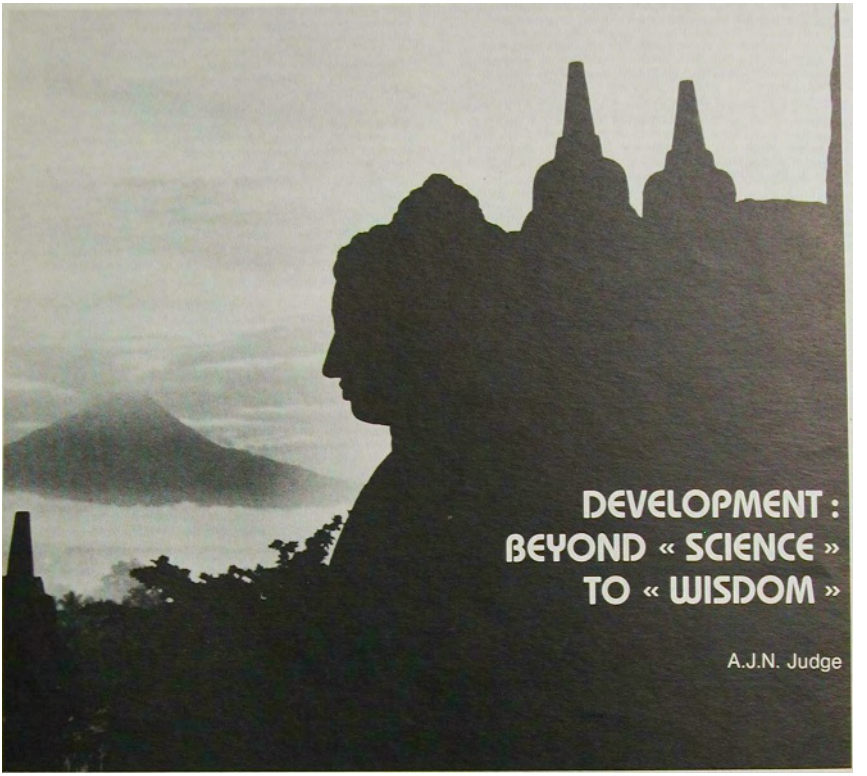

Facilitating the emergence of configurative understanding in « Councils of the Wise » through computer conferencing dialogues (*).

CURRENT PROBLEMS

Irrespective of the many well-publicized - world problems », there are others which are less well recognized (1). These handicap our society in its ability to respond to those which appear more urgent. They are seldom discussed or researched because they cal! into question the methods used and the institutions or disciplines using them. They may even only be described in a humoristic vein (2). It is not the purpose of this paper to document such problems in detail, even if it were possible (3). It is usually the case that, to those familiar with them, supporting evidence is superfluous, but, to those who are not, no amount of evidence is convincing.

The argument of this paper is not based on any consensus concerning the « existence « of all such problems, but rather on an increasing awareness that there are problems of this type, irrespective of how many a particular individual or group is prepared to recognize. A list of such problems, described elsewhere (3). is included here as Annex 1. A humorous list (derived from 2) is given as Annex 2.

The concern of this paper is with the process that is used to reflect upon and discuss problems and action to be taken upon them, using intellectual, organizational and other human resources, in the light of present and emerging values, and with some objective of « human development ». The « hidden » problems now make a mockery of the processes that are used (a). One unique but unsatisfactory attempt at recording this is by Arthur Koestler (4) reporting from bitter experience of interdisciplinary meetings of international experts.

* Prepared in connection with the sub-projects on networks, dialogues, and concepts of development of the Goals. Processes and Indicators of Development project of the United Nations University.
Presented at the World Future Studies Conference on Science, Technology and the Future (Berlin, 8-10 May 1979) - a conference in preparation for the United Nations Conference on Science and Technology for Development (Vienna. 20-31 August 1979). Agenda Item *4 :* Science, technology and the future.

(a) There are few little boys to note that the Emperor, as in Hans Andersen's famous tale. Is lacking any clothes.

it ts unofficially accepted that at least 90% of published papers are virtually worthless other than to the author and his or her career advancement. Research has even shown that the « average » journal article is « read » by one person amongst the total subscribership. The production of such papers is carefully designed to avoid confronting this issue - and indeed in whose interest would it be to confront it ? And yet the collective ability to respond effectively and creatively to problems seems to decrease rather than increase.

