Encyclopedia of World Problems and Human Potential

The article we are publishing hereafter is the introduction to the second edition of « The Encyclopedia of World Problems and Human Potential 1985/86 », *edited by UAI as Volume 4 of its* " Yearbook of International Organizations 1985/86».

This fourth volume is a comprehensive source of information on world problems that have been recognized, on how they are perceived to be interrelated, and on the human resources available to challenge them. Detailed sections draw attention to a variety of alternative insights into the ways in which human development and the world problématique mutually inhibit, enable and provoke each other.

Strategic assumptions

Over the past 25 years, from the first International Development Decade, international groups and organizations have implemented or advocated every conceivable strategy offering some promise of counteracting the emergence of a crisis of crises. Whatever the successes, it is widely acknowledged that the basic trend has not been significantly affected. This recognition has itself been voiced so frequently through the Secretary-General of the United Nations that it has itself become an outworn generalization associated in the minds of many with the of loss of credibility of existing institutions, democratic political processes and academic research, all of which have proven incapable of more than token response to the global problématique. The series of special international commissions (Brandt, Palmer, etc) recently convened to report on particular aspects of the emerging crisis have proven to be as much a symptom of collective impotence as capable of offering a foundation for new initiatives.

The same 25 years have seen the emergence of a widespread counter-culture which has offered the hope of alternative approaches. These have borne fruit in the form Of, for example, new communities, personal growth movements, political activism, volunteer programmes, alternative technology, computer-supported networking and the green movement. These developments have been sustained in part by exciting breakthroughs in comprehension of the nature of self-organization, paradigm change, holism, implicate order, and the relationship between physics and consciousness. Nevertheless whilst, like official and semi-official development and altered states of consciousness initiatives, these continue to offer the possibility of significant impact on the global problématique, such have not been forthcoming, And to a large extent such alternative approaches have appeared as luxuries irrelevant to the priorities of developing countries.

Maintenance orientation: It would appear that collective ability to respond to the crisis of crises has been effectively paralyzed. The 1980s have seen the emergence of a sense of apathy, defeatism and despair in the international development community and in grass roots movements. This is largely disguised by public information programmes and media events designed to maintain confidence in projects and campaigns which do indeed have some measure of success. But as the food crisis in Ethiopia has demonstrated, although a magnificent one-time attempt can be made to remedy short-term problems in the spotlight of media coverage, the solutions to the underlying longer-term problems are not in sight. At this point in time programmes are deemed a success if they can slow the trend toward major crisis. An acceptable criterion is maintenance of the status quo provided it lends itself to being described as innovation. Significant social innovation is seldom sought however eloquently it is advocated.

Solution production: Many "answers", whether explanations, programmes, strategies, ideologies, paradigms or belief systems, are being put forward in response to the current crisis, however it is perceived. The proponents of each such answer naturally attach special importance to their own as being of crucial relevance at this time. whether in the short-term for tactical reasons, or in the long-term as being the only appropriate basis for a viable world society in the future. However, this widespread focus o "answer production", a vital moving force in society, obscures both the significance of the lack of fruit-

fui integration between existing answers and the manner in which such answers undermine each other's significance. This mind-set also fails to recognize the positive significance of the continuing disruptive emergence of new "alternative" answers.

Questionable truths: Amongst this multitude of answers, explanations put forward as factual by scientific or government authorities are increasingly questionable because of peer group, religious, political, military, security and commercial pressures guiding objective evaluation and reporting. Recent examples include dubious evaluations by authorities of nuclear reactor and toxic waste hazards (USA. UK), official denial of the impact of acid rain on forests (USA, UK), and reassessment of the world population problem as non-critical (USA). The situation has been epitomized in NASA, the model of western high-tech management, by the top executive pressures on engineers to withhold information on the gravity of problems associated with low-temperature effects on space shuttle launchings. Middle management in any bureaucracy is under considerable pressure to report positive achievement in the light of pre-defined policy objectives, not to indicate the dimensions of problems subsequently detected. There is no assurance that such pressures do not affect the reporting of many other facts of social significance, even to the point of self-censorship, as increasingly practiced in biology textbooks (to meet creationist objections) and in encyclopedias (to avoid raising unwelcome political questions concerning such social realities as corruption and institutionalized torture). Even in courts of justice, an expensive (astute) lawyer considerably increases the probability of a judgement favourable to his client. The truth of facts has become a question of interpretation, leaving authorities free to deny politically unacceptable conclusions by selecting experts prepared to declare that "there is no proven causal link" between the problems in question (even though such a link may be accepted by equivalent bodies in other countries).

-"Gladiatorial arena: Policy integration initiatives at this time are themselves fragmented and mutually hostile, to a degree usefully interpreted in terms of the metaphor of a "gladiatorial arena", in which the survival of any integrative answer must be bought at the price of the elimination of all other competitors. There is considerable confusion about the nature of integration and it is difficult to imagine that integrative processes favoured by one group would be considered to be of much significance by another. This phenomenon cannot be disguised by simply opting for consensual procedures, "networking" processes or by viewing it as a "healthy" feature of academic or political debate.

Irrelevance of alternatives: The most characteristic response to this confusion is to simplify the situation by establishing or affirming, explicitly or implicity, the fundamental irrelevance of other answers and perspectives that are viewed as incompatible, if their existence is recognized at all. The preoccupations of the other constituencies are thus defined as dangerously misguided or agonizingly irrelevant. As a consequence there is always a perfectly valid reason for not instigating any advocated course of action or for not considering any alternative perspective.

Projection of blame: Many would reject any such recognition of paralysis. But the basis for their rejection is that, if only some other portions of society would cease to block effective change then this would release the resources that would demonstrate the collective paralysis to be only momentary. Unfortunately it is precisely the number and variety of such "if only theys", which has ensured the spread of this paralysis and which guarantees that it will prevail for some time to come.

Assumption of innocence: Corresponding to this projection of blame onto other groups as suitable scapegoats is a widespread assumption of the unquestionable innocence of one's own group which may well be perceived as making an untarnished significant contribution to the well-being of society. Whether it be academic disciplines or their corresponding professions, national or international organizations, public or private bodies, benevolent or alternative groups, each acts as though its contributions to society constituted an unmitigated good. However valuable these may be, the suspect consequences of these contributions can only be questioned at the risk of ridicule. Sanctions may be applied against those voicing such criticism, from within or without, whether in the case of the United Nations or of alternative groups. A perfect disguise is therefore provided for every possible systematic abuse.

Reinforcement of fragmentation: One major characteristic of the plethora of material documenting the ills of the global community is that it tends to reinforce this plaintive or angry plea, noted above, that "if only" some other group would act in some other way all could be well. Each such report focuses on one part of the network of problems, explicitly or implicitly denying the relevance of some other part with which others identify. It is understandable that any such other group would not be strongly motivated to respond to the concluding pleas of such a report. Furthermore it will probably associate itself with some other report denying, explicitly or implicitly, the relevance of the priorities laid out in the first. This process can be observed between the Specialized Agencies of the United Nations or their equivalents at the national level. It is however far from being limited to governmental bodies.

Narrow information base: The consequence of this process is that no group is motivated to recognize or document the full range of perceptions of the ills and opportunities of the world. Such information exists but has to be culled from documents in different locations, which very few are inclined or able to do. If such perceptions are not interrelated the chances of reducing the level of paralysis are handicapped. The argument is therefore that recognizing the full range of ills and opportunities by which groups are touched and with which they identify, is a minimum requirement for exploring the ways in which they can be collectively empowered to release their contribution to the paralysis.

Single-focus dependence: Such fragmentation encourages, and is further reinforced by, dependence on single-factor explanations and single-policy initiatives. Each such initiative is necessarily formulated in terms of a limited information base. This is usually discipline-oriented in the case of the academic community, but ideological, action-preference, "priority" and other filters may also be used. The integration of the approach is thus achieved artificially by deliberately avoiding the encouragement of a variety of complementary approaches capable of counteracting each other's weaknesses. When the opponents of such a unified approach can demonstrate its weaknesses, they then move to implement another simplistic approach of a contervailing nature in order to remedy them. Society thus moves spastically from policy to policy without any ability to acknowledge the merit of an ecology of policies and of alternation through a cycle of policies.

Initiative obsolescence: Single-focus dependence leads directly to the repetition of initiatives of a form which has failed in the past or whose success has been only marginal. This is tragically symbolized by the continuing attempt to drop sacks of food from an airplane in flight to starving populations. Although the fact that these sacks burst on contact has been evident for the past decade, the attempt continues to be made. Questioning strategies based on thinking of this Kind, especially when they are defined with politically acceptable trigger words (population, energy, environment, food, health, education), may be considered tantamount to questioning the merits of motherhood. In the Club of Rome's terms, many such initiatives are maintenance-oriented and are incapable of innovative breakthroughs. And yet disarmament conferences of similar form continue to be held. There have been over 5,000 since 1945. The need to break through to new forms of initiative is not accepted by the international community. Even the eloquent pleas for a new order are made on the assumption that well-tried conceptual, policy, programme, organization and conference forms are appropriate to its conception and implementation, with perhaps some minor adaptation.

Disagreement phobia: Society has been unable to design any framework, whether conceptual or organizational, in which disagreement is an accepted, permanent integral feature. The frameworks now used are based on the assumption that consensus is the keystone on which any viable organization must depend. As a consequence, disagreement can never be accepted as an integral feature of society, except through structures or processes designed to eliminate it (conflict resolution, mediation, arbitration). These include competition and violent conflict, in which victory is sought, through the downfall of the opponent, Although disagreement is a daily and often creative reality, the fear of situations in which disagreement prevails is such that they are shunned, whether unconsciously or by well-rationalized processes. When they cannot be avoided, much effort is devoted to amplifying the significance of whatever minor items can be discovered on which agreement has been achieved. Agreement then becomes an essentially superficial pretence of little operational significance. Conceptual, organizational or legal structures based on such agreement are consequently totally inadequate to the innovative requirements of any dynamic development process in which disagreement is inherent. Stressing consensus as a key to development and social transformation comes dangerously close to destroying the basis of its dynamism. Development can only occur if there is disagreement with those maintaining the status quo.

Self-reflective paradox: Any attempt to reflect the widest possible range of perspectives on the ills and opportunities of the world is bedevilled by an interesting paradox. Given the prevalence of disagreement, whatever method is employed must necessarily engender disagreement. It cannot be expected to result in some ideal, objective approach that would engender universal consensus. Indeed the very attempt to reflect the fullest range of perspectives must naturally remain suspect to those with the vested interests necessary for any specific form of action. Any breakthrough into a more fruitful mode must therefore endeavour to give explicit recognition to this paradox and to the dynamics associated with it. In this light it would be unproductive to attempt to produce yet another "answer" to the condition of the world, however adequate it might be.

Embodiment of discord: Since the widespread tendency to produce incompatible answers is a symptom of the underlying paralysis noted above, any endeavour to break out of this paralysis must respond to this dynamic, if it is to be of any relevance to the current conditions. Instead of a linear approach, taking up and defending a particular position, as required by the militaristic conventions of academic, religious, political or ideological debate, a complementary non-linear response can usefully be attempted whereby such positions are identified as perceived both by those who hold them and by those who consider them nonexistent, irrelevant, misleading or downright evil. A valid response is therefore to attempt to design a framework to internalize or embody discord, contradictions and logical discontinuity. The status within the framework of the perspective that the attempt itself represents must necessarily remain a paradox. A further step is therefore called for within such a framework to explore the adequacy of conceptual language to contain such incommensurable perspectives so characteristic of the dynamics of global society. The ultimate question is therefore how to interrelate inherently incompatible answers without producing yet another answer to compete with them in a process which has proved unable to transcend itself.

Objectives

The objective of the project through which this volume is produced is threefold and may be described as follows:

A. Collection and presentation of information

At this level the intention is to demonstrate the feasibility and value of assembling information reflecting the perspectives of a very wide range of international constituencies. In contrast to normal practice, this information is not filtered by some particular criteria of "truth" or "importance". Every effort is made to present it in terms of what is held to be true by the constituencies from which it originates, even if the information totally contradicts that from some other international constituency. It is a basic assumption of this project that it is the dynamics inherent in the interaction of such conflicting biases which reflect the reality of global society, as much as the fundamental insights emerging from any particular analysis of the global system in the light of criteria carefully selected by leading experts.

In organizing the information into the sections in this volume, the intention has been to group material into classes corresponding to the terms conventionally used to describe and order any response to the global problématique and the possibilities of human development, namely: problems, values, strategies, etc. Each of these tends in some way to be of fundamental concern to any international constituency, whatever the differences about the appropriate content of such classes.

In designing a framework "hospitable" to such a wide range of perspectives, whether mutually indifferent or inherently incompatible, a secondary objective has been to seek ways to juxtapose such perspectives in order to highlight the variety of relationships between them. The

framework therefore contains the variety of incompatible perspectives by fragmenting the information into a very large number of descriptive entries. This deliberate disorganization is counter-balanced by a very extensive network of cross-references between such entries. When appropriate information has been obtained from appropriate sources, some form of counterargument is included in many entries, illustrating the limited or misleading nature of the perspective presented.

This objective can be usefully described in terms of the metaphor of an astronomical telescope. Whereas a limited number of astronomical objects are visible to the naked eye, their visibility from Earth is determined both by their intrinsic brightness and by their distance from the observer. The major problems cited by any international constituency are equivalent to the brightest of those objects. Others may be barely visible to them. By the use of a telescope the number of visible astronomical objects, whether stars or galaxies, increases enormously, depending on the resolving power of the telescope. The brightness of some of them, to an observer located elsewhere, may be very much greater than those visible from Earth. So for some other international constituency, a different, but possibly overlapping, set of problems appears to be of major importance. The challenge of this project is conceived as one of designing a telescope of sufficient resolving power to collect information from distant sources on the phenomena which are highly visible to them. This is achieved by using the whole array of international bodies as collectors, thus constituting (as with a radio telescope with a long base line) a much more powerful telescope than that based on dependence upon any one of them or upon any small group of them. As with recent discoveries concerning the dangers of exposure to low-level radiation, this may also help to demonstrate that long-term exposure to less visible problems can be as dangerous as short-term exposure to the more visible problems.

It is hoped that the collection and presentation of information in this reference book form will meet the information needs of many users.

B. Clarification of conceptual challenge

At this level the intention is to clarify the challenge of interrelating perceived patterns of information with which people and constituencies can identify and by which they are empowered. In one sense this project is an endeavour to document the perceptions active in global society. For the resulting quantity of information to begin to become meaningful as a whole, this calls for new approaches to communication, with an emphasis on patterns of concepts. The perceptions documented are those with which different people identify and by which they are motivated. For such motivations to reinforce each other to achieve the required political will to change, greater understanding is required of how patterns of concepts may be nested together without doing violence to the particular perceptions with which people identify. For such social change to be fruitful, there is the even more challenging requirement of ensuring a comprehensible relationship between mutually incompatible patterns of concern that can correct each others' inadequacies and excesses. Although the variety of information assembled helps to clarify the dimensions of the conceptual challenge, one four-part section of this volume focuses experimentally on various dimensions of communication: forms of presentation, patterns of concepts, metaphors and symbols.

This second objective can to some extent be described in terms of the metaphor of electricity generation. The electrical current produced by some form of generator depends upon the degree to which opposite charges can be simultaneously generated within the same framework and conducted together (but insulated from each other) to the point where the difference between the charges can be used to do work. This project endeavours to accumulate and juxtapose within the same framework both extremely negatively charged information on world problems, and extremely positively charged information on human potential in various forms (values, strategies, etc), rather as in the design of a battery. This is in strong contrast to many other initiatives which endeavour to focus only on positive initiatives (solutions, values, etc), only on negative doom-mongering, or on a mixture from which the opposing charges cannot be effectively separated so as to empower people to act. In the light of this metaphor such efforts are as likely to succeed as attempts to design monopolar batteries or an electrical circuit with a single wire. When they do succeed in mobilizing people, their subsequent failures could be usefully compared to the dangerous discharges resulting from the generation of static electricity.

It is hoped that the information presented here will stimulate some users to contribute further to the clarification of this challenge.

C. Enablement of paradigm alternation

At this level the intention is to explore indications of ways of moving beyond the sterile relationships between the existing paradigms within which the perceptions documented in this volume are generated. For although the strengths and weaknesses of such paradigms continue to be demonstrated in many studies, the purpose of such studies tends to be that of proving the merits of some existing or alternative paradigm. The challenge then is to explore ways of moving beyond prevailing conceptual fragmentation whilst avoiding the opposite danger of simplistic holism under the guise of sterile relativism. The challenge is made more dramatic by the irresponsibility of experts, qualified to justify some particular position, who are totally unable to offer any guidance to voters and decision-makers as to the manner by which their position can be reconciled with some totally contradictory position justified on other grounds.

In an isolated local context, or a simpler world, this difficulty may be avoided by establishing certain perceptions as true and others as false, misleading or totally irrelevant. Some people are then empowered by the acceptance of such a coherent pattern of truths and the challenge of articulating them. Others are empowered by the process of denying the corresponding falsehoods.

In the more complex modern world of interacting contexts, decision-makers are forced to recognize pragmatically that contradictory positions may both be true, possibly under different conditions, even though there is no coherent framework within which they may be reconciled. Some are even empowered by the opportunity this provides to "divide and rule" by "playing one side against the other". But there is also the recognition by others that neither position need be true, and they are then empowered by the process of rejecting the system constituted by both together.

This third objective can also be described in terms of the metaphor of the current technological challenge of

designing a suitable magnetic container for plasma to enable nuclear fusion to take place. In order to generate energy in a fusion reactor, the problem is to discover the particular configuration of magnetic fields, values of plasma parameters and means of protecting the plasma from contact with any material surface which would quench it. This can be achieved by "bouncing" the plasma around within the configuration of a magnetic cavity (or "bottle"). As in the case of plasma, any comprehensive understanding of the human condition (encompassing both the global problématique and the associated opportunities for human development) is "quenched" by any efforts to contain it within a particular conceptual framework. And as with plasma, transcending this difficulty seems to require the design of a container which ensures that such understanding can only emerge, exist and develop if it is continually "bounced" or alternated between an appropriate configuration of different conceptual perspectives. Although there are indications as to the possible design of such a container, the multi-perspective containers that have so far been designed reflect the lowest common denominator of the participating perspectives rather than the highest common insight by which appropriate action in response to the global problématique could be empowered.

As this metaphor illustrates, this project is in many ways about the adequacy of the language used amongst international constituencies. To what extent are the challenges of society and the possibility of innovative response determined by the distinctions and connections permitted or forbidden by the language of the international community (and its various jargons). Can the many distinct problems, values and strategies engendered by that language be meaningfully distinguished? Is it in some way fundamentally inadequate as a means of formulating distinctions and relationships that are required to respond appropriately to the global problématique?

It is hoped that this volume may to some degree be used to explore the nature of the art of alternating between paradigms, languages or viewpoints to enable individuals and societies to be appropriately empowered in response to the conditions of the moment. The challenge appears to be to discover a comprehensible conceptual dynamic of sufficient complexity to permit an appropriate conscious alternation between the different combinations of acceptance and denial. This has been admirably illustrated in drawings by the artist Escher, especially as analyzed by Douglas Hofstadter in *Godei, Escher, Bach*. As in the relationship between male and female or between parent and child, it is the collective equivalent of the art of saying "yes" or "no" under changing conditions which is at its most frustrating and enchanting as it explores the excluded middle ground forbidden by the boundaries of Aristotelian logic, however vital the latter may be in particular circumstances.

Content of sections

As noted above {in "Notes to the user") the sections in this volume are positioned in an alphabetic order determined by a mnemonic letter code. This enables the significance of cross-reference and index entries to be more easily remembered and understood during use. The Strategies Section (S) therefore appears before the Values Section (V). In the following discussion of the contents, however, it is appropriate to review these sections in a particular logical sequence different from the mnemonic order. Other such sequences could also be usefully envisaged.

1. World problems (Section P)

The purpose of this section, the largest in the volume, is to identify the complete range of world problems perceived by international constituencies, whether as a focus for their programme activities, their research, their protest, their recommendations, or as part of their belief system. An entry has been established on each. This provides a context within which the network of specific relationships perceived between these problems may also be identified.

