long indeed. It covers everything and event among which relations of mutual determination, complementarity or competitiveness can be established.

Hence if we extend, as is increasingly being done nowadays, the definition of ecology to comprise the dimensions of occurrence in our world-wide environments it becomes possible to say that we are confronted with a problematique which is ecosystemic in character. The normative statement that describes the value- content of any ecosystem is "ecological balance." Consequently it is the idea of ecological balance that can, and will, be taken as the underlying value-base of the study; for in the terms dictated by our situation the "good" is self-evidently and most generally capable of being defined as the re-establishment of that many-dimensional dynamic balance that seems to have been lost in the modern world.

Given the general conditions of this study, such a value-base should make it possible to develop models and attain insights that have global relevance, and should further open the way for the integration of the models into one primary synthesis capable of providing ideas that, subsequently, can be made

actionable in terms of concrete policies, of new structures, and new institutions.

4. CONCLUSION

The points that have just been touched upon amount to saying that: apart from the reasons of urgency for which the study is being recommended its only a priori hypotheses arise from the recognition of the problematique as possessing world-wide dimensions and therefore systemic characteristics, and that the functional attributes of today's world system necessarily involve normative elements which, being planet-wide, transcend sectoral, political, or regional differences; and the recognition that our current methods of description as well as our social and institutional structures are not designed to operate effectively in a system which is world-wide.

It should be repeated in order to emphasize the point, if for no other reason, that the approach briefly described above is non-political be it in motivation, in methodology, or in its initial results. Its aim is to create new clarificatory models of the known and already described components of our complex problematic situation so that the subsequent activity of policy formulation may be facilitated or even made possible. It represents a step forward in relation to the present state of affairs, inasmuch as the current ways of describing our situation do not allow of any rational or effective attempt to grapple with the fundamental political considerations to which all insights and conclusions must ultimately be reduced.

V. THE PROPOSAL

The effort as a whole would be divided into two distinct steps:

First: The "project" as described herein, undertaken by the Club of Rome and dealing with the empirical aspects of the situation, its morphology and the interrelationships that operate among its components. This would be the rough modeling phase;

Second: A subsequent and more ambitious phase, hopefully to be undertaken by the World Forum, dealing with the study of the critical aggregations revealed by the initial model and would aim at the discovery of alternative means of interpreting and resolving interface imbalances and to the identification of various options that are suggestive of coordinated policies.

I. SCOPE

At the present juncture, the scope of the project (first step) is seen as follows:

- to define criteria for identifying imbalances of a global nature especially with reference to their future evolution
- to attempt a qualitative and quantitative delineation of the interactions that appear critically synergistic within the situation created by these imbalances;
- to establish a tentative morphology of problem interfaces and interactions;
- to identify and evaluate the main trends of research currently being undertaken with reference to this type of problem, to determine the degree to which such research can contribute to the investigation of the overall problematique;

- to outline programmes, initial methods of approach tasks and responsibilities pertaining to the investigation as a whole;
- to attempt to take the first steps necessary for the development of a dynamic computerized model by means of which the entire structure, rather than the mere parameters, of the situation can be manipulated, so that new configurations of the problematique may be revealed and experimented with.

2. PROGRAM

The governing statement concerning the project as a whole is that its aim is not research in the traditional sense but "invention."

This should be understood to mean that what is expected from the effort are new insights and approaches rather than the further and deeper elaboration of already known facts. The latter will be used in their present state of elaboration as the substantive material upon which the work will bear --however, the expectation that animates the work itself concerns the meaning which all these facts, in their systemic nature and system-wide impacts, have for the future of mankind.

Hence it is necessary to interpret the following program in the light of the above statement of purpose.

a) Investigation

This initial attempt should define some of the main empirical dimensions of the problematique, the way it is presently sensed and perceived.

The sources from which this information will be obtained are international agencies, research institutions, universities,

special study groups, foundations, unions, associations, youth groups, and various selected interest groups, etc.

Existing data banks of national or international scope dealing with critical world problems will be located and used insofar as possible.

Nevertheless in order to avoid sliding into some form of taxonomic research activity the project will for a start concern itself mainly with the basic grouping of problematic issues that are most widely known. These were listed earlier in this document under the heading of Continuous Critical Problems.

Each of the Continuous Critical Problems that were named is today the object of more or less deep research in many organizations and in many countries. This research is generally directed toward the problems themselves and not toward their interrelations--an aspect to which particular emphasis is to be given in the proposed effort. A comprehensive survey of this ongoing research must necessarily be made in order to identify capabilities, lags, and gaps in the body of understanding and knowledge now available, and to make use of any pertinent information it affords us.

Therefore the investigatory phase will attempt primarily at infusing the Continuous Critical Problems with as great an operational meaning as feasible; to enlarge or reduce or refine the initial listing by means of trees and clusters; to establish definitions that are more precise especially in relation to the value-base of ecological balance.

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b) System Description

The investigatory part of the work should lead to, or be accompanied by, the design of the system which represents the matique in its world-wide generality.