Information on problems transcending national frontiers tends to be: (a) widely available in excessive amounts in the case of macro-problems for which comprehensive strategies cannot be implemented effectively, or (b) highly dispersed in modest amounts in the case of politically acceptable problems for which satisfactory programmes promising tangible results can be designed, or (c) in the case of problems only recognized by experts, disguised or concealed within documents analyzing more acceptable problems or describing the range of detailed programmes in response to the latter, or (d) reported infrequently in an unsystematic manner in the media and specialized press in the case of problems for which no organized response has yet emerged. The majority of conventional responses to problems take the form of short-term budgetary commitments to politically acceptable short-term programmes, irrespective of the long-term nature of the problems which they are supposedly designed to contain. There is a need to group information on the network of perceived world problems to facilitate comprehension of their pattern as a whole, in all its variety and detail, and of ways in which the constituent problems are interrelated, as a means of encouraging the emergence of more appropriate conceptual, strategic and organizational networks to contain them.

The section contains entries on 10,233 world problems. It is divided into two parts: Section PP and Section PQ. The first, Section PP, contains 4,700 entries with descriptions. With each entry may be associated a set of up to 7 different types of cross-reference to other problems: more general, more specific, related, aggravating, aggravated, alleviating, alleviated. There are 17,636 cross-references of this kind. Section PQ contains 5,533 problems of which only the names are in this volume. The names of these problems are also indexed as well as being cross-referenced from Section PP. Section PQ is used to register problems on which information is being sought, or which are inadequately distinguished from others already described, or which, as sub-problems, fall below a cut-off level of specificity presently documented in some hierarchy of problems appearing in Section PP.

As a whole this section endeavours to present all the - phenomena in society that are perceived negatively by groups transcending national frontiers. These are the phenomena which engender fear and irrational responses as well as constituting a challenge to creative remedial action. Groups are very strongly motivated by the problems which infringe their values and arouse their

indignation. As such they are a major stimulus driving the development of society. The perceptions documented raise useful questions concerning the nature of problems and what is meant by the "existence" of a problem, especially when other groups consider that perception irrelevant, misleading or misinformed. There is great difficulty in obtaining and editing material on problems, rather than on incidents, remedial programme action, theories, or other frameworks through which perception of problems is filtered. So to that extent, it could be argued that this section assembles information on which people collectively have great difficulty in focusing, namely information whose significance, whether deliberately or inadvertently, is collectively repressed, displaced onto some less threatening problems, or projected in the form of blame onto some other social group.

2. Human values (Section V)

The importance of values is frequently cited in relation to the global problématique, whether it be in debates in international assemblies, in studies criticizing "value-free" approaches to research, or in discussion of quality of life and individual fulfillment. Values are deemed especially important in questions of cultural development and are central to concern for the preservation of cultural heritage. The purpose of this section is to register the complete range of values with which people identify, to which they are attracted or which they reject as abhorrent. Whilst it had been hoped to develop such lists from documents of international bodies, no adequate lists of values were located, even within the intergovernmental agencies (such as UNESCO) specifically concerned with human values, and despite numerous reports and meetings on "values" in recent years. The values referred to are very seldom named, although the commonest may be cited as examples. The list presented here has therefore been elaborated by the editors as an experiment based on the selection and interrelationship of constructive and destructive value words.

The section contains 2,270 entries. It is divided into four parts: Section VC, Section VD, Section VP, Section VT. Section VC contains 960 constructive value words (e.g. peace, harmony, beauty), whereas Section VD contains 1,040 destructive value words (e.g. conflict, depravity, ugliness). The entries in these two sections are linked by 7,008 cross-references to 225 entries in Section VP. These entries are value-polarities (e.g. agreement-disagreement, freedom-restraint, pleasure-displeasure) derived from the organization of Roget's Thesaurus. These in turn cross-reference 45 entries in Section VT in an attempt to identify major value categories. The section as a whole contains 14,463 cross-references.

None of the entries contain "descriptions" of the value(s) implied. In most cases this would be superfluous. The words in Section VC reflect values which tend to be accepted without questioning. Those in Section VD reflect values which tend to be rejected without questioning. The emphasis is placed on using the cross-references to indicate the range of connotations of particular value words. The entries on value polarities, Section VP. do however list proverbs, aphorisms or quotations selected to illustrate the dynamic counter-intuitive relationship between constructive and destructive values. They endeavour to draw on popular wisdom or insight to demonstrate the negative consequences and limitations of blind adherence to constructive values or to demonstrate the positive consequences and creative opportunity of judicious action in the light of destructive values. They point to the existence of a more fundamental and challenging dynamic than that implied, for example, by peace-at-all-costs and total rejection of conflict.

This exploration of values is of special interest in relation to the world problems in Section P. Many problems are named in international debate using a destructive value word (e.g. insufficient, unrealistic, unjust, inappropriate). Problems defined in this way imply the existence of some corresponding value whose expression is infringed by the problem. Such values may or may not be noted in defining the purposes underlying remedial action in response to the problem, although often they form part of the wording of any rallying slogan in support of some international strategy in Section S, But the set of constructive and destructive value words does indicate a way of coming to grips with the range of problems which the existing language renders perceivable and nameable. They also indicate possible dimensions of human development. This section is of course limited at this stage by the biases inherent in Roget's Thesaurus and the English language. It does however create a framework which could enable these limitations to be transcended.

3. Human development (Section H)

The purpose of this section is to describe briefly the complete range of concepts of human development with which people identify, consider meaningful or reject in their search for growth and fulfillment in life. The scope of this section has been deliberately extended beyond the unrelated concepts accepted with great caution by intergovernmental agencies: the job-fulfillment orientation of ILO. the health-oriented concepts of WHO and the education-oriented concepts of UNESCO. It includes concepts legitimated by the psychological and psychoanalytical establishments as well as those promoted by the various contemporary growth movements. It also includes concepts from religions and from belief systems of different cultures. Entries are included on explicit concepts of human development and on therapies, activities or experiences in which a particular understanding of human development is implicit.

The section contains 1,596 entries. It is divided into two parts: Section HH and Section HM, Section HH describes 628 concepts of human development and updates a section in the previous edition, as a result of the participation of the editors in the Goals, Processes and Indicators of Development project of the United Nations University's Human and Social Development Programme. Section HM endeavours to describe 968 modes of awareness, namely the experiential states associated with different stages in the process of human development as perceived by different groups (and preferably using wording with which such groups would identify).

The entries have been interlinked by 4.461 cross-references. These either indicate relationships between more general or more specific concepts, or, especially in Section HM, the relationship between succeeding modes of awareness in some process of human development (whether linear or cyclical).

This section indicates ways in which people struggle within themselves for fulfillment and the experiences associated with that struggle which they find meaningful (whether or not such experiences are considered totally deluded or inappropriate by different scientific or religious establishments). That many of these experiences cannot be effectively "put into words" is indicated by the use of

metaphors or symbols in naming them. These appear as strange to Western eyes as do others to Eastern cultures.

4. Strategies (Section S)

As with the world problems section, the purpose of this section is to explore ways of identifying a complete range of strategies conceived by different international constituencies as appropriate responses to world problems, whether at the global or at the local level. An entry is provided on each as appropriate, enabling them to be cross-referenced to the relevant international bodies advocating them, to the world problems against which they are directed (or which they may aggravate) or to the values in the light of which they have been formulated. Where possible the descriptions indicate the special strengths or inherent weaknesses (or blindspots) of each strategy.

The section contains entries on 8,335 strategies. It is divided into five parts: Section SP, Section SQ. Section SR, Section SS and Section ST. The first. Section SP, contains 239 entries whose main purpose is to group cross-references to the 7.148 strategies in Section SQ into strategic categories. The definition of each category is sharpened by presenting it as a polarity (e.g. Protecting-Endangering) indicating both a strategy and the counter-strategy to which it must respond. The second, Section SQ. contains 7,148 strategies, which are not printed in this volume. The names of these strategies are however indexed as well as being cross-referenced from Section SP. Section SQ is used to register strategies that have been defined at a local level, or on which information is being sought, or which are inadequately distinguished from those already described, or which, as sub-strategies, fall below a cut-off level of detail presently documented in some hierarchy of strategies appearing in Section SS. The third. Section SR. covers personal strategies. It contains 224 entries with brief descriptions. Section SS contains 679 collective strategies with more extensive descriptions. Section ST groups together the 239 strategic polarities of Section SP into 45 types. In this way the information in Sections SP and ST is presented using categories equivalent to the value categories of Sections VP and VT. There are 7,959 cross-references interrelating the entries in this Section, mainly from Section SP to Section SQ.

Whilst there is much awareness of the need for strategies, there is little effort to juxtapose the different concepts of viable strategies. As a result strategies of a type favoured by one set of constituencies are rarely to be found together with those favoured by others, as these are perceived as "irresponsible" or "irrelevant", however large the constituencies to which the latter appeal. As a consequence, the variety of ways in which people are acting, or are prepared to act collectively, is obscured or devalued. As a whole this section therefore attempts to portray the kinds of response being envisaged in response to the global problématique, but more comprehensively than is implied by the existence of a few widely publicized strategies such as the International Development Strategy or the World Conservation Strategy. The value of undertaking sections SR, SQ, and SS was clarified by the projects within the framework of the Goals. Processes and Indicators of Development project of the United Nations University (on alternative ways of life, strategies and dialogues respectively).

5. Integrative knowledge (Section K)

A principal characteristic of the global problématique is its inherent complexity. This calls for a complex response interrelating many different intellectual resources and insights and involving sensitivity to very different kinds of constraint. Integrative approaches of this kind have proved inadequate or exceedingly difficult to implement in a society characterized by specialization and fragmentation. Following token interest in interdisciplinary in its own right, recent years have seen an emphasis on a project-by-project pragmatic approach, which avoids the need for any form of conceptual framework transcending individual disciplines, but begs the question as to the relationship between such projects.

The purpose of this section is to assemble descriptions of the range of concepts or conceptual approaches which are, in some way, considered integrative and which are held by some international constituencies to provide the key to the organization of any effective strategic response to to the global problématique. Many of the words used to label these concepts are those which are considered indicators of the power of an advocated approach. They frequently appear in project proposals to trigger favourable response, whether or not any content can be given to them in practice. Words like "global", "integrative", "networking" and "systematic" are the magical "words-of-power" in the modern organizational world.

The section contains 702 entries on integrative concepts. It is divided into two parts: Section KG and Section KD. Section KG describes 632 integrative, interdisciplinary or unitary concepts in the broadest sense, namely it includes advocated methods of integrating awareness favoured by these who reject a purely conceptual approach. It is one of the few sections carried over and updated from the previous edition (when it was prepared with the support of the Society for General Systems Research). The 70 entries in Section KD comment on recent efforts to interrelate incompatible conceptual approaches and the nature of the challenge that this implies. This material is derived from papers prepared by the editors during their participation in the Goals, Processes and Indicators of Development project of the United Nations University, especially on problems of methodology.

The section as a whole attempts to respond to the dramatic problem of how to interrelate vital conceptual insights which are essentially incommensurable and in practice often mutually antagonistic. A plurality of responses in not in itself an adequate response, especially since each fails to internalize the discontinuity, incompatiblity and disagreement which its existence as an alternative engenders. It is for this reason that the second part explores the possibility, implicit or explicit in recent studies, that a more appropriate answer might emerge from a patterned alternation between alternatives. This calls for a focus on the models of alternation by which the pattern and timing of cyclic transformations can be ordered between mutually opposed alternatives. It highlights the possibility that the kind of integrative approach required may not be fully describable within the language of any single conceptual framework, however sophisticated.

6. Communication (Section C)

Any form of international "mobilization of public opinion" to engender the much sought "political will to change" is dependent upon communication, especially when the insights required to guide that change are complex, counter-intuitive or simply not clearly communicable within any one conceptual language. The purpose of this section is therefore to review the complete range of

communication possibilities and constraints. This is partly in response to the narrow focus of recent major intergovernmental initiatives under the extremely misleading titles of "International Commission for the Study of Communication Problems" (limited to the mass media) and the "International Communications Year" (telecommunications hardware) by UNESCO and ITU respectively. It is however a direct consequence of participation by the editors in the Forms of Presentation sub-project of the Goals. Processes and Indicators of Development project of the United Nations University.

The section consists of 1,055 entries. It is divided into four parts: Section CF, Section CM, Section CP and Section CS. The first. Section CF, contains 528 entries describing different forms of presentation or methods of communication, indicating wherever possible the special strengths and limitations of that mode. As an *editorial experiment*, the remaining three sections, each take one of these forms and elaborate entries relevant to the concerns of this project. Section CM explores through 88 entries the possibility of designing metaphors that are appropriate to engendering a creative response to the global problématique. Section CP explores in 337 entries three different approaches to interrelating mutually incompatible concepts in a pattern. Section CS reviews in 102 entries the range of symbols used in modern and traditional cultures as a way of communicating multiple levels of significance in a compact and reproducible form.

As a whole the section provides a framework within which to review alternative ways of interrelating items of information to facilitate comprehension and communication. The first part. Section CF, highlights the complementarity of very different modes of communication, each with its strengths and limitations. It is therefore a response to the increasing tendency to believe it is possible to depend only upon one mode, whether it is books, video, equations or slogans and to condemn others as being without serious value.

The second part, Section CM, recognizes the unique importance of metaphor in politics, education, religion and scientific creativity as a means of communicating complex notions, especially in transdisciplinary contexts. The entries have been elaborated as an experiment to stimulate interest in this mode as one of the few means of rapidly stimulating innovative breakthroughs in development problems, since it is not dependent on lengthy, specialized education and can, for example, be intimately interwoven into pre-existing rural community experience.

The third part, Section CP, is partly based on a comparative review of a very wide range of different concept schemes as patterns. One group of 253 entries has been developed from a "pattern language" elaborated by a team led by the environmental designer Christopher Alexander as an aid to designing physical contexts in which quality of life is enhanced. Selected patterns have been used, according to the methods of the previous section, as substrates for metaphors such as to suggest ways in which social, conceptual and intra-personal contexts may also be "designed". Its special merit is the integration between the component patterns provided by relationships reflecting an understanding of the socio-physical environment which is both extremely realistic and exceptionally harmonious. Another group of 64 entries is based on the pattern of concepts implicit in the much-publicized Chinese classic, the *Book of Changes*. These are transposed into a language which highlights the significance of such a complex pattern of transformations in any organizational or meeting environment. Its special merit is the explicit recognition of the need to shift from condition to condition in order to ensure both healthy development and the ability to respond to a turbulent environment. The final group of 20 entries is an exercise in designing a pattern of relationships between incompatible concepts in the light of insights in a wide range of different concept schemes that use sets of concepts of different sizes to contain qualitative complexity. Its merit lies in its deliberate attempt to internalize discontinuity and disagreement within the pattern. In total, there are 3,863 cross-references interlinking entries in this sub-section.

The fourth part. Section CS, emerges from the recognition of the special importance of symbols in embodying significance and giving focus to any campaign or programme and establishing its identity in relation to other initiatives. As a focus for public attention, their choice is far from being an arbitrary matter. It is a response to constraints which need to be better understood if human resources are to be more effectively mobilized. They give visual form to abstract concepts by which development processes are organized especially in traditional cultures which do not respond to conventional forms of presentation. The relationship between the symbols by which people are motivated (or alienated} is also of vital importance. There are 636 cross-references between entries in this sub-section.

7. Innovative Techniques (Section T)

The purpose of this section is to provide a context for the presentation of accessible techniques, which offer possibilities of making an immediate difference to the manner in which resources are mobilized in response to the global problématique.

The section contains 218 entries. It is divided into two parts: Section TC and Section TM, The first contains 207 entries with descriptions on new ways of conceiving meetings and meeting processes. The second contains 11 entries suggesting ways of re-ordering a conceptual arena presently frozen into an unfruitful pattern of polarization.

Meetings, and especially international meetings, are a vital feature of social processes and the initiation of change. They are a principal means whereby different perspectives are "assembled". Through such occasions resources are brought to bear upon questions of common concern. They may also provide the environment in which supposedly unrelated topics can emerge and be juxtaposed. But despite the assistance of professionals and the increasing number of such events, there is rising concern that many do not fulfil the expectations of participants, nor of those whose future may depend upon the outcome. This is particularly true of events most concerned with social transformation. Current meeting procedures, despite efforts at innovation, on such questions tend to give rise to little more than short-term public relations impact and in this form can themselves constitute an important obstacle to social change. In a very real sense meetings model collective (in)ability to act and the ineffectiveness of collective action. The challenge is therefore to provoke reflection on a new attitude or conceptual framework through which meeting dynamics may be perceived and organized in order that they may fulfil their potential rote in response to the global problematique.

Structure

The previous edition was composed of 13 sections, interlinked by cross-references between items, both within a section and between sections. There was also a variety of introductory texts. Although this reflected the complexity of the material it made access to it more than necessarily difficult. In this edition the number of pages prior to the first section has been reduced. The introduction to each section has been considerably simplified and all amplifying comments, acknowledgements and other notes have been transferred to the end of the volume.

Although this edition effectively contains 21 sections, these have been grouped into 7 major groups for each of which there is a brief introduction and a mini-index. The general index is located at the end of the volume. Items anywhere in the book are identified by a six-digit code (e.g. VP1234) in which the first letter indicates the major section and the second letter the subsection in which it is located.

Items within any subsection are in most cases not grouped according to any classification scheme. This continues the policy adopted for the 1976 edition and is in accordance with that adopted for the *Yearbook of International Organizations*. Despite the strong arguments for classifying items, the fundamental reason for not doing so is that it avoids reinforcing the impression that such classification can be readily done and satisfactorily done. One of the challenges however is that there does not exists any classification scheme for interdisciplinary topics. What is called for at this time is a series of ongoing experiments with different classification schemes, some of which may eventually prove to be of value. The data needs to be held in an arbitrary permanent order which facilitates such experiments without hindering the editorial tasks of maintaining the data on computer. This question is discussed in more detail in Appendix YB. One such experiment in classifying the items in the world problems section by subject is published in *Global Action Networks* (vol 3 of *Yearbook of International Organizations)*.

There are cross-references between entries in some sections. These are listed at the end of each entry, if present. In some cases there are also cross-references between entries in different sections. Because of the scope of the cross-referencing system, it has been necessary to use a 2-letter coding system to indicate the type of cross-reference. For ease of use, the relationship codes used in any section are explained at the head of each page of the section. There are three groups of cross-references:

- Cross-references within a section indicating some form of logical relationship: (a) which other entries the entry may be considered a part of (analogous to Broader Term in a thesaurus); (b) which other entries may be considered a part of that entry (analogous to Narrower Term in a thesaurus); and (c) which other entries may be considered related (analogous to Related Term in a thesaurus).

- Cross-references within a section indicating some form of functional relationship: (a) which other entries may be considered to precede this entry in any causal chain or process; (b) which other entries may be considered to follow from this entry in any causal chain. A further distinction may be made in each case between a constructive and a destructive causal chain.

The number of international organizations make it impractical to have a separate section on such bodies in this volume, as was done for the 1976 edition. However this volume has been designed to interlink with the 3-volume *Yearbook of International Organizations* through the system of cross-references. Similarly entries in certain sections of this volume are integrated as cross-references into the subject volume of that Yearbook as mentioned earlier in connection with classification.

Scope and method

Details of the scope of each section are given in the introduction to each section and in the comments upon it In general however every effort was made to ensure coverage of perspectives from: industrialized and developing regions (North and South), socialist and capitalist economic systems (East and West), occidental and oriental cultures, and official and unofficial sources (governmental and nongovernmental). In doing so attention was given to scientific and "unscientific" perspectives, whether well-documented or poorly-documented, fashionable or unfashionable, informed or "misinformed", and whether emanating from qualified elites or marginalized groups.

The method employed was an extension of that elaborated over many years to locate and process information on the 20,000 internationally-active organizations currently documented in the 3-volume *Yearbook of International Organizations*, with which this project is intimately linked at all levels. The method may be outlined as follows:

1, A constant flow of material is received, particularly from international organizations sensitive to the preoccupations of every sector of society in every region and culture of the world, and mainly in response to: direct mail requests (partly in association with regular contacts involved in work on the *Yearbook of International Organizations),* mailing of proof pages from the previous edition, exchange agreements with international bodies, purchases or loans of publications (or microfiches) from intergovernmental bodies, and special requests. This material is received in many languages although the text extracted from it is presented in English.

2. Particular efforts, including library searches and bulk acquisition of documents, are made in the case of bodies such as the Specialized Agencies of the United Nations, OECD and the Commonwealth Secretariat. As might be expected, such sources are supplemented by journal searches, reference books, press cuttings and unsolicited material from a wide variety of sources.

3. Documents are scanned for relevant material and. if the document is complex, portions are photocopied for classification and filing.

4. During the process of scanning and classification, provisional decisions are taken as to whether the item represents a new category or whether the document could be appropriately filed within an existing category.

5. Editors then work on files by item. Each file might itself contain many documents, including books, from very different sources. The editors attempt to elaborate the clearest and most succinct presentation of the item by combining information from different source documents as appropriate. Every effort is made to use existing texts supplied by international bodies. When this is not possible, adaptations of texts presented in other documents are made.

6. During the editorial process the status of the item is reviewed, possibly leading to its being further subdivided into separate items, integrated with some other item or simply rejected.

7. The editorial process is assisted by working indexes which are periodically updated or sorted by subcategory.

9. For some sections of this volume very extensive use of computers has been made to explore various ways of reordering and regrouping the items.

The task of preparing the final text is therefore an editorial process of making the best use of any number of items touching on the nature of the organization, the world problem, or the strategy as the case may be. It should be stressed, particularly in the case of the world problems section in this volume, that the task is conceived as being editorial and not research in which the editors might be required to analyze material in order to formulate hypotheses concerning the problems in any particular domain. This said, the task of determining from a mass of documents in a file what problems or sub-problems are being identified there, explicitly or implicitly, is necessarily a form of empirical research in the broader sense of the term. It is the role of the editors to clarify any presentation and to use supporting texts to reinforce any relevant opinion expressed, rather as in the formulation of a legal brief. It is not the role of the editors to impose their own opinion on the material. One clear exception to this, in the case of world problems, was to clarify the names used to denote world problems when these are conventionally confused in international jargon with names of associated values or remedial strategies. "Peace", "disarmament" and "youth" are not considered adequate names for world problems. An adequate problem name was required to have one or more words, indicating its problematic nature (e.g. "proliferation of arms", "disaffected youth").

This volume includes a number of smaller sections of a deliberately experimental nature, such as those on values, communication, or meetings. As noted above, in each case the method used is discussed in the section. Wherever possible it is an extension or a variation on the editorial procedure outlined above.

The design of this volume, namely the sections selected for inclusion in it, was partly determined by the experience of the previous edition and the possibility of updating or (temporarily) excluding certain of its sections. It was also strongly influenced by material arising from participation of the Union of International Associations in a five-year research project on Goals. Processes and Indicators of Development (1978-1982) of the Human Development Programme of the United Nations University. The existence and final form of some sections, especially that on values, was influenced by the opportunity of experimenting with various possibilities of manipulating and presenting information via the computer facility with which the editorial work is done.

It is appropriate to stress the strong pragmatic influence on working methods as they affected the design of the volume in its present form. As in any design problem there were constraints on resources and in this case, due to the restricted level of editorial funding, they were very tight for a project of this scope. The detailed procedures were continually reviewed and modified to achieve a satisfactory final result with the most efficient use of resources. Since the page space was necessarily also limited, another concern was to "pack" information as efficiently as possibly. These factors influenced, and were influenced by, the manner in which the text database system could be used or modified to facilitate the procedures leading to the final product. The difficulties and opportunities were further complicated by the fact that computer work was transferred from a main frame batch system to an experimental local area network during the final production phases.

Despite the technical possibility of doing so, a decision was made not to use resources to submit edited texts in draft form to competent authorities for comment or improvement prior to publication. In the case of the world problems section, for example, the assumption was made that an adequate formulation could be adapted from the documents originally supplied by international organizations claiming some competence in the domain in question, particularly if these had been sent in response to proof texts from the previous edition. This procedure proved much more efficient than that of requesting such bodies to elaborate problem descriptions (as was done for the previous edition). Commissioning them to do so was beyond the resources of the project, with the exception of some work on the human potential sections. As part of an ongoing project, the existing texts will be submitted as proofs to concerned bodies to trigger responses for the next edition, as is done for the *Yearbook of International Organizations*.

Biases

In the light of the scope and methods noted above, a further influence on the design of the publication was a number of specific biases, some of which strongly influenced the length of any description.

1. As mentioned above, the whole editorial process was biased against any particular set of values, especially any particular concept of truth or falsehood, or of right or wrong, or of good or evil, or of strategic relevance or irrelevance, whether or not this resulted in texts which were acceptable or ridiculous in terms of the scientific, legal, religious, cultural, political or strategic priorities of others. The task was conceived as one of "telling things as they are" in the eyes of those who identify with a particular perspective, not of highlighting only what is important according to one such perspective.

2. There is a definite bias towards giving more space to less well-publicized perspectives and consequently less space to the standard well-documented perspectives, for example the world problems of war, famine, pollution, etc.

3. The above bias is partly corrected by a bias in favour of presenting any problem complex as an interconnected set of many sub-problems rather than as one long amalgamated description. The sub-problem descriptions may in fact be longer than that of the parent problem.

4. When information was inadequate or too much editorial work was required to process the available material into an appropriate form, there was a bias in favour of including the entry, even without a description, rather than excluding it to ensure an impression of entries of higher quality. There was therefore a bias in favour of opening up categories to which indexes and cross-references could refer in anticipation of work in future editions. This may be viewed as a bias in favour of lists.

5. In contrast to other efforts to document world problems, there was a definite bias against dependence on "high grade" information in which each "fact" has been substantiated by an approved authority. As pointed out earlier, such "facts" are quickly disputed, denied or ignored in counter-report s by those holding alternative views, whether "authoritative" or not. Where high grade information is available from international bodies it has been used. Where the information is too controversial to be approved by an international body or where no concerned body, exists, "low grade" information circulating in the media has been used.

6. This publication raises many questions about the use of language by the international community and the media. Whether a world problem denoted by a particular set of words "exists" in a manner distinct from that denoted by a related set of words (which appear to be partly synonymous) is a matter for continuing review. In this project there is a specific bias against premature resolution of such editorial/research difficulties. Obvious duplication has been avoided, but other cases have been allowed to co-exist especially in the human development section (see Appendix YC).

7. As noted earlier, the limited resources imposed an unwelcome bias against material requiring translation into English, in contrast to the editorial practice for the Year-*book of International Organizations*. The assumption was made that this was largely corrected by the extensive use of materials formulated in the multi-lingua! environments of international organizations. Some exceptions were also made in the case of unique materials obtained in French.

8. A final specific bias, associated with the previous point, is one against premature classification in this volume. The task here is seen to be one of registering, describing and interrelating perspectives (in a non-linear manner, where necessary), not of classifying them in some framework which would eliminate significant inconsistencies. Hence the bias in favour of unstructured lists, complemented by indexing and cross-references. Classification, with all that it implies in terms of imposition of a particular conceptual (and often defensive) framework on data, is a separate matter. The same approach is adopted with regard to the international organizations and multilateral treaties in the *Yearbook of Internat-ional Organizations* (vol 1). These are classified experimentally (in vol 3) in an evolving integrated framework of some 3,000 categories, together with the world problems and strategies from this volumes (see Appendix YB).

Background

The previous edition of this publication was published in 1976 under the title *Yearbook of World Problems and Human Potential.* It was produced as an experiment arising from a joint project started in 1972 between the Union of International Associations and Mankind 2000. For the UIA it was a logical extension of its function as a clearing-house for information on the networks of international agencies and associations, as documented in its 3-volume *Yearbook of international Organizations.* For Mankind 2000. as catalyst of the international futures research movement, it was a means of bringing into focus its prime concern with the place and development of the human being in the emerging world society. The project was jointly funded by the two transnational non-profit bodies, with Mankind 2000 supporting the editorial costs and the UIA the publishing and administrative costs.

In its present form, under the new title, the publication is jointly funded by the UIA and K G Saur Verlag, current publisher of the UIA's 3-voiume Yearbook. Agreement to produce this edition was reached in 1983, when work commenced. It was originally conceived as constituting a fourth volume within the Yearbook series because of the degree of cross-referencing between the four volumes.
But because its periodicity will depend on how it is received, it was subsequently decided to treat it as a separate publication under the current title rather than tie it to the established annual Yearbook. The present content of the book has also been strongly influenced by the participation of the UIA in the United Nations University project on Goals, Processes and Indicators of Development during the period 1978-82.

Originally founded in Brussels in 1907, partly on the initiative of two Nobel Peace Laureates (Henri La Fontaine, 1913; Auguste Beernaert, 1909), the UIA as an international nongovernmental organization had activities prior to 1939 which illustrate its long-term interest in relation to the current project. These include publication of the *Annuaire de la Vie Internationale,* Vol I (1908-1909. 1370 pages), Vol II (1910-1911. 2652 pages) which included information on problems with which international organizations were concerned at that time. Also published was a *Code des Vœux Internationaux: codification générale des vœux et résolutions des organismes internationaux* (1923, 940 pages, under the auspices of the League of Nations), which fisted those portions of the texts of international organization resolutions which covered substantive matters, including what are now regarded as world problems. It covered 1216 resolutions adopted at 151 international meetings. The subject index lists some 1200 items. Paul Otlet, co-founder of the UIA. produced in 1916 a book entitled *Les Problèmes Internationaux et la Guerre*

which identified many problems giving rise to and caused by war, and proposing the creation of a League of Nations. In 1935 he attempted a synthesis, *Monde,* which touched upon many problems and their solution within a society in transformation. The preface bore the title "The Problem of Problems", a topic he had first explored in 1918.

Intended use

A project of this kind evokes amongst some the response "Why bother, when we already know what ought to be done?" Who, after all, needs another book parading the range of problems with which the global community is confronted? Key people no longer have time to read more than one page summaries and each international body is acting as best it can to contain the problems to which it is sensitive.

In 1984 the Director of Political Affairs of one major intergovernmental body considered this project both presumptuous and ridiculous. He then went on to argue that problems did not "exist" in a way which allowed them to be identified and described in a book. For his institution they were agenda items which came and went according to the political currents of the moment, ceasing to "exist" once his organization was no longer obliged by political pressures to deal with them.

Others would argue that it is a grave mistake to focus on problems in any way because this "gives them energy", hindering the necessary "positive thinking" from which appropriate social transformation can emerge. There is widespread belief that the action required can be simply defined. Food aid is a topical example, although even major intergovernmental bodies are now acknowledging the counter-productive aspects of such generosity. A modicum of humility would require the recognition that most seemingly positive initiatives have at least minor counter-productive effects - omelettes cannot be made without breaking eggs.

There are however many who point out that international institutions are not containing the problems faced by the global community; rather they are being overwhelmed by them. To function at all. such bodies have to concentrate on very small portions of the pattern of problems, denying the relevance of other portions or even their very existence. This is especially the case when they are constrained to prove the value of their own initiatives even though they may aggravate such other problems. Many claim to know what needs to be focussed on, or done, or avoided to resolve the crisis - if only everybody else would subscribe to their particular set of priorities. In such a context it is appropriate to present these many "action vectors" within a single framework, in effect bringing them collectively to consciousness rather them denying or repressing those which do not fall neatly within some favourite paradigm.

This volume is therefore intended for those who question whether they are receiving information from a sufficiently broad range of perspectives. It is for those who believe that much might be learnt from the variety of perspectives on what constitute significant problems and significant responses to them. In particular it is for those who recognize the possible dangers and limitations of attempting to filter this variety down to a handful of "essential" problems which can be appropriately contained by a single policy, strategy or blueprint based on a single conceptual framework guided by a single set of values.

The users of this volume will therefore include:
- International relations institutes;
- Policy research institutes and "think-tanks";
- International organizations (governmental and non-governmental) concerned with the potential range of problems and programmes and with the design of new programmes;
- University departments (international relations, environment, law, social science) concerned with interdisciplinary issues and ways of presenting to students the variety of the global problématique and potential responses to it;

National government departments designing programmes which need to be sensitive to problems and possibilities in other sectors;
- Futures research institutes;
- University departments responsible for designing general studies programmes for students;
- Ministries of foreign affairs concerned with training or briefing diplomats and members of delegations;
- Students in many fields needing an overview of the range of global issues, how they may relate and the difficulties of ordering such information within one conceptual framework;
- Change agents promoting the creation of new organizations or programmes, whether at the international or the local level;
- People concerned with paradigm change and conceptual breakthroughs in responding to the global problématique;
- Foundations requiring a sense of context within which they can assess new proposals;
- Corporations concerned with navigating in a complex and turbulent social environment;
- Researchers grappling with the ill-defined fields of values, human development and states of consciousness and their relationship to global problem-solving.

It is expected that the majority of readers will use this book to locate specific items or groups of information. Some users will respond to the challenge of ordering, comprehending and presenting such a range of information in new ways, because of the extent to which it reflects the variety of issues with which people and groups identify and by which they are motivated. It is hoped that some will also be further stimulated to explore the possibility of patterned dynamic relationships between incompatible conceptual languages, encompassing the discontinuity between them, in order to develop a dynamic conceptual foundation appropriate to the global order of the future.

Assessment

The principal strength of this publication lies in the range of information presented, often derived from inaccessible documents, reflecting a broad spectrum of cultures, ideologies, disciplines and belief systems. Many of the topics are little-known, however vitally relevant they may appear to those specially sensitive to them. A significant proportion of the information is of a kind which is normally avoided or ignored by institutions and academic disciplines, because there are no adequate procedures or frameworks for handling it. Many of the topics are therefore of a kind not to be found in available reference books whether because they fall between conventionally recognized categories, or because they threaten them in some way (as with some types of problem).

A second strength lies in the juxtaposition of seemingly unrelated kinds of information (e.g. problems, values, human development) which emerge as complementary and call for the recognition of a pattern of relationships between them. The organization of the volume is designed to permit very extensive cross-referencing of various types. It allows relationships, whether logical or functional, to be indicated in a much more precise manner than in other contexts.

A third strength is the deliberate presentation of information so as to confront opposing viewpoints, whether through the arguments supporting or denying the existence of a particular problem, by matching constructive and destructive values, or by opposing strategies and counter-strategies. Wherever possible entries indicate the limitations of the perspective presented. The structure of the volume therefore guards against dependence on any one particular perspective. Each may indeed be appropriate in particular circumstances, but it is more probable that it is only on the whole "gene-pool" of perspectives that humanity can safety depend in a turbulent social environment during a period of vulnerability to nuclear, ecological and food crises of an unpredictable nature.

A fourth strength is the exploration, both through the variety of information and through a number of editorial experiments, of the limitations of language in distinguishing both problems and responses to them (values, modes of awareness, strategies). The approach used has made it possible to present sets of fuzzy categories, such as values, in a way which allows them to be usefully related to harder categories of information. Many neglected categories have been "opened up" in a manner which allows the significance of such distinctions to be explored. The approach usefully questions assumptions about the adequacy of language in responding to the global problématique and designing integrative strategies.

The principal weakness of the publication lies in the inadequacy of information on particular items. Whilst many of the entries are adequate, or more than adequate, there are exceptions where more appropriate information could usefully have been included. This is a direct consequence of the method which was oriented to culling information from many sources but did not permit (because of limitations on editorial resources) follow-up on particular items. This defect is also partly a consequence of the bias in favour of "opening up" neglected topics as opposed to extending information on well-documented topics.

A second weakness for many is the absence of any scheme through which the large amount of information is ordered. To this extent it may appear as a "grab-bag" collection of disordered information of varying quality and significance. As is pointed out however, the absence of a classification scheme is deliberate because one of the fundamental challenges is the design of an adequate scheme which would be non-trivial and minimize distortion. The method used minimizes distortion and provides an information structure with which classification experiments can be undertaken, some of which are presented in this volume.

A third weakness is the absence of any adequate bibliography or indication of sources, particularly since in recognizing the existence of a perspective in the international community it would be desirable to indicate what group or constituency holds that view. In the 1976 edition considerable effort was in fact expended in preparing extensive bibliographies on human development and on interdisciplinarity. These have not been included here. The difficulty in including bibliographical references comes again from the method used. In the case of United Nations material, for example, literally tons of documents were scanned for the rare paragraphs defining a problem. In preparing the final entry, the file used might contain photocopies of many such paragraphs. It was not considered feasible to allocate scarce resources to time-consuming bibliographic work when the objective was to cross-reference the entry to the international body directly concerned with an topic, whether or not that body provided information on it. Indeed one of the basic difficulties in obtaining information on world problems, for example, lay in the fact that the bodies most concerned with an issue were frequently unable to supply a succinct description of it. More useful texts often came from other sources commenting in summary form on the issue.

Future improvements

In the introduction to each sub-section, indications are given as to possible future improvements for subsequent editions. These mainly focus on refinement of the entries and extending the range of cross-references between them.

Now that all the sub-sections exist in text database files on an in-house local area computer network, many possibilities emerge for enriching the information, its organization and its presentation. Of special concern is the possibility of linking entries to specific international bodies and, in the case of the United Nations, to resolutions of those bodies.

The in-house computer facility should finally enable the networks of cross-references to be presented in map form as was originally envisaged in 1976. Although this step was planned for this edition, priority could not be accorded to it. It is believed however that experimenting with such visual presentation will lead to significant breakthroughs in ordering information on the global problématique and on ways of responding to it (see Appendix YF).

World Problems* :

Commentary

1. Significance

In the paragraphs which follow, and with the aid of quotations from a variety of authors, an attempt is made to justify a problem-focused approach. By this is meant an approach which focuses on problems in all their negativity rather than on solutions to problems. The basic point being that only by knowing more about the nature of problems and how they combine together will it be possible to conceive of more adequate solutions which have any hope of widespread support.

1. Multiplicity and gravity of problems

There is widespread recognition of the number and seriousness of the problems faced by mankind, as acknowledged in texts such as the following:

"It is unforgivable that so many problems from the past are still with us, absorbing vast energies and resources desperately needed for nobler purposes: a horrid and futile armaments race instead of world development; remnants of colonialism, racism and violations of human rights instead of freedom and brotherhood; dreams of power and domination instead of fraterna! coexistence; exclusion of great human communities from world co-operation instead of universality; extension of ideological domains instead of mutual enrichment in the art of governing men to make the world safe for diversity; local conflicts instead of neighbourly co-operation. While these antiquated concepts and attitudes persist, the rapid pace of change around us breeds new problems which cry for the world's collective attention and care: the increasing discrepancy between rich and poor nations; the scientific and technological gap; the population explosion; the deterioration of the environment; the urban proliferation; the drug problem; the alienation of youth; the excessive consumption of resources by insatiable societies and institutions. The very survival of a civilized and humane society seems to be at stake. " (U. Thant, Secretary-General of the United Nations on the occasion of United Nations Day, 1970).

Although there is agreement that there are many problems and that many are serious, little concerted effort has been made to determine how many problems there are. Such efforts as have been made have generally been limited to identifying major or critical problems, usually guided either by political expediency or by the particular objective of a major agency. For example one study, resulting in 6 problems analyzed in detail, was based on a procedure whereby 1000 problems were deliberately filtered through a succession of phases down to 100, to 50, to 20 before the *"final sort and aggregation".* (Assessment of Future National and International Problems. US National Science Foundation. 1977, NSF/STP 76-02573), Only the final 6 were submitted to the President. No further mention is made of the 994, whatever their importance to particular constituencies. At that time UNESCO engaged in an exercise to identify the "major world problems" with which it was concerned and identified 12 (Medium-Term Plan 1977-1982. UNESCO, 19C/4).

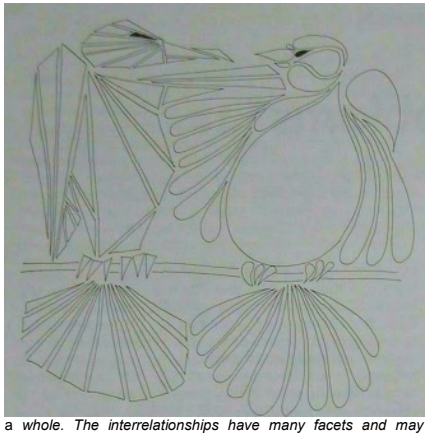
* Extract from Section XP of *"The Encyclopedia of World Problems ana Human Potential. "* UAI ed .K.G. Saur. München 1986.

2. Interrelationships between problems

It is becoming increasingly evident, and increasingly accepted, that problems interact with one another. This situation is illustrated by the following;

"In spite of much publicity, the complexity and magnitude of the problems faced by man if he is to survive as a social animal is still only adequately conceived by specialists, and it derives not so much from the mere multiplicity and gravity of problems awaiting a solution in our technological society, or in what the Battelle Institute has described as the "frightening series of problems now appearing over the horizon", as from the fact that between these multiple problems there exists an incalculable number of inter-relationships which, whether ascertained or not, greatly restrict the range of action open to the policy-maker. It is this situation which has brought about the tendency for the solution of one problem to create a number of new ones, often in fields only distantly related at first sight to the original matter. In particular, this not being fully understood, there is a general disposition to envisage and treat the symptoms of trouble, particularly the more obvious ones such as the various forms of pollution of the environment, rather than to deal with the root cause which is to be found in the inadequacy of the decision-making machinery of human society under any form of government at present known. Serious errors in decision-making with regard to the Tennessee Valley or the rivers feeding the Caspian Sea or the application of DDT have produced disastrous consequences which cannot be remedied by going back to the starting point. It is necessary to start from the position as it now exists, and necessary to fully understand it, for which purpose full and processed information is required." (Sir Peter Smithers. Governmental Control; a prerequisite for effective relations between the United Nations and non-UN regional organizations. New York, United Nations Institute for Training and Research, 1972. p.45-46).