The organization of such a system must be so conceived as to reveal:

- the structure of the dominant interrelationships among systemic components.
- the nature and present intensity of the interactive relationships; the nature and intensity of the "feedback" and "feedforward" effects; the general (obvious) causality patterns into which the interactions can be seen.
- the dynamic of the interactions from which some idea system's future states can be sensed or deduced.
- the controlling elements of the system as it is today, and how this order is likely to change as the system evolves in time.
- the component linkages that appear to be the mostly critical.
- the functional morphology of the linkages: degrees of rigidity, flexibility, equilibrium, stability --in the rates and the levels of the system of interactions.

The final configuration of situational components to emerge from the proposed study will therefore have a spatial and temporal morphology that embodies the dynamic process that animates critical world problems, when that process is set in the context of a general value framework of ecological balance.

The project will not attempt a forecast of how problems will be apprehended in the future, although the final shape of the system will depend on the integration of alternative perceptions of the future with perceptions that have currency today.

c) Report

The project should result in either one or several reports containing the synthesis of the work conducted, interpreting the new system of world-wide critical interconnections, the key problem-clusters that should be given particular attention, and the methods to be used in their further investigation.

d) Outcome

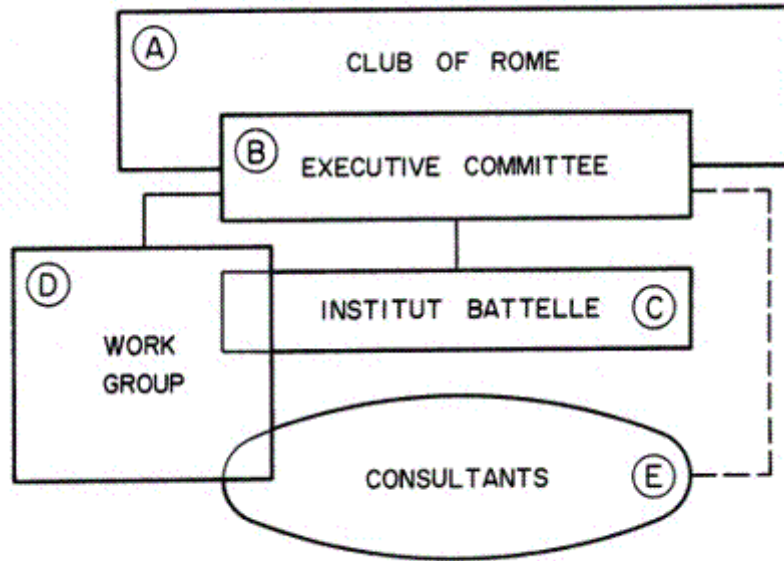
The reports, by giving a clearer picture of the nature of the problematic interactions, of their relative importance and their dynamic configurations, should be of use as a preliminary indication of possible new and viable directions in the field of policy-making.

Once this initial aim is attained it is the hope of the Club of Rome to have its findings reinterpreted in depth by the kind of instrumentality that was referred to earlier as the World Forum. Such reinterpretation would allow the results of the project to be fitted into the framework of different value systems and molded into new attitudes and outlooks at a higher level of political endeavor where new structures and institutions can be designed. However, to be reached, these ends require means that are both more ambitious and more sophisticated than those to be used in the project --e.g., policy analyses and design, trade-off calculations, deontic logic applications, the construction of alternative systems, long-term dynamic simulations with multiple variables, etc.

Through such means a normative as well as an empirical delineation of the future states of the world system might be obtained together with the details of the new framework of integrated policies, institutions, and organizations that are necessary to render such a new world system operational.

e) Organization

The overall organization of the project is described below in its relationship to the envisaged structure of the Club of Rome.



- A. The aims of the Club of Rome have already been noted in relation to the project being considered here. Its general objectives and constitution are described in Section Three (Annex I).
- B. The project falls directly under the cognizance of the Executive Committee of the Club of Rome. During the latter's formative stage an Executive Committee has been formed ad hoc whose membership will be found in Section Three (Annex III).
- C. The Executive Committee has asked the Institut Battelle at Geneva to provide administrative support and act as managing agency for the project. This request having received favorable response from the Battelle management, it was decided that Battelle's Geneva Centre de Recherche would be providing hospitality and facilities for the Work Group that will be engaged in carrying out the project.
- D. The Executive Committee has asked Prof. Hasan Ozbekhan to undertake the overall direction of the project and the operational responsibility for the Work Group. Currently, the Work Group itself is visualized as consisting of some

ten senior scientists from various national backgrounds, supported by a team of junior researchers. Further details concerning the Work Group will be found in Section Three (Annex IV).

- E. The aid of a number of Consultants will be solicited to support the Director of the project. These consultants should be authorities in various fields that pertain to the project in its generality.

The principal role of the consultants will be to offer new ideas and substantive verification from the viewpoint of disciplinary approaches whenever necessary.

A general idea of the planned competence of this consulting group will be found in Section Three (Annex V).

3. COST AND DURATION

It is expected that the project as described can be realized within a budget of \$900,000 and that its duration would be approximately of 15 months. Therefore if the work can be started sometime during the summer of 1970 it should be completed by the end of 1971.

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