"The systems of international trade, payments and finance are component parts of an interdependent world economy. The functioning of each is intimately related to that of the others; and present or prospective arrangements in the three spheres must be viewed in terms of the requirements for economic expansion and structural change in the world as



a *whole. The interrelationships have many facets and may take 3 number of forms. Examples are not hard to find: inadequacies in the flow of finance, long-term or short-term, may obstruct a mutually advantageous international division of labour; an improperly working adjustment process may exert deflationary or inflationary pressures, and encourage restrictions on flows of goods and finance; rigidities in trade patterns may generate chronic instability in currency markets; the capacity to service accumulated debt may be impaired by an inadequate rate of growth in the export markets of debtor countries. Any tension between the established international economic mechanism and the dynamics of economic growth will be reflected in difficulties in the monetary, financial and commençai spheres. A malfunctioning in any one of these spheres will generally produce stresses in the others also. Acute problems, when they arise, may emerge in the form of commercial, financial or monetary imbalances that appear to be localized in particular countries or groups of countries. Deeper analysis will, however, often show that the problems of one country or group of countries in one sphere are intimately related to concomitant problems in other countries and in other spheres and that adequate overall solutions depend on parallel and consistent measures in several different fields, having regard to the interests of all countries. What may appear to be a problem unique to one sphere may be symptomatic of wider and more far-reaching tensions in the international economic system as a whole."* (United Nations Conference on Trade and Development. Interdependence of problems of trade, development, finance and the international monetary system; report by the Secretary-General. Geneva, UNCTAD, 6 July 1 973, TD/B/459. para. 1 -3).

Not only are there many interrelationships between problems, but in some cases the combined presence or interaction of two or more problems can lead to the emergence of new problems. Thus workers in factories are often exposed simultaneously to different physical or chemical agents which interact and which have a combined effect significantly different to the sum of the effects of the various agents encountered independently. Another example is the synergistic relationship between malnutrition and infection which in its combined form constitutes a major problem in developing areas.

"There is, then, no such thing as the food crisis. Similarly, there is no such thing, in isolation, as the population crisis, the urbanisation crisis, the pollution crisis, the armaments crisis, the oil crisis, the energy crisis . the fertiliser crisis, the resources crisis, the water crisis, the soil crisis, the fish crisis, the technology crisis or the trade crisis. Each of these crises acts on the others, and while it may be useful to focus attention on them one at a time, none of them can be solved unless the others are taken into account. This hydra-headed world crisis is difficult to comprehend... The dilemma at Rome, as at Stockholm, Caracas, Bucharest and elsewhere, is that the poor and hungry nations sense that the isolated crisis on the agenda is but a part of a wider population-resources-development crisis which unless resolved in toto will condemn them for good to the status of second-class citizens on their own planet...the present series of international conferences suffers from a universal catch-22, which states that any problem we can solve is part of a larger problem which we cannot" (Jon Tinker. The Green Revolution is over. *New Scientist, 7* November 1974, p.388-393).

Although there is agreement that there are interrelationships between problems, little concerted effort has been made to identify how many there are and between which problems. Such efforts as have been made have generally been limited to determining adequate descriptions (in mathematical terms) for the nature of the relationships between a handful of major or critical problems. The relationships between other problems have only been explored within the various specialized domains, irrespective of any wider significance. Communication between such domains is generally agreed to be poor or non-existent.

3. Complexity of the inter-problem network

By the manner in which the simple interactions between the problems combine together, a new condition, namely a problem system or problem network is identifiable, as illustrated by the following:

"Many of the problems we experience today have been with us for a long time and those of recent vintage do not seem insurmountable, of themselves. The feature that is wholly new in the problematic aspects of our situation is rather a frightening growth in the size of the issues and a tendency toward congealment whose dynamics appears to be irreversible. The congruence of events appears suddenly possessed of a direction and a total meaning which emphasizes the insufficiency of all the proposed solutions increasingly and reveals rigidities that are not stable or set, that do not confine the problems but enlarge them, while also deepening them. This suggests that our situation has an inner momentum we are unable fully to comprehend; or, rather, that we are trying to cope with it by means of concepts and languages that were never meant to penetrate complexities of this kind; or, again, that we are trying to contain it with institutions which were never intended for such use. Therefore, even to be able to talk meaningfully about these problems (or, is it a single problem that is facing us?) we need first to develop a conceptual approach and a language we can use, which correspond better than what we now have to the essence of the situation)." (Hasan Ozbekhan. Toward a general theory of planning. In: Eric Jantsch (Ed). Perspectives of Planning. Paris, OECD. 1969, p.144).

" Problems misbehave. Instead of neatly slipping into clean-cut categories that correspond with the names of ministries, scientific disciplines, and problem-solving programs, they tend to fuse with each other and become a tangled web. Thus, as a society becomes more complex, analysis of the housing problem leads one into industrial location, transportation, technological development, fiscal policy and intergovernmental relations. Any serious analysis of the population problem leads one into the consideration of the resource base for supporting any given population level, appropriate technologies in the use of such resources as well as in birth control, social security, opportunities for female education and employment, and a variety of cultural and motivational Questions. Any problem of ethnic or geographic imbalance within a country cuts across all problems and programs that affect any ethnic or regional subdivision of the country. " (Bertram M Gross. Strategy for economic and social development. *Policy Sciences,* 2, 1971. P.353).

The Club of Rome uses the term "world problématique" to denote the current situation in which mankind is no longer confronted by identifiable, discrete problems, each one amenable to being dealt with on its own terms, but by an intricate and dynamic maze of situations, mechanisms, phenomena, and dysfunctions, which, even when they are apparently disjointed, interfere and interact with one another, creating a veritable problem system.

"Our present situation is so complex and is so much a reflection of man's multiple activities, however, that no combination of purely technical, economic, or legal measures and devices can bring substantial improvement. Entirely new approaches are required to redirect society towards goals of equilibrium rather than growth. Such a reorganization will involve a supreme effort of understanding, imagination, and political and moral resolve." (Commentary by The Club of Rome Executive Committee on The Limits to Growth. New York, Universe Books, 1973, p.193).

Although there is agreement that interrelationships between problems are so numerous as to constitute a complex network or system, little concerted effort has been made to map this complexity. Such tentative efforts as have been made have generally been limited to the production of simple maps of the relationships between major or critical problems, or (in a few cases) the production of more detailed maps for some particular problem area.

4. Increasing inadequacy in response to the problem network

The traditional and planned approaches to problems are recognized as increasingly incapable of containing the problem complex as it is now emerging. This situation is illustrated by the following:

"Evidence is mounting that the environment which managers seek to control - or, at least, to guide or restrain - is increasing in turbulence and complexity at a rate that far exceeds the capacity of management researchers to provide new and improved methodologies to affect management's intentions. Faced with the consequences of force-fed technological change, and the concomitant changes in the social, political, psychological, and theological spheres, there is real danger that the process by which new concepts of management control are invented and developed may itself be out of control relative to the demands that are likely to be imposed upon it." (Introduction to a 1968 management conference session of the College of Management Control Systems, The Institute of Management Sciences)

"While the difficulties and dangers of problems tend to increase at a geometric rate, the knowledge and manpower qualified to deal with those problems tend to increase at an arithmetical rate." (Yehezkel Dror. Prolegomenon to policy sciences, AAAS symposium, Boston, 1 969)

"Social institutions face growing difficulties as a result of an ever increasing complexity which arises directly and indirectly from the development and assimilation of technology. Many of the most serious conflicts facing mankind result from the interaction of social, economic, technological, political and psychological forces and can no longer be solved by fractional approaches from individual disciplines." (Bellagio Declaration on Planning. In: Erich Jantsch (Ed) Perspectives on Planning. Paris, OECD, 1969).

"What finally makes all of our crises still more dangerous is that they are now corning on top of each other. Most administrations...are not prepared to deal with...multiple crises, a crisis of crises all at one time...Every problem may escalate because those involved no longer have time to think straight." (John Platt. What we must do. *Science,* 28 November 1969, p.1115-1121).

"Scientists and business and political leaders in virtually every country are becoming increasingly aware thai the human race is facing more crises than its social and political institutions can handle adequately. Proposed ...Many important steps are now being taken to meet these problems. These steps, however, are often shaped to fit existing institutional patterns or to be politically or commercially expedient, while other measures of perhaps equal or greater importance have not yet been started. Moreover, the multitude of crises and their complexity and interactions so overburden the mechanisms that have been designed to handle them that there is a valid fear that these mechanisms will break down at the critical moment and make the disasters worse." (R A Cellarius and John Platt. Councils of Urgent Studies. *Science,* 25 August 1972. p.670-676).

"...the world is becoming so complex and changing so rapidly and dangerously and the need for anticipating problems is so great, that we may be tempted to sacrifice (or may not be able to afford) democratic political processes."

(H Kahn and J Wiener. Faustian powers and human choices, in: W R Ewald. Jr (Ed). Environment and Change. Bloomington. Indiana University Press, 1968).

5. Inadequacy of institutional response to problems

The weaknesses of the organized response to problems are best illustrated by the following:

"The map of organizations or agencies that make up the society is, as it were, a sort of clear overlay against a page underneath it which represents the reality of the society. And the overlay is a/ways *out of phase in relation to what's underneath: at any given time there's always a mis-match between the organizational map and the reality of the problems that people think are worth solving...There's basically no social problem such that one can identify and control within a single system all the elements required in order to attack that problem. The result is that one is thrown back on the knitting together of elements in networks which are not controlled and where network functions and the network roles become critical."* (Donald Schon. Beyond the Stable State; public and private learning in a changing society. London. Temple Smith. 1971)

"Since problems were for so long deemed to be immutable, functions already assumed became more important than aims. Thus the attainment of major national goals, such as the elimination of illiteracy or the improvement of agricultural yields, called for the development of the relevant government functions, such as education and agricultural policy. In the sequel, within each of these functions, new goals were inferred from extrapolations of goals already achieved; the functions defined the problems to be met, and reassessment of the problems at hand did not lead to the redefinition of the function...The rigidity, fragmentation, and institutional competitiveness of bureaucratic practices are obviously both causes and consequences of this state of affairs. Bureaucratic development is partly a result, of the vagueness of aims pursued. The determination of new aims is often not sufficient, however, to overcome these weaknesses, which also stem from the inclination of bureaucracies to resist innovation. For these reasons, contemporary societies are called upon to challenge certain forms of organisation that can no longer render the services they require, because in these societies, change and uncertainty have become the constant companions of prosperity. Thus, it has become a commonplace that many new problems, over the last quarter of a century, have been recognized too late by the government machine, which has often been moved to action only by the advent of a crisis...Any attempt to assess dissatisfactions, define opportunities, and formulate new goals inevitably runs counter to established policies that have been instrumental in the emergence of new problems. It will therefore always be difficult to look to operational agencies and policies for an objective effort to redefine aims that may involve agonising reappraisals, challenge existing interests, or simply call for a sense of perspective incompatible with the responsibilities of day-to-day action. For this reason the identification of emerging problems is a function that tends to be overlooked by traditional public administration and therefore cannot be wholly integrated with it..." (Organisation for Economic Cooperation and Development. Science, Growth and Society. Paris, OECD, 1971, p.60-61)

"Consider the problem of poverty among minority groups. Our nation is committed to reducing poverty. We do not know how to approach solving the problem without creating other undesirable conditions in the process. Our govemment comes at a problem, like minority group poverty, from many directions: some officials are convinced that all that is necessary is to stimulate economic growth, others call lor better education, still others advocate a direct transfer of income, and of welfare. This is much like many blind men feeling parts of an elephant and then being asked to describe it The man who describes the trunk is as right as the man who describes a leg; both are partially right. Division of problems into subproblems without knowing their overall dimensions hardly ever contributes to a situation." (John Crecine and R D Brunner. A fragmented society; hard to govern democratically. In: Information Technology; some critical implications for decision makers. New York. The Conference Board, 1972, p.178)

"Institutions, firms and (thanks to television) private citizens today receive critical information very quickly indeed; the aggregate picture at federal level is slow by comparison to materialize. To put the point the other way round, then, the body politic has wildly over-active reflexes. In the body physiologic this is the condition of clonus - it is a symptom of spasticity. If we live, as I suspect, in a spastic society it is because of clonic response. And by the expectations of these arguments, the clonus will get worse." (Stafford Beer. Managing modern complexity. In: Committee on Science and Astronautics, US House of Representatives. The Management of Information and Knowledge. Washington, US Government Printing Office, 1970, p.45).

"...increasing specialization makes all problems more difficult With more economic and social development, the subdivision of labor is carried to extremes never dreamt of in previous historic periods. The more effective and efficient organizations and planning bodies are those that operate for narrow and segmental purposes, thereby rendering much more difficult any effort to achieve mutual adjustment or coordination. The more able, honored and highly valued expert is the one who works within an *increasingly narrow sphere and who has great difficulty in communicating with other experts as well as laymen."* (Bertram *M* Gross. Strategy for economic and social development. *Policy Science, 2,* 1971, p.353)

The relationships and significance of each of the lesser-known problems may well be recognized in the appropriate sectors of the available scientific literature, but may thus only influence a limited sector of society. This means that information systems, organizations and programmes often recognise only one particular set of problems and over-identify with them. This results in a multiplicity of candidates for "the key problem" requiring maximum allocation of resources to bodies, which may not intercommunicate even though each may stress the importance of defining its own problem in relationship to other problems. Hasan Ozbekhan makes the point: *"This almost subconsciously motivated attempt, that of a sector to expand over the whole space of the system in its own particular terms and in accordance with its own particular outlooks and traditions, compounds the problem by further fragmenting the wholeness of the system. For sectors cannot become systems, they can only dominate them; and when they do they warp them. Hence this tendency toward the spreading of sectoral primacies over the full social space must be viewed with alarm. It is a portent, and an ominous one, of the conflicts and dislocations that await us unless a system-wide integrative approach is worked out..."* (Hasan Ozbekhan. Toward a general theory of planning. In: Eric Jantsch (Ed). Perspectives of Planning. Paris. OECD. 1969. p.83-84). There is also the suspicion that the network of problems may be better integrated than the networks of organizational and conceptual resources which could be brought to bear upon them.

The "Bertrand Report", a recent major internal review of the difficulties afflicting the United Nations system (Maurice Bertrand. Some Reflections on Reform of the United Nations. Geneva. UN Joint Inspection Unit. 1985, JIU/REP/85/9) notes: *"In short, it is the sectoralized, decentralized and fragmented structures of the System that are the reason lor its failure to adapt to the solution of development problems."* (para 104) *"The countries concerned need a World Organization capable of facilitating syntheses, organizing co-ordination, helping to find long-term financial arrangements, and granting many-sided aid to solve the most urgent problems. What the United Nations System offers them is a series of divergent and contradictory recommendations, some 30 bodies whose action has to be co-ordinated with that of some 20 sources of bilateral aid, but it does not help them to solve their medium and long-term financial problems."* (para 106)

"In other words, since the Organization here is confronting the essential mission it should fulfil, we have to ask ourselves whether it is properly equipped to do so; whether the results obtained so far are satisfactory or negligible; and whether the Organization really does possess the organs capable of reflecting upon and identifying the problems and the framework of negotiations which the modern world needs. The replies to these questions are inevitably negative; the machinery of negotiation is not easily identifiable and separable from the rest of the activities under the various sectoral programmes and does not constitute a coherent system. The results achieved relate only to a few limited fields and do not represent solid progress in the direction of changing world consensus. This situation has its political reasons, which are well known, but they do not explain everything. Actually, it is the structure of negotiations offered by the World Organization that is ill-adapted to solving the problems of the modern world. " (paras 107-8)

"They call for considerable preliminary efforts to identify the problems which are susceptible to negotiation before any negotiations can begin. This work of identification is complex, and it comes up against difficulties of a cultural, technical, ideological and semantic kind; it can often only be concluded when a preliminary agreement is beginning to take shape on a given concept; so that it is no longer surprising that it implies attempt after attempt at formulation, often clumsily done, and that it is a source of endless talk. Negotiation among 160 parties presents specific technical difficulties other than those of the size of the meeting chamber or the organization of simultaneous interpretation. It involves the definition of interest groups whose composition and dimensions vary according to the subjects dealt with, and the method of representation of these groups." (para 109}

6. Absence of consensus concerning problem priorities

In 1974 Jan Tinbergen noted that only two years after the (Pearson) report of the International Commission of Development suggested accelerated growth for the developing world, the results of the Club of Rome study indicated the necessity for decelerating world growth. He Suggests that these two objectives are not necessarily irreconcilable, but are very close to being incompatible. The two sets of recommendations clearly emerged from studies which detected different problems as being of major importance. Robin Clarke, in demonstrating the pressing need for alternative technology, examined 9 problems (from pollution to alienation) and showed how five different functionally significant constituencies perceived the problems and the necessary solutions. Consensus appeared to be minimal (33).

It is a fact of political and social life that there is no general consensus on the relative priority of problems. As noted in the first report of the Social Indicator Development Programme of the Organisation for Economic Cooperation and Development (3): *"Commonality of social concerns among Member countries tends to be greatest at the highest level of generality, diminishing as the definition becomes more specific."* The degree of consensus also increases when the problem is perceived as being so extensive that it can only be solved by some improbable combination of institutions or "everyone acting together".

7. Framework for interrelating incompatible perspectives

Before achieving consensus for purposes of action, some framework needs to be developed within which the different problems can be interrelated prior to the determination of their relative importance. Geoffrey Vickers argues that: *"The changes that will flow from all of these impacts are unpredictable and perhaps unimaginable, but we can prepare to recognize and understand them more quickly as they emerge, by finding some common frame within which to comprehend them."*

Consensus does not have to be total for effective action to take place. Different constituencies can pursue different problems provided that there is some general understanding of how the different problems being tackled by different groups are interrelated, at least in the terms of each perspective.

From the previous paragraphs, such a framework should be able to contain:

problems which are incompatible in the light of the conclusions of different kinds of scientific analysis

problems which may be perceived by one group to be irrelevant or trivial, and by another to be of major importance

problems which are normally unmentionable in intergovernmental circles for political reasons, namely wholesale massacres, torture, political imprisonment, and other sensitive problems, whether current or in recent history

problems which are potentially, but not currently, important as political issues (such as environmental pollution prior to the 1972 UN Conference in Stockholm)

problems, recognized as such by the United Nations, but which catch many others unprepared because of the strength of the counter-claim (eg the 1975 UN vote to recognize Zionism as a form of racism)

problems, recognized as fundamental as a result of very sophisticated analysis, which are extremely subtle and essentially beyond the capability of existing institutions *(eg* Kenneth Boulding's identification of the reduction of psychosocial variety as being a major threat to society's ability to respond successfully to future crises)

As things stand no existing framework even attempts to reflect such incompatible perspectives. And yet the dynamics of their interaction are the reality of social life. Just as in the case of the arms race, it is the action-reaction phenomenon between the protagonists which contributes directly to its continuation. In this connection it is valuable to recall the technique used, in very difficult times, by Diderot and d'Alembert, the editors of The Encyclopaedia (1751-1772). *"The editors of The Encyclo-*

paedia were well aware of the dangers they faced, and so they cleverly maintained an air of innocence throughout. By a brilliant device of cross-reference, however, they were able to annihilate the effect of an orthodox view in one article with the arguments expressed in another article to which the reader was referred."

In contrast to those times, the right view cannot be simply brought to light by a brilliant argument (or other device) cross-referencing the outmoded incorrect view. Nowadays, there are many intellectual and other authorities, each with its own set of arguments. It is no longer easy to determine which set of arguments protects an outmoded view, or by which view it should be replaced, since all the functionally significant groups (even amongst the sciences) compete in advocating their own perspectives and in criticizing every other perspective. The arguments of many of the groups may be well-documented, although the absence of evidence in the case of the others does not curb their advocacy or the sincerity of belief in their particular perspective.

It is however possible to envisage a framework in which the problems perceived by each group could be combined, or registered separately if there is disagreement, accompanied by their supporting arguments and the relationships perceived to other problems. The problems emerging from each perspective can be handled in this way. So can the focal points of disagreement. If the claims by one group for the existence or importance of a problem are contested by another, then the arguments of the counter-claim can be recorded with the claim.

In contrast to the example of The Encyclopaedia, in such a case each group supplies its own brilliant arguments, annihilating or ignoring the competing groups. The functions of any editorial group are then limited to locating the best formulated argument for each position and for the problem inter-relationships which they consider significant. This task can best be performed with the collaboration of the interested groups, preferably through their representatives at the international level, whether inter-governmental, nongovernmental, or informal bodies.

Clearly the results of such an exercise would not satisfy those with a thirst for the immediate and final answer on any particular problem, because when any such final answer is contested, the aim would be to reflect the dissent, even of a minority group. As Abraham Kaplan has explained in discussing methodology in the behavioural sciences:

"The demand for exactness of meaning and for precise definition of terms can easily have a pernicious effect, as I believe it often has had in behavioral science, it results in what has been aptly named the premature closure of our ideas. That the progress of science is marked by successive closures can be stipulated; but it is just the function of inquiry to instruct us how and where closure can best be achieved.... That a cognitive situation is not as well structured as we would like does not imply that no inquiry made in that situation is really scientific... Tolerance of ambiguity is as important for creativity in science as it is anywhere else. " (1)

But irrespective of the scientific value of such a framework, it is a necessity to policy formulation. In discussing the problems of developing contextual knowledge John P Crecine and R D Brunner note: *"It is not enough for the masses and the government to understand one another and to be able to communicate effectively. Knowing what the problems are. in and of themselves, seldom proves sufficient to improve situations. A different kind of knowledge and ability is required concerning the context of public-sector decisions and the workings of those societal mechanisms the public sector attempts to alter. Uncovering necessary contextual knowledge to support public policy moves is difficult at present and likely to becomes more so.....Little effort is made to determine the content or the timing of research to maximize its contribution to the solving of social problems. The means of achieving full employment of minorities in an urban ghetto, for example, is not a problem which an economist, a politicai scientist, or a sociologist alone is likely to solve. To the extent thai scholars focus their attention on increasingly narrow details without relating the results io a more comprehensive map of society, they are not likely to provide public officials with the knowledge necessary to grapple effectively with the problems of society."* (2)

2. Against a problem-focused approach

A number of arguments against a problem-focused approach have been encountered during the course of this project. Although the arguments overlap, in that they are based on common conceptions, they are examined separately below.

1. Major problems versus minor problems

It may be argued that the major problems are well-known and have been adequately described and that all other problems are either components of the major problems or unimportant. This raises the question as to how the importance of the major problems was determined. Was the problem of the environment important before the United Nations conference in Stockholm in 1972? Some international organizations have been working on this problem since the 1950's, but a book produced in 1967 by the well-respected Hudson Institute (Herman Kahn and A J Wiener. The Year 2000; a framework for speculation on the next thirty-three years) makes no mention of either pollution or environment. Importance in this sense means simply as a political issue, since all the information concerning the problem was available whilst the problem was still unimportant. There are however other ways in which a problem can be important. A problem may not be of importance in its own right but primarily by virtue of its relationship to other problems in the problem complex or network. Consider the case where no significant impact has been achieved by the allocation of considerable resources to the mutually reinforcing problems A, B, D and E, considered to be of greatest importance because of their immediate tangible effects. If it can be shown that A, B, D, and E are all dependent on reinforcement from the seemingly insignificant and little-known problems C and F, then C and F may acquire considerable importance in any policy relating to the problem complex. Their relationships to the other problems, and the possibility that they may lend themselves more easily to available remedies, makes them of vital importance in any general strategy, since any positive results will have beneficial multiplier effects which may alleviate the more tangible problems. Furthermore, if it can be shown that action on problems C and F is impeded by problems G, M and Q, then the latter may acquire even greater significance because of they way in which they obscure critical leverage points in the problem network at which action and research may be most beneficial with a minimum of resources. The difficulty at this time is that it is apparently not possible to determine which problems are like C and F,

and which are like G, M and Q. since alt attention is devoted to A, B, D and E, except in the plaintive reports from those attempting to implement the solutions to the latter. Only by exploring the networks of interrelationships between problems of all degrees of importance and visibility will it be possible to locate the critical leverage points, as opposed to those action areas which can continue to absorb resources without any significant result.

2. Major problems versus subproblems

It may be argued that once the major problems have been identified it is unnecessary to attempt to identify the component subproblems with any degree of precision, whether because the precision is illusory or because the subproblems are merely aspects of the major problem without any significant degree of autonomy. In contrast to this view, the OECD Social Indicator Development Programme in identifying 24 fundamental social concerns stated that each of these *"...may be viewed as the summit of a vertically linked hierarchy of an indefinite number of subconcerns representing the important aspects and means of influencing the fundamental concern. A t the same time, there are various kinds of horizontal linkages or relationships among these hierarchies; a particular concern or subconcern may have simultaneous effects on a number of other social concerns."* (3) On this point John Crecine and R D Brunner note: *"Division of problems into subproblems without knowing their overall dimensions hardly ever contributes io a solution. But, it is precisely this division into subproblems that must be achieved, however badly, if an organization is to effectively pursue an objective or execute a program. Without knowing the structure of a problem, it is difficult, if not impossible, to efficiently design solutions or government organization."* Also: *"The sad fact of the matter is that we know very little about dividing the social problems with which government must deal into component subproblems. Without effective division of overall problems and* subséquent *assignment of the parts to specific units, government is likely to remain the blunt instrument it now is. All the information, communication, computer capability, all the coordination in the world is useless if not properly mobilized."* (2) The difficulty in identifying subproblems is to determine down to what level of detail it is useful to go in different problem areas. This project explores this difficulty in a number of different problem areas where many levels of subproblem exist (eg commodity problems, endangered species).

3. Irresponsibility of drawing attention away from major problems

It may be argued that drawing attention away from the 5 to 10 problems currently in favour as "major", and giving a comparatively greater amount of attention to seemingly "minor" problems, serves to dilute the already inadequate effort to solve the major problems. In order to understand the major problems better it is however necessary to focus on the minor problems through which they may be connected in unforeseen ways. It is by analyzing the network of all problems that it becomes possible to determine what the major problems are under any particular set of conditions. But perhaps of greatest importance, people may identify more easily with non-major problems and unless the interrelationship of all problems can be demonstrated such people cannot be convinced of the merit of allocating resources to the major problems. It could also be argued that programmes to mobilize public opinion in support of the major problems have been in operation for sufficient time to have been able to make any significant impact possible. In the report of the United Nations Secretary-General reviewing the *Dissemination of Information and Mobilization of Public Opinion Relative to Problems of Development* (E/5358. 21 May 1973) it is noted that: *"... it is difficult to escape the conclusion that... the state of public opinion on matters of development, particularly in the industrialized countries, is generally less favourable today than it has been in the past. "* It also notes: *"It would probably be unfair to conclude that a sudden callousness had overcome public opinion in the developed countries. It is more like a closing of the gates to a pattern of generalizations perceived as outworn by over-use. "* Since a high proportion of available resources will continue to be allocated to the major problems, experiment with alternative approaches is justified to see whether it is possible to break out of the pattern of out-worn generalization. The greatest danger lies in the probability that the United Nations system's public relations and public information programmes will lead the informed public and many decision-makers to believe that the U.N. is doing all that can or need be done and has the attack on every world problem well-coordinated. This automatically devalues the activities of other bodies, reduces the allocation of resources and support to them, dampens initiative from the local and national level which is not channelled through governmental and U.N. channels against U.N.-perceived problems, and effectively nullifies the type of constructive criticism which can lead to renewal of effort, new approaches, and galvanization of the political will necessary to the accomplishment of all international programme objectives.

4. Problems versus values

It may be argued that it is a mistake to focus on the negative features of society, namely problems, rather than on the positive features, namely values or goals, which are a basis for consensus formation and the coherence of society. And yet it is the irony of the times that problems have greater currency than values and would often appear to be the focal point for greater consensus. People can agree about problems and they lend themselves to action-oriented debate. To an important degree, with the loss of common positive symbols and the absence of a universal ethic, common problems perform a unifying function. In addition they are easier to identify with precision. The Organisation for Economic Cooperation and Development, through its Secretary-General's Ad Hoc Group on New Concepts of Science Policy (4), in discussing the formulation of problems, notes that: *"The systematic identification and formulation of new problems are the more necessary because the distinguishing characteristic of many of the present social demands is that they are defined more by the dissatisfactions they engender than by a precise formulation of the satisfactions looked for: existence of dissatisfaction, in other words, does not automatically imply a recognition of preferable alternatives. The complexity of society and the limitations of knowledge make it difficult or impossible to envisage realistic alternatives. This is one of the frustrations of modern society: today's "hungers" are not easily defined. Thus, environmental pollution, the chaos of city life, and the inadequacies of the universities arouse discontent that is not expressed in precise alternative concepts of the types of environment, city, or university desired. Although in many cases these discontents may be based on misperceptions of the objective situation, we must recognise that the perception is itself part of reality. Thus the discontent cannot be alleviated by physical measures alone: it requires an understanding of the total situation. "*

The emergence of problems may therefore be considered as the actualization of hitherto unrecognized values. A problem is in some ways a value in disguise and may signal the presence of new values. In the DEMATEL Project of the Battelle Institute, one element of the definition of a problem was that it related implicitly to a value system (5). A problem is an instance of value-dissonance.

5. Problems versus solutions

It may be argued that at a time when everyone is aware of the problems, and many are suffering from excessive awareness, any further emphasis on problems rather than solutions is unconstructive. From this perspective, what is lacking at this time are collections of information on solutions, not collections of information on problems. As will be seen below, however, most of the available information tends to be either on the major problems or on conventional solutions to existing problems. Unless a clear picture of the range of problems is available, and it is not, the solutions proposed may either be solutions to non-critical problems or solutions which will simply aggravate other problems as a result of their successful implementation. There is also the point that solutions envisaged for today's problems are already inadequate by the time they are implemented because of the evolution of the problem environment. A focus must therefore be maintained on tomorrow's problems in the light of current predictions. This approach does not preclude cross-referencing the problems identified here to a parallel collection of information on solutions.

6. Unmanageable number of problems

It may be argued that once any attempt is made to look beyond the 5 to 10 currently favoured major problems there is no limit to the number of problems which can be identified and described. Any problem area can be broken down into subproblem areas which can in turn be broken down further. The exercise then becomes impossible because of the amount of information, and of questionable value for the same reason. This argument could, however, also be applied to the activities of the botanist and zoologist who now recognize some million species of plants and animals respectively. But zoologists, for example, have found ways of handling this degree of diversity without needing to limit themselves to such basic categories as mammals, reptiles, birds, fish, and insects. The question is whether some similar approach can be made to the range of problems. Only a deliberate attempt to collect such information can provide a basis for any response. This section is itself a demonstration that it is possible to collect information on more than 10 problems without the data becoming uncontrollable.

7. Multiplicity of problem interrelationships

It may be argued that any attempt to record the potential interrelationships between a large number of problems leads to such a large number of interrelationships as to be unmanageable. Thus 1,000 problems could give rise to over 990,000 interrelationships. If however the information collection is limited to those relationships which have been recognized, the number of actual interrelationships is much more limited and therefore quite manageable. Again only a deliberate attempt to collect such information can prove whether such an approach is impractical.

8. General, unstructured approach versus particular, structured approach

It may be argued that any such project is only manageable and of significance if it is conducted in terms of some particular viewpoint such as the policy requirements of a given organization. Or else, it may be argued that a particular classification scheme or model must first be developed to guide the subsequent collection and presentation of information. These are however precisely the difficulties at this time. There is a multiplicity of oriented projects and models with no effort at interrelating them or suggesting that they should be interrelated. And yet it is the disagreement amongst the advocates of different approaches which hinders the formation of any consensus or general strategy and the mobilization of adequate resources. The challenge is to develop a project which is as general and minimally structured in its approach as is feasible without losing coherence and utility. This project is an experiment in that direction.

9. Erroneous conception of a problem as a well-defined entity

It may be argued that problems, by their very nature, are nebulous and poorly defined, and that therefore a numeric identifier cannot be usefully and meaningfully allocated to a problem. Any such treatment of the problem in fact distorts the nature of the problem and gives it a precision which it lacks and implies that it possesses characteristics which it may not have. It is therefore impossible to make a)ist of world problems because what is a problem is in fact a cultural variable. Any such attempt therefore forces all problems into the same mold and implies that they can all be conceived as having common features particularly when embedded in a network of problems. The notion of a relationship as a simple link between two problems may also be considered unsatisfactory for similar reasons. This project is however not so much concerned with what a problem is as a problem but rather with how a problem is perceived and discussed in terms of the labels given to it. It is in denoting the variety of phenomena "problems" that the above errors may be encountered, but once this has been done and has achieved the present acceptability it then becomes permissable to identify the semantic domain in question by a numeric identifier and to attempt a summary description of the processes believed to be associated with that domain.

10. Sufficiency of information on problems

It may be argued that there is already a very large amount of information available on most problems. Some problems have one or more books describing them: some have whole specialized libraries devoted to them; many are covered by specialized periodicals and abstracting systems. Under such circumstances a summary description could not do justice to the complexity of the subject matter and the available knowledge. Against this it must be said that only specialists can afford the time to scan such quantities of information, and only well-endowed institutes can afford to obtain even a small proportion of the available material. In addition, as was discovered during this project, the information is rarely structured in such a way as to make evident the nature of the problem, let alone the relationships between one problem and another. Such information is scattered through a multitude of documents, except in a few isolated cases. Whilst many documents exist, they may well be effectively unobtainable during the time they are needed. Current international information systems do not facilitate access to many vital documents. Such documents may be quickly out of print, and normal booktrade delays may be up to two months between Europe and America and up to six months in the case of some developing countries. But whether available or not, the widening gap between the exponentially

increasing quantity of data available for consumption and man's very limited capacity for acquiring and processing useful information needs to be bridged by new methods of presenting information. The attempt in this project to hold problem information in networks of relationships which can be plotted on maps or displayed on computer graphics devices is an experiment at reducing the current difficulty.

11. Project approach as instance of the key problem

It may be argued that the allocation of resources to the collection of information on problems is in itself an example of the general tendency to substitute action about a problem for action on the problem. The problems are denatured by the process and lose the potency that they have in the real world. Worse still, any attempt to draw attention away from the key problem (such as capitalism or communism) to a multiplicity of pseudo-problems, which at best are symptoms of the Key problem, merely serves to aggravate current difficulties, whilst profiting from them. Ail action can however be criticized in this way. particularly when there is disagreement on what the key problem is or what problem components should be tackled in what order in any strategy. This project is an experiment in alleviating both the difficulties from which such disagreement arises and those to which it gives rise.

3. Definition

There is no generally accepted definition of a world problem and there is considerable debate about the nature of a social problem. No attempt is therefore made aï a final definition of a world problem at this stage. In order to build up as comprehensive a data base as possible, the criteria for problem inclusion and exclusion were initially kept to a minimum. The emphasis during the selection procedure was not on whether adequate proof existed that a problem was a valid and significant one according to some objective standard. The emphasis was placed on including those "problems" which well-established constituencies indicated as significant in terms of their own frame of reference - even when the validity and existence of the problem is challenged by the perspective from some other frame of reference. In effect, all problems are sought which are identified as being of importance by some functionally significant collectivity which manifests itself in some way at the international level (whether as an organization or through self-selected groups of spokesmen).

This open-ended approach permits the registration of all the problems perceived as real whether or not, as Stafford Beer suggests (6), most of the problems with which society believes it is faced, are bogus problems generated by theories about social progress and the way society works. The existence of information questioning the validity of a perceived problem is treated as information about that problem. Each perceived problem is envisaged as having a certain probability of existence for some groups in society and is therefore treated like a proposition carrying annotations commenting on its validity - but it is included.

Two basic techniques were used to simplify the task: (a) Problems registered had to be based on published documents. The documents preferred were those arising from the work of international organizations, which cover most matters which have emerged as being of more than national significance. However, use was also made of material from other publications. Individual responses to a questionnaire sent mainly to international organizations were used only as an indication of the existence of a problem for which published documents were required. (b) Criteria were progressively elaborated to reduce the inclusion, in this first series, of very detailed problems which were nested within other problems. In other words, when a distinct hierarchy of problems was encountered (eg problems relating to commodities, or to the extinction of species) suitable cut-off points were selected within the hierarchy below which more detailed problems were not considered (eg a commodity class level within a classification of commodities).

This approach led to the elaboration of: (a) a list of tentative positive definitions as a guideline for problem identification: (b) a list of general criteria for inclusion of problems identified; (c) a more specific set of criteria for the exclusion of certain kinds of problem. These are listed below.

1. Tentative positive definitions

1. Any condition believed to threaten the balanced physical and psycho-social development of the individual in society, whether the threat is directly to his personal well-being, to the values which he upholds, or to features of his environment on which he is dependent.

2. Any condition believed to cause or constitute social regression or degradation.

3. Any condition before which society is currently believed to be in some way helpless, because resources cannot be brought to bear upon the problem.

4. Any condition believed to render social change uncontrollable or discontinuous, or which so increases the complexity of society that it becomes incomprehensible in its totality and consequently unmanageable as a whole.

2. General inclusion criteria

Geographical spread: The problem should be recognized in at least three countries or considered to exist in at least three countries. Resources should preferably be allocated to its solution in at least three countries. The problems relating specifically to one country only included are when they are the subject of a United Nations resolution (eg apartheid, Zionism). Problems can be considered as "world" problems, either because they require solutions on a global scale (eg the international monetary crisis), or because they are present in a number of different countries even if only local solutions are required (eg urban problems).

Disciplinary spread: The problem should be common to, or with implications for, more than one discipline and should preferably have implications for different classes of discipline (eg natural and social science disciplines). This excludes problems internal to a discipline.

Experi recognition: The problem should be recognized by more than one expert, and preferably by experts in different countries, and if possible by an international governmental or nongovernmental body. In other words, the problem should have an adequate "constituency".

Expert documentation: The problem should be the subject of serious articles, scholarly studies, official reports, or reports of international meetings. The problem must be adequately documented, or its recognition must be adequately argued. This does not however imply the need for any check on the validity of the argument.

Time period: The problem should have been the subject of documents during the period 1970-1985. Problems no longer considered to be active are not included (although this could be done in a later phase).

Duration: Short-term calamities, natural disasters, man-made disasters, or calamitous events in general should not be treated as individual problems, although appropriate groups of such disasters *(eg* earthquakes in general as contrasted with an individual earthquake disaster) can be so treated.

Potential problems: The problem can be a potential or future problem, even a "vulnerability": namely a problem which does not currently exist because some threshold has not yet been passed but whose emergence is predicted for some foreseeable future time and for which preventive action is advocated now.

Autonomous problems: The problem should preferably be in some way distinct and clearly isolate able. But where the relation between a sub-problem and the problem of which it is a part is not immediately apparent, or the dependence of one on the other is questionable or ambiguous, sub-problems should be treated as problems in their own right, particularly where the sub-problem is perceived as having distinct relationships with other problems. (The nature of the problem-subproblem relationship is indicated by cross-references within each entry.)

Seriousness: There should be some indication that the problem, if not solved, will aggravate or cause some social tension, or alternatively is a key factor in preventing the solution to other problems which result in such tensions. This means that seemingly trivial problems may be included if relatively large amounts of resources are allocated to their solution rather than to the solution of what others may consider to be more serious problems.

Secret problems: The documentation available which legitimates concern with the problem should not be classified or secret material, for obvious reasons. (Clearly, however, such secret problems may exist and, for that very reason, be of special importance.) For those problems for which secrecy and cover-up policies are believed by significant constituencies to be in operation, isolated examples of problems may be considered sufficient evidence for the existence of the problem as a world problem. (Counter-arguments refuting the claims for the existence of the problem would then be sought from the published documents of the institutions held to be responsible for such policies.)

3. Specific exclusion criteria

General problems: Very general problems, such as the inadaptability of man to change, have been considered for inclusion if they have been precisely formulated. A number of widespread problems common to any form of organized action are also considered as general problems, as will be clear from the points below. These include problems of inadequate finance, training, knowledge, etc.

Operational problems (routine): The normal operational problems of a problem-solving organizational system have not been included. This means that no problems which arise (are encountered and solved) as part of normal technical, academic, research, legal, administrative, or political activity (namely "contained" problems) have been considered. This includes: institutional development, technology development, programme or process implementation, and operation and maintenance of equipment and services. However, whilst the problem of obtaining spare parts for maintaining a particular machine or group of machines (eg agricultural machinery) would normally not be considered, it may be considered if, as in the developing countries, this is recognized as an important obstacle to industrialization. In which case it would be considered as a general problem for developing countries. Normal operational constraints, such as political problems, human resource problems, resource availability problems, and problems of public acceptance, have also been excluded, except as general problems. In the case of problems of the supply of resources, these have only been considered if the resource in question was a basic item (eg cereals, construction materials, *etc)* and not a luxury item.

Operational problems (insoluble): Insoluble operational problems, whether institution, technology, or concept dependent have not been considered as such.

Institutional change problems: Problems of institution building, management (including intra-organizational coordination), financing, and adaptation have not been considered as such. However, some consideration has been given to problems relating to inadaptability of institutions, or the inadequacy of financing, or the lack of management skills, but only as genera! problems. Although problems of building specific institutions have not been considered, some consideration has been given to the problems of specific institutions of world importance (such as the United Nations) or to types of institutions (such as transnational coporations).

Structural modification problems: Problems of changing attitudes, technology, institutions, or legislation have been considered only as general problems.

Coordination problems: Problems of coordination between institutions, between disciplines, between regions, or between sectors have been considered only as general problems and not in relation to specific disciplines, institutions, regions, or sectors. The exception made for institutions concerned the major international systems *(eg* United Nations, intergovernmental organizations in general, and international nongovernmental organizations in general). The exceptions made for regions concerned the relation between developed and developing countries, and between the major power blocs.

Planning problems: Problems of evaluation of objectives, strategy formulation, and resource allocation have been considered only as general problems. Problems of choosing between alternative courses of action have not been considered.

Compatibility problems: Problems of equipment standardization, compatibility of procedures and legislation, or problems of language in this context, have not been considered except as general problems.

Interaction problems: Problems of an inter-cultural, inter-ethnic, inter-faith, inter-ideology, or similar kind, have only been considered as general problems.

Consensus-formation problems: Problems such as that of mobilizing opinion, freedom of information, freedom of association, and over-simplification of issues, have only been considered as general problems.

Knowledge storage problems: Problems of language, technology, semantics, and cost, in relation to knowledge

Storage, retrieval and dissemination have only been considered as general problems.

Communication problems: Problems of language, technology, semantics, and cost, in relation to communication in general and public information in particular have only been considered as general problems.

Date usage *problems:* Problems of undemocratic control of data, invasion of privacy, and commercial abuse of collected data have only been considered as general problems.

Natural environment problems: Problems of pollution, resources, population, and the reduction of environmental variety have been considered in detail with an effort to locate suitable cut-off points for nested problems.

Operational side effects: Problems arising from the deterioration of the natural environment and the normal operations of institutions and industries have been considered in detail with an effort to locate suitable cut-off points for nested problems.

Structural violence problems: Problems relating to any forms of discrimination, imbalance in resource usage, social injustice, or unparticipative decision-making have been considered in detail.

Emotions as problems: Emotions such as anger, hate, jealousy, fear, and anxiety have been considered for inclusion as general problems.

Professional problems: The problems internal to a profession, as perceived by its members, have not been considered. However, those problems created by its activities, as perceived by outsiders, have.

Problems of belief: Problems of belief as such have not been considered although general problems such as evil, superstition and animism have been included, as well as extremes of belief such as fundamentalism and fanatism. Problems of protecting or promoting a particular belief were not considered unless the belief related to human rights or other beliefs relating directly to societal problems.

Institutional protection problems: Problems of protecting existing procedures or institutions (other than the general problem of security) have not been considered unless such procedures were designed to protect human rights or other matters relating directly to societal problems. (Thus school absenteeism was not considered as a problem for schools but rather as a problem for the child or for society.)

Conflict problems: Territorial, political, and industrial disputes (including war) have not been considered individually *(eg* civil war has been considered as a problem but not individual civil wars).

Anti-group problems: Problems documented by one group of bodies as being caused by the dangerous activity of another group have not been considered unless recognized by the United Nations. Thus the problem of the existence and activity of a particular named capitalist or communist institution, for example, have not been considered, although the general problem of capitalism and communism to which they relate have been considered.

Moral and ethical problems: In contrast to the previous edition, clearly defined problems of this type have been included. The emphasis has been on problems experienced in practice, not on those which emerge as distinctions in philosophical or theological debate.

For-profit problems: Technical problems defined as an open challenge, with prize money offered to the solver (as in the case of man-powered flight, for example) have not been included. However "sponsored" problems, deliberately created in secret by a group in order to derive commercial or political profit from "solving" them would be included (eg bugging and bomb attacks by security firms, new diseases by pharmaceutical corporations, semi-addictive additives by food and beverage corporation, vulnerable varieties of seed by seed coporations).

Action obstacles arising from specific objectives: Problems are perceived as obstacles to its achievement when a specific programme or objective is defined. Such problems have not been included, unless they are common to many programmes or objectives. Examples of those excluded are:

Problems affecting the progress of tourism in the developing countries are not included if they only relate to tourism.

Problems of river development, such as improving hydrological services, improving analytical tools in water resource utilization, and encouraging scientific and technical investigation are not included.

The following quotations illustrate some kinds of problems that were not, for the purposes of this volume, considered as such:

An immediate problem was the most-favoured-nation principle...

One basic problem is to break with the traditional belief that a national policy for children should be confined to dealing with the under-privileged and handicapped

EEC spending and expansion problems

The importance of the problem of the relationship between over-all and industrial programming derives from certain essential considerations

The problem of intermittence (of power demand) may, however, be over-stressed and with it the storage of energy...

Technological problems: Problems of application of research to solve some urgent technical problem have not been considered. For example:

The problem of economic desalination of sea-water

The problems of adapting man to space travel

The problem of machine translation of texts

The problem of extraction of energy from the fusion process

Measurement problems: Problems of quantifiability, data collection and comparability have not been considered. This means that problems such as the following have been excluded:

The problem of measuring poverty

Problems of quantifying the effects of special preferences

Problems of the lack of suitable monitoring instruments for environmental pollutants

- The only exception is the general problem of comparability of statistics.

Research or scientific problems: Problems of research, methodology, and analysis have not been considered, as

with theoretical problems in general *(eg* Hubert's list of 23 outstanding unsolved problems for mathematicians in 1900). and problems of paradigm change. However some attention has been given to the general problems of inadequate concepts, logical or semantic fallacies, irresponsible research, or research which legitimates some abuse of human rights.

Different kinds of research have in fact been distinguished by Gunnar Boalt (7) on the basis of the relationship between the problems considered and the theory in question:

the problem independent, not associated with the theory
the problem independent, with a secondary association with theory, which is of lesser importance
the problem is of about equal importance with the theory used
the problem is of some interest, but the theory is of more interest
the problem consists of the testing of a theory

Only the first two categories would merit consideration for inclusion here as problems of possible world importance.

A useful distinction between in-house research problems and social systemic problem is illustrated by the remarks of T S Kühn (see quotation in paragraph 5.2 below on "Problem disguises").

4. Identification procedure

The following approaches were used in parallel:

1. A request for documents on specific problems was sent to the secretariats of international organizations selected from the companion *Yearbook of International Organizations*. This requested either that specific problems be identified and described within a questionnaire framework, or that the organizations send any documents or other material from which the required information could be obtained. With the questionnaire was sent a preliminary list of criteria by which suitable problems could be identified, with the request that additional or alternative criteria be supplied. Where appropriate a proof of an entry from the previous edition was included for amendment or comment. The mainly mainly served to increase the flow of problem-oriented documents already received from international organizations in connection with other information processing activities of the Union of International Association (see below). The value of the replies in both cases lay mainly in (a) their identification of new problems for which documentation was either supplied or had to be obtained, and in (b) their identification of problems categories which it was not useful to include.

2. International organizations send a stream of documents to the Union of International Associations to facilitate the production of reference books on their activities. The relevant publications are the 3-volume *Yearbook of International Organizations*, and the quarterly *International Congress Calendar,* for both of which supplements are included in the bi-monthly periodical *Transnational Associations*. This incoming stream and the documents already filed were scanned for problem descriptions.

3. The United Nations and its Specialized Agencies produce considerable quantities of material about world problems. The relevant documents and publications were obtained or photocopied, partly as a result of research in the appropriate libraries.

4. Many other sources were investigated and used to the extent feasible. They include: journal series, commercially available publications, research institutes, encyclopedias and other general reference books.

5. Once the bulk of the material had been filed by problem, the filed documents were re-examined to locate descriptions of other problems which were then made the subject of new files. This was an integral part of the process of identifying relationships between problems. A variety of techniques were used, depending on the material available and the nature of the macro-problem area in question, to clarify such problem networks and to locate adequate problem descriptions.

6. Although all statements used in building up problem descriptions are, in almost every case, very closely based on existing published documents, no explicit link is established between statement and source documents. This was avoided for two reasons. Firstly, resources only permitted problem statements to be located and did not necessarily permit the location of the best document(s) devoted to that problem. Consideration has been given to the inclusion of references in future editions Secondly, the editorial process of selecting and restructuring of texts from different sources may have unintentionally distorted the meanings in the original contexts (particularly when the original statements did not constitute clear descriptions). Any such misinterpretations will be corrected in future editions.

7. Particular attention was given to the relationships between problems. Various series of problems necessitated some regrouping of problems into problem groups to avoid inclusion of too many problems at too great a level of detail. Different methods of handling this matter and establishing cut-off points were used on an experimental basis. Constructing such problem hierarchies was considerably facilitated when the available documents had attempted some such categorization of the problems. Relationships between problems, other than hierarchical ones, were included either where they were specifically mentioned in the available documents or where they could be reasonably inferred from such material. It is rare for documents to be systematic in their description of the relationships between problems. Relationship networks have to be built up from several different sources. Often it was not clear whether the relationship applied for the whole of a problem hierarchy or for only some component part. Some effort was made to "tidy up" such networks, but in general the practice adopted was to include relationships at this time in order that the networks could be more thoroughly criticized with a view to improvement. It is general easier to criticize errors of commission than to undertake the extra effort to remedy errors of omission.

8. When the editorial process was complete, the file of problems numbering over 15,000 items was split into three parts: those with descriptions or a minimum of two cross-references (which form the 4700 entries of Section PP), those which had inadequately formulated names or overlapped existing problems to an excessive degree (excluded from the publication), and the remaining problems (which form the 5533 entries of Section PQ).

5. Preliminary comment on results

1. Problem conception and denotation

There seems to be a general lack of precision in thinking about and naming problems. A recent major inter-

na) review of the United Nations notes, for example, that: *"The United Nations System does not possess precise criteria for defining problems which have some chance of being taken seriously by the international community as a whole. The identification of problems which should be the subject of "major conferences", for example, is done mainly on the basis of the existing sectoral schedule of problems: industrialization, science and technology, agrarian reform, population, women, environment, water resources,* etc. *But frequently the subjects chosen do not represent really new problems, or they are only repetitive devices for driving home the claims of the Group of 77 (increased aid from the industrialized countries, etc). Hence major conferences of this type often culminate in "action programmes" which in spite of their title do not embody anything concrete and do not contribute to any change in the respective attitudes of the participants...."* (para 127). Elsewhere the report states: *"The task of identifying world problems when the time has not yet come for negotiating but only for recognizing as a whole the existence of elements of a "problématique" common to all countries, but without any suggestion of going beyond the analysis stage. These problems are dealt with at all levels. In virtually all programmes of all organizations there is a research and identification component of this type. However, only a few problems gradually emerge from all this* corpus...and *they are gradually identified as suitable for possible discussion on the convergence of national policies or the negotiation of common standards. Thus the questions of the environment, population, certain social problems, economic and monetary problems are at various stages of identification within the world forum."* (para 112). (Maurice Bertrand. Some Reflections on the Reform of the United Nations. Geneva, UN Joint Inspection Unit, 1985, JIU/REP/85/9).

The lack of precision in thinking about problems arises in part from shorthand usages by which issues are identified in the media and in political debate. As an example, the Director-General of UNESCO produced a report to the 18th General Conference (Paris 1974) concerning the "Analysis of problems and table of objectives to be used as a basis for medium-term planning (1977-1982)". It was specified that this should include *"all major world problems-coming within UNESCO's purview and relevant to its goals."* The major world problems identified as such are:

1. Human rights; 2. Peace; 3. The advance of knowledge - scientific and artistic creativity; 4. Exchange of information; 5. Communication between persons and between peoples; 6. Concepts and methodologies of development; 7. Policies and strategies for development; 8. Infrastructures and training for development; 9, Greater participation by certain groups in development; 10. Man's natural environment and its resources; 11. Man in his environment, 12. Population.

None of the names given by UNESCO to the problems would be considered acceptable as problem names for entries in this section. It is the lack of human rights, or their infringement, which constitutes the problem. Similarly, it is the presence of conflict, or the instability of any period of peace, which are the problems. (Human rights and peace, as such, are goals or values) Exchange of information is the name of a process, which if it operated inadequately, as it does, would constitute a problem. Man in his environment does not denote a problem but a subject of study or debate. Population denotes the (number of people living in a place, country, *etc,* or a special section of them. Only when this number is too high, too low, or increasing too rapidly, etc. can problems be considered, to exist. An effort has therefore been made in this section to locate an appropriately negative name to clarify and make evident the supposedly negative nature of the societal problems for which entries are included. With respect to the population issue therefore, it may be made up of overpopulation, underpopulation, inadequate birth control, and similar problems. Peace as a positive and desirable condition cannot also be the name for a problem. War, conflict and other tensions are what is presumably meant. The only problem which could justifiably bear the name "peace" is that arising from any negative features of peace as a condition (eg lack of stimulus. *etc),* and even then some negative qualifier should be supplied for clarity.

For an organizational system to consider the problem and the objective as identical can only lead to considerable confusion. It is even counter-productive because the organization is then motivated to perpetuate problem-solving activity irrespective of whether or not the problem persists as originally perceived. It is presumably for such reasons that the Batelle Institute's DEMATEL Project required that problems had to be stated not as goals to be attained but as unacceptable situations for which there are numerous perceived solutions (5).

It may be argued that the UNESCO document does not suggest that "human rights" is a problem, but rather that the problem is "the problem of human rights". In other cases this technique of adding "problem" to the descriptor is widely used when no adequate term is available (eg the urban problem, the youth problem, the drug problem). This technique has been avoided in this section because it tends to blur (and even discourage) any focus on component problems. As the report of the UNESCO Executive Board (93 EX/4, 31 July 1973, para 51) notes: *"There are no youth problems as such, but only problems that* affect *youth."* What problems make up the issue areas known as "the youth problem" and "the urban problem"? Summarizing, therefore, it was found that only by requiring that a negative name or phrase be found for the problem, and by avoiding the use of "problem", that problems could be satisfactorily isolated from issue areas and programme objectives. The question is also discussed in the Appendix on Language-determined distinctions, (see Appendix YC)

2. Problem disguises

Considerable difficulty was experienced because the available material, from whatever source, rarely provides a comprehensive and succinct description of a problem as a problem. There seem to be a variety of ways by which societal problems are transformed and diluted by processes in society with different perspectives.

1. *Assemblies, conferences:* Such occasions are usually highly structured by agenda item. If societal problems are to be discussed they are reconceived as items in the conference process. As such it is their procedural features and disturbance to the current activities of existing bodies which come to the fore. In this context problems are distinguished with difficulty from routine meeting agenda items. This is especially so when the main function of the assembly is to review the work of other bodies which implement its directives.

Agenda items may give rise to resolutions. Again these may concern societal problems, but it is only by careful examination that problem-oriented resolutions are distin-

guished from other types of resolution. For example, research on UN ECOSOC resolutions by UNITAR categorized resolutions and their paragraphs according to 10 categories: recognition of issues *("identifying, defining, assessing importance of. and commenting upon substantive problems, facts, conditions, events and causal connections external to the UN")*, delineating potential UN participation in world problems, setting standards and goals, creating or modifying UN organization, establishing programmes and strategies, detailed implementation, information transfer and coordination, monitoring and evaluation, exhorting governments, and internal administration.

Only 5% to 7% (depending on the level of analysis) were concerned with recognition of issues, and even this percentage included *"restating, reiterating or making reference to information on substantive problems, needs, facts, states, and conditions. "*

The report of the Director-General of UNESCO (mentioned above, paragraph 5.1) identifying world problems and supplying each *"with a brief and general description"* typifies the confused nature of problem descriptions currently available. Thus with respect to the first problem, human rights, the nearest equivalent to a description is the statement that: *"The Organization's constitutional responsibilities with regard to human rights may be summed up as follows: (a) to assist in combatting all forms of discrimination; (b) to promote certain fundamental rights, such as the right to education; (c) to extend the opportunities for leading a more satisfactory life, at the individual and community levels, through participation in scientific advancement and in cultural life and access to full and objective information. "*

The societal problem under (a) is "discrimination", but it is embedded in a concern with UNESCO's own constitution, which surely is irrelevant to any description of the problem. In addition the problem is described in terms of combatting such discrimination. Again what UNESCO does about the problem is surely irrelevant to any description of it, unless the problem is in fact that of "combatting discrimination", namely the strategic, tactical, and logistical problem of combatting discrimination. This is not the external problem of discrimination but a problem interna! to the organizational system in some way related to the undefined external problem.

Similar difficulties could be brought to light with respect to the eleven other problems. The descriptions are all embedded in preoccupations with organizational and program goals (or, in some cases, with the theoretical preoccupations of the predominant discipline, or of the department responsible for formulating the description).

2. *Political arena, government:* In the political arena societal problems are merged into the maze of issues which galvanize the political process. Issues, as with news, may be very short-term, highly personalized or concerned with threats to the credibility or image of some establishment unit. Problems only become identified as issues when they excite a significantly powerful pressure group. The extent to which issues become issues, or get lost in limbo, is to a large extent fortuitous. Many issues are deliberately projected as problems when in fact they are only pseudo-problems, which may nevertheless be sufficiently magnetic to attract short-term electoral support. Power groups appropriate issues as a means of establishing relevance to a constituency. Once the dramatic appeal and novelty is lost relative to other issues, a problem issue is discarded.

3. *Administrations. agencies, secretariats:* Administrative bodies and agencies tend to work in terms of programme and budget items. The problems, supposedly defined at a plenary or planning meeting, are here disguised and defined by the action programmes agreed upon. Just as intelligence has been defined as "what is measured by an IQ test", the problem becomes "that which the programme is designed to combat". A secretariat official of one major intergovernmental agency, questioned about material on illiteracy, put the point very simply by stating: *"Illiteracy is not our business; we are concerned with literacy programmes."* At any stage up to or following its full recognition, the problem may be absorbed into some section of the administrative apparatus. It is internalized so that it is almost impossible to distinguish (from the organization's perspective) between action to solve the problem and the routine activity of the administrative section, or even between the external problem and the internal administrative or political difficulties in solving it.

4. *Public relations, public information:* A problem has to be transmuted by a public relations operation into a symbol in order for it to permeate the world of images. There are many symbols which do not represent problems. The process of conversion into a symbol involves a simplification, a dramatization and a humanization. This may strip the problem of subtle cross-linking relationships to other problems, introduce ambiguity, and may even distort it beyond recognition by those who originally defined it. The symbol of the problem is designed to incite to specific action, not to facilitate new thinking about the nature of the problem or whether or how to act against it. Where the public information is disseminated by an organization or agency with programmes designed to reduce or eliminate the problem, it is in the agency's interest to concentrate its information on the success (however partial) of its programmes, rather than the gravity (however great) of the problem. This is best demonstrated by an examination of the catalogues of photographs available to the press from intergovernmental agencies. Only a very small percentage attempt to illustrate the problems, most illustrate actions to solve the problems.

5. *Journalism, newsmedia:* Here there is a tendency to focus on events, news items and stories, possibly built around a core societal problem. But more often than not, the problem is interpreted to give meaning to a personalized event rather than vice versa. Nevertheless this sector is possibly least reluctant to record, if in over-dramatized form, the announcement of an unforeseen problem.

6. *Legal system:* Legislation is concerned to proscribe certain activities (abuses, offenses, *etc)* which create or constitute societal problems. A body of legislation may be conceived as a set of contained problems - problems "behind bars". All crimes may be considered problems.
The societal problems of interest are those that escape from these constraints to a significant degree - beyond the threshold level up to which the legislation may be considered adequate. An international agreement may signal the presence of a world problem, and may of course contain it, if properly implemented. The difficulty is to determine when legislation disguises the presence of uncontained problems.

7. *insurance:* The insurance sector of the economy is not concerned with problems as such but is concerned with risks. Risks may however be considered as potential problems. In this sense the insurance sector is the most explicitely concerned with the definition of problems.

However these problems are in most cases defined in terms of the financial interests of the insurers. The insurance sector may however prove to be a rich source of information on the incidence of many problems.

8. *Religion:* Historically religions have played a major role in clarifying the values in the light of which social problems such as poverty or injustice are perceived. But such problems tend to be perceived by religions as being a consequence of sins and vices (Judeo-Christianity) or afflictions (Buddhism), which are not usually considered as problems in their own right. There is a distinction between what a religion perceives as a sin and what secular society chooses to perceives as a problem, especially in the case of sins or afflictions of the mind having little recognizable impact on society.

9. *Conflicts:* Conflicts, whether violent or not, may be considered as a definite manifestation of a problem. The turbulence of the conflict, in its very concreteness with all the visible side effects, tends to obscure the underlying problem. Those involved in a particular border conflict naturally tend to resist interpretation of their conflict as an instance of the general problem of border conflicts.

10. *Documentation:* Clearly all problems which form the subject of an article or book should be detected by the documentation, library and abstracting system. This is so, but only as "subjects" completely merged into the multitude of other subjects which are the preoccupation of classification systems. Unfortunately, subject headings and descriptions do not detect problems which are not yet labelled by a term - namely those at present defined by a phrase or a mathematical relationship *(eg* between resource flows). Nor do the documentation systems detect problems noted in the body of a text.

11. *Research disciplines:* The problems detected by disciplines are normally intimately bound up with the characteristics of the theory or model used to research them. T S Kühn clarifies the relationship between research problems and societal problems in the following quotation (8): *"Bringing the normal research problem to a conclusion is achieving the anticipated in a new way, and it requires the solution of all sorts of complex instrumental, conceptual, and mathematical puzzles... It is no criterion of goodness in a puzzle that its outcome be interesting or important. On the contrary, the really pressing problems,* eg *a cure for cancer or the design of a lasting peace, are often not puzzles at all, largely because they may not have any solution... One of the things that a research community acquires with a paradigm is a criteria for choosing problems that, while the paradigm is take for granted, can be assumed to have solutions. To a great extent these are the only problems that the community will admit as scientific or will permit, its members to undertake. Other problems, including many that had previously been standard are rejected as metaphysical, as the concern of another discipline, or sometimes as just too problematic to be worth the time. A paradigm can, for that matter, even insulate the community from those socially important problems that are not reducible to puzzle form, because they cannot be stated in terms of the conceptual and instrumental tool the paradigm supplies- One of the reasons why normal science seems to progress so rapidly is that its practitioners concentrate on problems that only their own lack of ingenuity should keep them from solving. "*

An external societal problem may be internalized by the discipline, as is the case with administrative agencies, such that it is impossible to distinguish (from within the discipline) between action to solve the problem and the normal advance of theoretical knowledge within the discipine, or even between the external problem and the internal theoretical or practical difficulties in solving it.

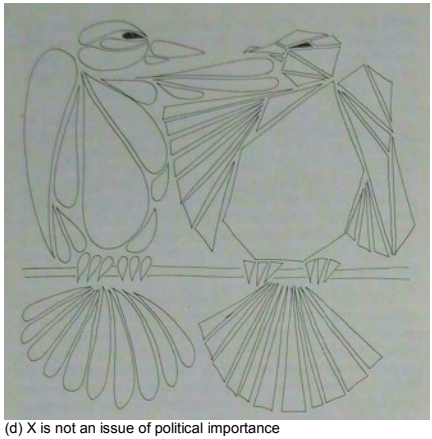
In contrast to these views, scientist-activists such as John Platt and Richard A Cellarius suggest the creation of international councils to focus on and legitimize research on solutions of major crises: *"Until recently, many scientists have wanted only to pursue basic research and have avoided problems of practical or social significance - except when paid to act as consultants to government or industry."* (9) They identify 210 areas for urgent research studies, many of which are intimately related, by definition, to world problems.

The situation is further complicated by the relationship between the problem as researched and the problem as perceived by the body concerned with the formulation of policy. Yassin El-Ayouty makes the point (10): *"There are certain misconceptions held by the operational official as regards what research should do for him. An important misconception is the operator's assumption that the solution of his problem would be primarily advanced through the mere collection of facts. In this regard, the operator may erroneously conceive of the research process as an exercise aimed at providing him with specific replies or answers to questions or problems which he has selected for research. As a result of this misconception, the operator finds the problems, as researched, appear different from those in which he, the action man, is interested. The disappointment of the operator does not stop only at finding that he is no nearer to the answers he is seeking through research than when he began. It is compounded by the fact that the whole research process may appear to be a complicated way of saying the obvious. As to the researcher, he may have his own frustrations in responding to the demands of policy through research. As his research proceeds, his conviction may grow that the action official has asked the wrong questions, and that the concepts and categories in which the policy problem has been posed are neither meaningful nor useful. If he reformulates the problem or restates the questions, the result may be that his customer, the action official, makes little or no use of his investigations."*

3. Problems as boundary phenomena

Domains such as those noted above each have problems of vital internal concern. The problems of interest in this section are however those which appear to have some existence "out beyond" the various conceptual frameworks which society has evolved to respond to unforeseen social change of an unexpected nature. Such problems overflow and are not contained by such frameworks. They define the presence of an "outside" with respect to society - uncontained processes. It is almost as though the layers of problems and matching procedures internal to organizations, disciplines, legal systems, politics, *etc,* constituted a distorting factor hindering and even blocking the perception of a problem. Every attempt is made to perceive the problem within some familiar framework, if it is not possible to deny its existence. There is a parallel between the following statements about the problem X:

(a) X has no theoretical significance
(b) X is not on the current agenda of our general assembly
(c) X is not the subject of any existing legislation



(d) X is not an issue of political importance

(e) X is not a matter of concern within the current two-year programme of our organization

(f) X is not of interest to our readership (or viewers)

Each such sector experiences great difficulty and reluctance in grasping the problem as a negative condition in its own right. Each sector rapidly separates its attentions from the social and human impacts of the problem, reinterpreting it and transforming it. This reduces the significance of its particular content and diverts attention to the various formalistic features of the manner by which the original problem is contained and encapsulated. The problem is converted into: a story, an issue, a case, a programme focus, an agenda item, etc. This is accompanied by an effort to concentrate more upon what is being done to remedy the problem situation than to clarify the nature of that problem.

4. Nebulous characteristics of problems

Problems are strange nebulous entities having a shadowy existence. They may be described or bounded by negatives - as *"the substantial, unwanted discrepancies between what exists in a society and what a functionally significant collectivity within that society seriously (rather than in fantasy) wants to exist in it."* (11). They are artefacts of concerned human minds. There is even the suggestion of Kuang-ming Wu that they are the artefacts of Western minds (36). For him the supposition of "problematicalness", with its attendant implications for reason, for principles, and for history, is so deeply ingrained in Western consciousness that its déniai seems absurd. But, in the light of his interpretation of Chuang Tzu, to conceive of life as presenting problems to be solved is a misconception of life, if there are indeed major problems of culture, and cultural attempts to respond, then history is not merely a chronicle of episodes but allows of interpretation as a form of drama. With a problem-oriented vision it is possible to speak of the rise and fall of civilizations, of a dialectic of progress or devolution, and of the importance of roles in history in relation to problems. But if it is not necessary to see life as presenting problems or to understand life in relation to problems, then these features of historical consciousness are not as important as they presently seem. Alternative views are then also possible and may even prove more appropriate (36).

1. *Subjectivity:* The shadowy nature of problems derives from the fact that they represent in part an objective state of affairs and in part a subjective state of mind. Thus a UNESCO expert meeting on violence reporting on its definition notes: *"What do we mean by violence. That depends on who "we" are."* But even this objective quality may be questioned. *"Problems and solutions are, however, based on the perceptions of individuals. They are not objective conditions of the real world. They are subjective constructions - what Kenneth Boulding would call "images" of the real world - although such perceptions may be and often are shared in roughly the same form by many people. Nevertheless, problems may appear in different forms to different people. What is a critical problem to one person may appear unimportant, or even noi a problem at all, to another person. To paraphrase Boulding, a problem is what somebody perceives as a problem; and, without somebody or something to perceive it, a problem is an absurdity." (29)* The emergence or disappearance of the discrepancies noted above may be affected by raising or lowering standards or by the improvement or deterioration of social conditions. *"We must therefore be prepared to find thai the same social conditions and behaviors will be defined by some as a social problem and by others as an agreeable and fitting state of affairs. For the latter, indeed, the situation may begin to become a problem only when the presumed remedy is introduced by the former.....There is no paradox then in finding that some complex, industrial societies, having a comparatively high plane of material life and rapid advancement of cultural values, may nevertheless be regarded by their members as more problem-ridden than other societies with substantially less material wealth and cultural achievement. Nor is there any longer a paradox in finding that as conditions improve in a society (as gauged by widespread values), popular satisfaction may nevertheless decline."* (11)

2. *Solutions as problems:* Even the distinction between problems and solutions is blurred and confused. A supposedly less desirable state of affairs is conveniently called a problem situation and the more desirable situation is termed the solution situation. But as Bertram Gross notes: *"..alt solutions create problems. Adequate solutions lead to large problems. Good solutions create fantastic problems." (30)* and he cites the consequences of successful agricultural development in developing countries. Frank Trippett notes: *"The Politician can appeal solely to the boundless and inextinguishable nostalgia of the human race. So he talks about "problems" for which he proposes "solutions"... But he does not solve these problems, simply because from the folkloric world he can scarcely see, let alone touch, the actual world. His is a phantom reality. The very things he calls problems are, in fact, solutions in the real world."* (31) He cites the unemployment problem as a conventional solution to economic problems, and the urban problem of overcrowding as a solution to the problems of housing increasing numbers of people.

3. *Structural necessities:* In the spirit of the Iron Mountain Report (32), the supply of an adequate number and variety of problems will be necessary as a structuring device for a complex society since it provides a sufficient number of "sinks" (perhaps the psycho-social equivalent to the astronomers' "black holes") to absorb the excess energy generated by social processes. In many respects

problems fulfil the criteria for *"substitutes for the function of war"* identified in that report. The presence of adequately complex problem-situations is also essential to effective social learning.

4. *Fable and superstition:* Seen in the light of the above points, any attempt to collect information on problems bears some resemblance to the compilation in medieval times of reference books on monsters noted by travellers in distant parts. A bestiary is in fact "a *medieval, often illustrated, work in verse or prose describing with an allegorical moralizing commentary the appearance and habits of real and fabled animals".* The magical element is also present in a certain reluctance of people to direct attention to the clarification of understanding about problems in all their negativity. There seems to be a superstitious feeling that there is an element of bad luck about doing so, which might attract the attention of unwelcome supernatural powers. ("Problemology" then comes to resemble demonology). In the same vein, however, problems, as evils, escaped long ago from Pandora's box. If the latter is viewed as a conceptual framework, the collective human task is to find a way of getting them back in again.

5. Problem metaphors

The nebulous, shadowy nature of problems discussed above suggests the value of trying to understand them through metaphors. Not only can valuable insights be obtained, but this helps to comprehend how people favouring problems as understood through one metaphor have difficulty in attaching significance to problems as understood through another metaphor. The favoured metaphor may render problems even more evanescent. There is also the possibility of considering problems as metaphors in their own right (see Section CM).

1. *Atoms, molecules:* Problems may be considered as discrete entities, like atoms, having relationship to one another, like molecular bonds. This resembles the most simplistic form of portraying atoms and molecular (the solar system and billiard ball models) and is still in use for teaching and in graphic displays for research (see Appendix YF), The structure of this volume is based on this metaphor. But although such models are useful, it is the implied discreteness of atoms which obscures other properties, of atoms as field effects (which are less easy to visualize), leading to alternative descriptions. Problems also have non-discrete characteristics which can better be understood as field effects.

2. *States of matter* It is useful to compare problems using the metaphor of the different states of matter. Solid: problems can be described as solid barriers, and rock-like obstacles. Liquid: the fluid, shifting, interconnected nature of problems can be understood using liquid metaphors. (In Section CM, a chemical metaphor of problems dissolving into solutions and being precipitated out as solids is mentioned). Air: the manner in which problems "clamour for attention" or people are "bombarded by problems" can be understood in terms of the pressure exerted by molecules in a gaseous state.

3. *Geography and weather* The previous metaphors are often understood in terms of geography and weather effects. Problems may be compared to mountain barriers, earthquakes, volcanoes, landslides, avalanches. Crises can also be described in terms of storms and hurricanes, whether of wind or accompanied by waves (as in the phrase "making waves"), or in terms of severe extremes of temperature.

4. *Ecology:* Problems can be described in terms of ecosystems (jungle, desert, ice-field), wild beasts, insect pests, plagues or virus.

5. *Disorders:* Problems may be considered to be in some way the social equivalent of foreign bodies circulating in the human bloodstream (requiring the action of antibodies), or of different diseases affecting the different structures and processes of the human body. They bear a resemblance to "negative theories" (or "anti-theories"), namely they exist in the same way that theories exist (bearing the same relationship to data and values), but instead of providing explanatory and predictive power to link related phenomena within a coherent framework, they mark the presence of confusion and unpredictable relationships between seemingly unrelated phenomena. To the extent that they involve a comprehension vortex, with some form of "event horizon", they resemble black holes in the universe of information.

It may also be the case that the increasing recognition of problems in an increasingly sophisticated society based on communications media, is to some extent a social equivalent of individual hallucination under conditions of prolonged sensory deprivation. The increasing proportion of the population living and interacting with, and through, a world of images reduces the collective daily necessity to relate directly to traditional grounded realities, but in so doing creates a generalized sense of eventless-ness which provokes the emergence of compensatory collective hallucinations to which the collectivity can respond with positive activity.

6. Evaluation of problem importance

No effort has been made to determine the relative importance of problems for which entries have been included. In this preliminary exercise, effort has been limited to locating problem descriptions and relationships between problems, which would then permit further attention to be given to the question of the relative importance

of the problems. Different minority groups and interest groups approach the universe of problems from different perspectives and with different value preferences. Such differences are reflected in the very wide variety of international organizations representing such views. The resulting differences in the weighting of the relative importance of problems leads to different: priorities for action; time-scales within which action must take place; relative amounts of resources to be allocated; and hence to different perceived critical paths through the problem network. The evaluation of the relative importance of problems is itself a major task beyond the scope or immediate intentions of this section, particularly since a large number of reputable authors and organizations have devoted effort to isolating the 5 to 10 key problems which merit immediate attention. It is the fact that these authors and organizations are not in agreement which is of interest here.

In deciding what is a valid problem for inclusion, the "objective importance" according to experienced analysts was considered not so significant as the "subjective importance" to those who perceive a particular problem as of major importance from their place in the social system. The social response to eclipses is interesting in this respect.

Thus a relatively "trivial" or "irrelevant" problem (according to some "objective" analysis) which looms large in the daily preoccupations of an individual or an organization may from that perspective appear to be of much greater importance than some "major" problem. Whether a "major" problem is held to be major because of the results of some specialized, up-to-the-minute method of analysis, or because it looms large in the daily preoccupations of some other segment of society, is immaterial. Any segment of society may legitimately attempt to convince other segments of the importance of those problems to which it is sensitive. Whether or not it succeeds, if it is free to do so, it will allocate resources to remedy those problems which it considers to be of relatively greater importance, in the light of its own standards of objectivity, social justice, etc. Such resources are not then available to allocate to the solution of other problems, judged by other segments of society to be the major problems.

The question raised is where the line should be drawn. Does the allocation of hundreds of million dollars annually to the reduction of personal facial and physical defects (to take an extreme example) justify the inclusion of "unmentionable" but widespread conditions such as ugliness, halitosis, obesity, excess body hair, and the like, as world problems? The point being that such funds are currently not available for the better legitimated problems such as underdevelopment.

The relative importance of problems is therefore not clear. Any attempt to clarify the matter can proceed either by first excluding all "irrelevant" problems in order to isolate those of "major" importance which merit further analysis, or by first collecting information on as comprehensive a range of problems as is feasible as a basis for clarifying the debate as to the relative merit of the problems. The first alternative immediately alienates all those individuals and groups whose problems are not admitted as being of major importance by the body responsible for the selection procedure. Being alienated and excluded, and perceived as misinformed or motivated by self-interest, they will continue to allocate the resources over which they have control to the problems which they perceive to be of importance. This is one reality behind the current shortage of funds for "worthy" problem areas. The second alternative opens up the possibility that by demonstrating the interrelationships between the problems (including the direct or indirect relationships between the problems perceived by the different groups to be either of "major" or of "trivial" importance), a clearer understanding of the merit of the opposing viewpoints may be achieved by all concerned - with the consequence that the psychosocial needs acknowledged by policy-makers may become more subtle and the value of allocating resources to less popular problems may be recognized. it is important to include problems with which people identify. Major problems are in danger of acquiring the same status in people's minds as governmental agencies, namely that they are perceived as being too vast and impersonal to be related to in any meaningful way. So that even though a problem may only be a symptom (according to some method of analysis), if a significant group believes it to be a problem, and relates to it as such, then it should be registered as such because such people many not identify with or understand the nature of the underlying or causative problem. The relationship between the symptomatic problem and the underlying problem can be identified and registered as a particular kind of relationship appropriately labelled.

7. Questions for consideration

Interesting questions that emerged during the course of work on this project include:

1. How can networks of relationships be analyzed systematically as networks to determine what are the most important focal points for action, and what different meanings could then be attached to "importance"?

2. How can comprehension of complexity be improved without artificially forcing relationships into (definitive) hierarchical groupings thus doing violence to any inter-hierarchical linkages?

3. Might it not be useful to investigate the result of using the mathematical technique to convert relationships between points into points in a network? Useful insights may then emerge from being able to switch between the perception of problems as linked in a network of relationships and the perception of problems as relationships which intersect at certain points.

4. Given that the number, variety and relationships of human diseases, and the nature of their effects on the individual are now well understood, do they not suggest ways for organizing thought about the range and variety of psycho-social problems and their impact on the psycho-social system?

5. Is it as ecologically inappropriate to ask the question "What are the five most important problems (organizations, *etc)* in the social system" as it is to ask the question "What are the five most important animals (plants, *etc)* in the natural environment"?

6. Can the relationships between problems (or between organizations) be usefully conceived as analogous to the food webs and trophic levels within which animals are embedded? Does this help to suggest why different kinds of problems emerge as being of major importance at different times? How might the evolution of problems and problem systems be conceived in this light?

7. From what is the stability of a "problem ecosystem" (as it might emerge from the previous point) derived? Is it

useful to distinguish between degrees of (negative) maturity of problem ecosystems and to attempt to determine the amount of energy required to maintain them? Is anything suggested for better understanding of problem systems by the fact that a highly diversified ecosystem has the capacity for carrying a high amount of organization and information and requires relatively little energy to maintain it. whereas, conversely, the lower the maturity of the system, the less the energy required to disrupt it (as emphasized by R Margalef)? Thus anything that keeps an ecosystem oscillating (or "spastic"), retains it in a state of low maturity, whence the possible danger of simplistic reorganization of organizational, conceptual, or value systems. Is the problem of understanding and organizing the maturation of natural ecosystems of a similar form to that of understanding and organizing the disruption of problem ecosystems?

8. Given the absence of sufficient comparable information to produce sensitive, widely-acceptable, quantitative world models covering all aspects of the psycho-social system, to what extent can increasing the number and variety of non-quantitative relationships and entities documented lead to valuable insights of greater acceptability? In other words, to what extent can knowing less about more (and organizing that knowledge) compensate for not being able to know more about less? Can any relationships be established between the amount of information, the type (quantitative, structured or unstructured qualitative), the manner of representation, and its degree of acceptability?

9. To what extent is the complexity of the problem system with which humanity is faced greater than that which its organizational and intellectual resources are capable of handling? Worse, is there a widespread unacknowledged preference for simplifying the representation of complex problem (and other) systems down to less than 10 elements so that they lend themselves to easy debate in public and in a policy-making environment (as might be suggested by some work of communication psychologist George Miller)? Are organizational and conceptual resources then marshalled and structured to match the problem system as simplified rather than to handle it in its more dangerous complexity, thus running the (unacknowledged) risk of leaving the problems uncontained and uncontainable by the resources available? Does this suggest a corollary to Ashby's Law of Requisite Variety which might read: That any attempt to control a psycho-social system with a control system of less complexity *(ie* of less variety) than that of the psycho-social system itself can only be made to succeed by suppressing or ignoring the variety (;'e reducing the diversity) in the psycho-social system so that it is less than the relative simplicity of the control system? Such suppression tends to breed violence, however.

6. Possible future improvements

1. Revision of information included in each entry, with addition of information where appropriate to produce a more complete description.

2. Inclusion of new problem entries.

3. Revision and extension of the system of relationships between problems to include such features as (a) relationships arising from a situation in which one problem is perceived as having displaced another, as a result of new understanding of the nature of the problem (whether or not this understanding is widespread); (b) relationships arising from recognition, as a result of analysis, that a problem is a symptom of a more fundamental problem (as distinct from cause-effect relationships between problems of equivalent level); (c) relationships arising from educational considerations, namely indicating the next more complex problem, in which the nature of the problem is reformulated in more sophisticated terms; and (d) relationships arising from the historical order in which problems were perceived and displaced by other later problem perceptions,

4. Extension of the system of relationships between problems to other series to include such features as: (a) international organization sub-units specifically concerned with the problem; (b) resolutions of major United Nations bodies dealing specifically with the problem; (c) qualification of relationships, such as those with international bodies, to specify whether they are concerned with policy, research, a programme management, public information, or information exchange.

5. Inclusion in entry descriptions, where appropriate and where such information is available, of statements criticizing the existence of the problem as described (namely counter-arguments or counter-claims).

6. Inclusion in the entries, where appropriate, of other subheadings such as (a) details of how the problem has developed over time and how it is expected to develop in the future; (b) list of countries in which the problem is known to occur; (c) information centres which keep track of the problem (other than international organizations); (d) standard reference books dealing with the problem; (e) international meetings dealing with the problem.

7. Development of several alternative classification systems for the problems.

8. Identification of key people who are closely associated with action against particular problems by functioning as catalysts for the generation of new organizations, programmes, or other initiatives. A separate section listing such people could be cross-referenced to the problems series,

9. Development of computer programmes to draw attention to errors in the ways in which the hierarchies of cross-references for particular problem-areas have been indicated.

10. Development of computer programmes to plot out onto "maps" certain problem networks around core problems. Such maps could be included as illustrations accompanying the descriptions of such problems in future editions. More complicated maps could also be constructed showing how the network of organizations matches, or fails to match, the network of problems. Collections of such problem-based maps could be published in a form of atlas accompanying future editions of this volume (see discussion in Appendix YF).

Previous, parallel or related initiatives

1. Several of the Specialized Agencies of the United Nations publish reference books which include descriptions of many world problems. The World Health Organization publishes *Health Hazards of the Human Environment.* The International Labour Organisation publishes *Encyclopaedia of Occupational Health and Safety.* The World Bank has published *Environmental. Health and Human Ecological*

Considerations in Economic Development Projects. Individual divisions within the United Nations system produce a very large range of document series which present summaries of the current state of a particular world problem area, *eg* the periodic *Report on the World Social Situation* produced by the UN Department of Economic and Social Affairs. Statistical yearbooks or reviews are produced by the major agencies.

2. Apart from the United Nations system, many of the 300 other intergovernmental organizations produce detailed analyses, summaries, or statistical surveys relating to the world problems in their domain. For example, the Environment Directorate of the Organisation for Economic Cooperation and Development produces a series of reports on individual environmental problems. The 3. Some major international organizations periodically attempt to review the range of world problems with which they are concerned, in an effort to redefine their priorities for the future. Thus, for example, UNESCO has produced an *Analysis of problems and table of objectives to be used as a basis for medium-term planning (1977-1982).* This exercise resulted in the identification of 12 major world problems which were linked to 59 objectives. The Organisation for Economic Cooperation and Development produced in 1973 a *List of Social Concerns Common to Most OECD Countries* (3).

4. A large number of research-oriented institutes have programmes which attempt to identify and focus on one or more of the most critical world problems. Such institutes are usually related to some aspect of planning, forecasting, futures, technology assessment, or policy sciences. Overviews of this activity may be obtained from such publications as W W Simmons *Exploratory Planning Briefs* (13) which describes the activities in this field of 48 corporations, 58 governmentent and civil bodies, and 107 service institutes of many kinds.

A number of institutes maintain the results of extensive surveys of current activities around the world in their own data banks. Such a survey, in the field of future studies, has been conducted for the United Nations Institute for Training and Research (UNITAR) by the Center for Integrative Studies. The World Future Society produces a directory of future-related resources and a periodical surveying them.

Most institutes are primarily concerned with a limited range of major problems, such as population, resources, or environment (within which are of course grouped many other problems although usually not distinguished as such). An exception is the Hudson Institute which has identified 78 technological crises in 7 groups. Many institutes necessarily conduct such research to identify the problems which will affect the body or area from which their funding is derived, *eg* Europe 2000, Hawaii Commission on the Year 2000, or individual corporations interested in predicting the environment within which their products must be profitable. There is a well-recognized tendency for institutes to switch programmes from year to year as new problems appear on the horizon of funding bodies.

5. There is a tendency for special institutes to be created in each country for the comprehensive analysis of policy alternatives, national goals, and national priorities. These necessarily involve a focus on the world problem context. An example is the Institute for the Analysis of Public Choices established by the Aspen Institute for Humanistic Studies.

6. There is of course an unknown amount of government-sponsored classified research as well as corporation-sponsored proprietary research. This may well be superior to anything that is publicly available, although it is likely to suffer from the disadvantage of being oriented in terms of the sponsoring body.

7. The Club of Rome (created in 1968 by a group of 30 individuals and limited in membership to 100) initiated in 1970 a Project on the Predicament of Mankind with the objective of examining the complex of problems in the world, conceived as a world problématique in that; the problems occur to some degree in all societies; they contain technical, social, economic and political elements; and that they all interact. The project is being conducted in phases. The first phase led in 1972 to the very well-publicised study under Dennis Meadows entitled *The Limits to Growth*. This examined the interaction of five basic factors (or problem areas) that determine and limit growth on the planet. The second phase resulted in 1974 in the production of a report *Mankind at the Turning Point* by M D Mesarovic and E Pestel in which the global system outlined in the previous phase was disaggregated into ten major interacting geographical regions and analyzed with new methods. The third phase in 1976 led to the production of a report on *Goals for Global Society* (under the direction of Ervin Laszlo) which identified sociological, psychological and cultural inner limits which could give positive direction to human aspirations. The Club of Rome world system modelling exercise has stimulated many emulators and rectifiers. A survey of these has recently been produced (15).

8. Encyclopaedias and similar general reference works contains descriptive information concerning a wide range of problems, although the problem is generally not recognized as a problem but rather as a phenomenon. Important problems may be omitted. Thus although Diderot's Encyclopaedia in the 18th century includes an entry on torture, the 1975 edition of the *Encyclopaedia Britannica* does not, nor does the *International Encylopaedia of the Social Sciences*.

9. A World Design Science Decade (1965-1975) was proposed by R Buckminster Fuller to the International Union of Architects at their 6th World Congress in 1961. This proposal called for the initiation, by schools of architectural and environmental planning around the world, of a continuing survey of the total chemical and energy resources available to man on a global scale, and of human trends and needs in relation to these resources, and of how the use of these resources may be redesigned to serve all humanity. This proposal led to the creation of the World Resources Inventory at Southern Illinois University (Carbondale) and to the production of a series of documents by Buckminster Fuller and John McHale relating to each phase of the programme. Phase 1 was entitled *World Literacy are World Problems*, for which one of the documents produced in 1963 was *Inventory of World Resources, Human Trends and Needs.*

10. In the period 1970-72. the Institute of Cultural Affairs and the associated Ecumenical Institute (Chicago) undertook an extremely comprehensive survey of the range of contradictions with which society was confronted. This material was ordered in various ways in a series of unpublished studies one of which identified 385 contradictions grouped into 77 categories. These contradictions were perceived as underlying problems in many sectors (economic, cultural, social, *etc)*. From 1974-78 this mate-

rial was used to guide 50 community dialogues in some 30 countries. Each of which gave rise to further sets of contradictions described in a series of internal reports.

11. Numerous books and articles by individual researchers identify specific world problems or groups of problems and propose taxonomies for them. However the number of problems taken into consideration is usually less than 10. An exception is Hasan Ozbekhan's series of 28 Continuous Critical Problems (16). During his period as Executive Director of the Club of Rome (prior to the Limits to Growth exercise) this was extended in an internal document to approximately 50 problems. These problems are system-wide and are characterized by the fact that they cannot be solved independently of the rest of the set.

12. The Battelle Memorial Institute, through its Geneva Research Centre, conducted the DEMATEL project (namely DEcision-MAking Trial and Evalutaion Laboratory). The objectives were to help find better solutions to world and generalized problems based on a better understanding of the problem structure or so-called world problématique, in order to avoid the selection of solutions which are in fact problem-generating. A survey of problems perceived by about 100 responsible and knowledgeable persons was prepared in 1972, and led to the production of a list of 48 problems in 14 groups. The initial questionnaire and proposed follow-up questionnaire were designed to determine the perceived relative importance of problems and their affect on each other. Mathematical techniques for the analysis of these systems of interrelationships were then developed. An objective was to produce a map of the world problématique (5).

13. The Federal Republic of Germany, through its Environment Programme, is developing a computer-based Environment Planning Information System (UMPLIS) to be operated by the Bundesamt. One subsystem of this consists of a referral service and "problem bank". Experiments have been conducted with an Issue Based Information System (IBIS) to document the *"landscape"* of various environmental issues, together with their state of treatment and the relationships established between the various topics and issues of concern to environmental politics.

14. A number of initiatives by isolated individuals have led to the collection of information on world problems or related matters but have not attracted funding to permit the production of some form of publication. For this reason they are difficult to trace. Such is the case with Ulf Christensen (Oslo), who from the early 1950s developed a reference system of 10,000 items as a preliminary to a directory of Contacts for Survival, namely people who are acting to solve problems. Similarly, Bennet Skenwes-Cox, President of the Academy of World Studies (San Francisco) has developed a system of 60,000 references giving a synoptic approach to a range of world problems,

15. A number of universities have courses on problem-solving. For example, the Mershon Center Program of Transnational Intellectual Cooperation in the Policy Sciences (directed by Chadwick Alger) at Ohio State University has a graduate course in problem-solving in international organizations. In addition to identifying and comparing the various problem networks of organizations concerned with the networks of problems. At Swarthmore College there is a programma on problem complexes in public technology. Southern Illinois University, through a programme originally directed by R Buckminster Fuller, operates a World Game which introduces students to interactions between problems and resources.

16. There is a very extensive literature on social problems and social issues. An *Encyclopedia of Social Reform* was even produced at the end of the 19th Century (17). There appears however to be an important difference between what are currently included under the term world problems and what is currently meant by a social problem, although even amongst sociologists there is disagreement as to the definition of a social problem. Thus in *Contemporary Social Problems* edited by R K Merton and R Nisbet. 15 major social problems are identified. The exclusion of other possible problems is justified by the statement: *"Sociology is a special science characterized by concepts and conclusions, which are based on analysis and research, yielding in turn perspectives on society and its central problems. For many decades now, sociologists have worked carefully and patiently on these problems."* (18) Social problems would therefore appear to be those problems perceived by sociologists as being the central problems of society.

17. The Worldwatch Institute (Washington DC) directed by Lester Brown produces an annual State *of the World* (19) report since 1984. This reviews current problems in fields such as ecology, resources, hunger, population and energy. The International Institute for Environment and Development produces *Earthscan* reports periodically and is proposing to present similar information in a global report. Jacques Cousteau and the Cousteau Society have produced *The Cousteau Almanac; an inventory of life on our water planet* (20) which reviews many problems.

18. The United Nations University is chartered to devote its work to research into the pressing global problems of human survival, development and welfare that are the concern of the United Nations and its agencies. This is done through a network of research and post-graduate training centres and programmes located around the world and coordinated by a central body. Its project on Goals, Processes and Indicators of Development (1978-82) strongly influenced the content of a number of sections of this publication. The United Nations Institute for Training and Research directs research into problems which are of interest to the Secretariat and the Assembly of the United Nations and which is primarily of interest to national officials and diplomats. UNITAR has undertaken a future studies programme, particularly in terms of impact on the United Nations. The United Nations Research Institute for Social Development conducts research into problems and policies of social development during different phases of economic growth. The United Nations Social Defence Research Institute undertakes research into the field of prevention and control of juvenile delinquency and adult criminality. Many other such specialized international research units exist.

19. A number of school textbooks and teachers guides have been produced on world problems: *World Problems in the Classroom; a teacher's guide to some United Nations tasks,* which gives information on 12 problems (21); One *World; sources and study guide,* which gives information on 5 problems (22); *World Problems,* which gives information on 6 problems (23); and *World Problems: a topic geography* (24), which gives information on 36 problems in 8 groups.

More recently Norman Myers has produced a *The Gaia Atlas of Planet Management* (25) which reviews and illustrates problems and possibilities in relation to land, ocean, elements, evolution, humankind, civilization and management.

20. Numerous studies of world order have been made in which the focus is placed on the political-social-legal forms, organizations and institutions envisaged as being relevant to the solution of world problems, especially those connected with organized violence. The most extensive of these is the World Order Models Project (sponsored by the Institute for World Order), which has given rise to a series of publications (26).

21. A proposal was made in 1972, by Richard Cellarius and John Platt for the creation of International Councils of Urgent Studies to seek out and support the kind of research effort on world problems that would be inappropriate (or suspect) if sponsored by national governments. They identified some 210 areas of urgent research under 25 headings within 6 main groups (9).

22. Numerous surveys have been conducted of community attitudes towards local problems and problem-solving. An example is the Benchmark programme of the Academy of Contemporary Problems (Ohio State University). Other surveys have been made of some special-interest membership organization concerning the relative importance of current problems or those that they perceive as emerging in the foreseeable future. A few nation-wide surveys of this type have been conducted. Thus, for example, in 1968 the *Sunday Times* in the United Kingdom requested that readers write in to draw attention to problems or suggested remedies, and then published a compilation of the results. In 1984-85 the BBC sponsored a *Domesday Project* in which 10,000 British schools participated. The results will be made available to the schools on laser disk. An international equivalent is envisaged. The Institut Français d'Opinion Publique conducted a survey in France concerning 40 problems to determine their relative probability, gravity, and ability to stimulate individuals to activity. (The results were reported at a Colloque International sur la Perception Nouvelle des Menaces in 1973). The Center for Integrative Studies, on behalf of the World Academy of Art and Science, questioned 3000 international organizations concerning the relative importance of 25 problem areas in an effort to identify world priorities; the survey respondents added 196 other items. (The results were reported at the second Conference on Environment and Society in Transition in 1974).

23. A major study was commissioned by President Carter and resulted in the production of the *Global Report 2000; a report to the President* by the US Council on Environmental Quality.

24. The International Federation of Institutes for Advanced Study (whose member bodies must have a minimum of $100 million annual expenditure) is a mechanism for transdisciplinary and transnational initiatives to assist society to cope with an increasingly complex, rapidly changing and interdependent world. The International Institute for Applied Systems Analysis (whose members are the principal scientific academies in each country) initiates and supports collaborative and individual research in relation to problems of modern societies arising from scientific and technological development. The Institute sponsors global modelling activities.

25. Within the United Nations system efforts are being made by the various statistical units to move towards the implementation of a System of Social and Demographic Statistics which could serve as the principal data base on many social problems, but particularly for the preparation of social indicators by which many problems are identified and tracked (27).

26. The Organisation for Economic Cooperation and Development, as the result of the first phase of its Social Indicator Development Programme, has produced a *List of Social Concerns Common to Most OECD Countries* (3) with the object of identifying the social demands, aspirations and problems which are or will likely be major concerns of socio-economic planning processes. The social concerns identified are those *"which are of sufficient importance, present or potential, to the governments of those countries for them to want to have indicators available on a comparable basis."* A social concern is defined as "an *identifiable aspiration or concern of fundamental and direct importance to human well-being as opposed to a matter of instrumental or indirect importance to well-being. "* Social concerns involving means rather than ends are excluded. The list identifies 24 concerns in 8 groups; 14 of the concerns also have a total of 56 sub-concerns indicated against them. Each of the 24 fundamental social concerns *"may be viewed as the summit of a vertically linked hierarchy of an indefinite number of sub-concerns representing the important aspects and menas of influencing the fundamental concern. At the same time, there are various kinds of horizontal linkages or relationships among these hierarchies: a particular concern or sub-concern may have simultaneous effects on a number of other social concerns... It wilt remain with the planners for specific sectors to extend the hierarchy further downwards to suit their more detailed sector planning, evaluation and programme needs and to establish horizontal relationships between the diverse components of the hierarchies."* The document notes that *"Commonality of social concerns among Member countries tends to be greatest at the highest level of generality, diminishing as the definition becomes more specific, "*

27. The Educational Policy Research Center of the Stanford Research Institute, produced a study in 1971 on *Contemporary Societal Problems*. This attempted *"to identify and to interrelate the driving problems of our time, both national and international, to develop a useful perspective from which to better understand these problems, and to thereby identify crucial dilemmas whose understanding seems necessary if societal continuity is to be ensured." (28)* The report explored the use of resource allocation analysis as a tool for the identification of neglected societal problems and presented it as part of a more genera! problem analysis procedure. The study made "a *comprehensive attempt to list all relevant societal problems." Three* overlapping procedures were used: (a) a selection of prominent (mainly American) persons of known divergence in both ideology and professional background were asked to nominate other persons whom they regarded as having the best grasp of current problems, to identify key materials on current problems, and to identify they key problems they saw as being most crucial at that time and in the future; (b) published results of previous systematic attempts to identify, categorize, or list societal problems were collected; (c) using the information collected a core sample of texts was collected for detailed analysis. The body of the report (27 pages) distinguishes between substantive, process, normative, and conceptual problems, and then compared the conventional and a proposed transformational view of societal problems. The appendix (46 pages) listing societal problem descriptions

and taxonomies, consists of six items: Ralph Borsodi's *Seventeen Problems of Man and Society:* the US National Industrial Conference Board's *Perspectives for the* 70s *and 80's.* Karl Deutsch's *Issues which the proposed center for national goals and alternatives should address:* the Institute for the Future's *Future Opportunities for Foundation Support:* and John Platt's What we must do. These identify 17, 118. 35. 64. and 8 problem areas, respectively. The sixth item, resulting from the literature search and the leading thinker survey, lists 46 problem areas in seven groups.

28. A series of "independent commissions", loosely related to the United Nations system, have produced reports on broad ranges of issues. The first of these was the Independent Commission on International Development (Brandt Commission) (29,30) meeting from 1977-82. This was followed by the Independent Commission on Disarmament and Security Issues (Palme Commission) (31) and more recently by the Independent Commission on International Humanitarian Issues and by the currently operating World Commission on Environment and Development. The UNESCO International Commission on Communication Problems (MacBride Commission) may be considered as part of this series.

29. The Union of International Associations, an international non-governmental organization founded in Brussels in 1907 partly on the initiative of two Nobel Peace Prize laureates (Henri La Fontaine, 1913; Auguste Beernaert. 1909), had activities prior to 1939 which are of historical interest in relation to the current project: *Annuaire de la Vie International,* Vol I (1908-1909, 1370 pages), Vol II (1910-1911), 2652 pages) which included information on problems with which international organisations were concerned at that time; *Code des Voeux Internationaux; codification générale des voeux et résolutions des organismes internationaux* (1923, 940 pages, under the auspices of the League of Nations), which listed those portions of the texts of international organisation resolutions which covered substantive matters, including what are now regarded as world problems. It covers 1216 resolutions adopted at 151 international meetings. The subject index lists some 1200 items. Paul Otlet, co-founder of the UIA, produced in 1916 a book entitled *Les Problèmes Internationaux et la Guerre* (32) which identified many problems giving rise to and caused by war, and proposing the creation of a League of Nations. In 1935 he attempted a synthesis which touched upon many problems and their solution within a society in transformation. The preface bore the title *"The Problem of Problems"* (33). He also dealt with this question in 1918 (34). The different series of publications of the UIA since 1949 constitute a useful source of information on problems recognized by international organizations, especially the *Yearbook of International Organizations.*

30- The General Conference of UNESCO adopted a résolution at its 23rd Session (1983). creating a major programme concerned with reflection on world problems and future studies. This was reconfirmed at its 24th Session (1985). During the first two-year period a symposium was held on the creation of a decentralized network for analysis and research on world problems (35). During the second two-year period, with a budget of $1.8 million, it is proposed to track the evolution of the global problématique and its perception by different schools of thought, encourage research on it and promote exchanges of information and ideas on world problems through the network.

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