The difficulty is not only evident in use of the written word. The dynamics of meetings are such that the majority of spoken insights goes unrecorded, and even if recorded goes unread, as pointed out above. But what is most unfortunate is that the insights produced, as a linear sequence of statements (possibly in parallel sessions), can seldom be effectively interrelated into new patterns. The decisions which emerge are more often characterized by the insights which they ignore than by those which they are able to incorporate. In the field of ideas, as it has been between nations, « might is right »... although such a simplistic standpoint cannot counter a famine or an ecological disaster.

But this would not be so bad if those advancing insights were is some way interested in weaving their perception into a larger pattern, in fact this is not the case, somehow we (and the author must necessarily include himself) are only interested in ensuring that our own perspective is well-placed in the limelight of the stage. And in fact debate within the international community is more characterized by divergence and diffuseness than by focus and clarity. So that on the one hand there is the simplistic imposition of « bandwagon » topics (which usually last from 2 to 5 years) and on the other a cornucopia of unrelated preoccupations.

SOME ATTEMPTS AT A REMEDY : STRUCTURE

A number of approaches to alleviating this situation have been made :

- **interdisciplinary** meetings, programmes, organizations, think tanks, periodicals, etc : it is now accepted that these are in most cases simply multidisciplinary aggregations of perspectives. Interdisciplinarity is viewed with disdain and suspicion in all disciplines and by all institutional divisions - however much lip service is paid to it.
- world modelling exercises have attracted much interest but do not appear to have led to any breakthrough of significance to action on the problem complex. And of course there are competing world models... a model of the real problem.
- **Situation rooms** are favoured by the military and some corporations. They are of course ideal for implementing a strategy where the power structure is hierarchically ordered. They are of little use in the complex world where the problem is to harmonize the relationship between competing hierarchies, respecting those whose conditions are not so effectively represented. It is noteworthy that the United Nations could not design and effectively use such a room.
- **information systems** (5) have been designed to give access to a body of literature covering broad spreads of problems. This is the case with many intergovernmental agencies. Unfortunately bibliographical information seldom implies ease of access to the publication (often « unavailable " or « to be ordered »). On the hand 50 references do not facilitate selection. Worse still, the authors usually present conflicting or unrelated perspectives, necessitating further research (and thus perpetuating the malaise). Other such approaches could be cited, but each is in some way blocked in its effectiveness.

FURTHER ATTEMPTS : DESTRUCTURE AND PROCESS

If the above attempts are considered to be a « 2nd order » approach to the situation, it is possible to identify what might be considered a « 3rd order » approach :

- **think tank networks** as typified by the International Federation of Institutes for Advanced Studies and possibly the more recently created institutional network of the United Nations University. But these have not yet produced any breakthroughs either and have problems in ensuring that their networks work.
- **networks of the wise** as typified by the Club of Rome, the World Order Models Project, and the International Foundation for Development Alternatives. Again, although they have increased sensitivity to problems they fail to reach consensus on solutions. And. above all. they fail to produce credible and politically viable approaches to implementation. Their conclusions are not actionable except perhaps in a very limited sense.
- **process and context:** abandoning organizational structures, many attempts have been made to bring the knowledgeable and/or wise together in ideal for specially selected) environments and to facilitate by sensitive techniques the process of interaction between them. These exercises have resulted in many interesting books, and have built and maintained interpersonal relationships valuable to those involved, but cannot be said to have led to any breakthroughs.
- **networks of information systems** (5) : attempts have been made to interrelate the information systems of different agencies using competing classification systems, standards and hardware. This is typified by the UN Inter-Organization Board for Information Systems and Related Activities or the UNESCO/ICSU World Sciences Information System (UNISIST). Such systems, if they get beyond the policy stage, do not assist the user to find the question that he does not know he needs to ask. The user is confined to the framework from which he approaches the system.

Again it is perhaps possible to identify other 3rd order approaches, but each would be found to be blocked in its wider effectiveness.

NATURE OF THE PROBLEM : ACTION

As will emerge below, it would be presumptuous to assume that the nature of the problem can be adequately formulated from any one perspective (b). For this reason, in searching for a « 4th order » approach, it is necessary to proceed by indirection accepting the paradox to which such a search is subject. Without identifying «the problem», its nature can be sensed from antinomies such as the following :

- **process versus structure :** approaches which emphasize specially designed structures are found to be loo constraining and are often somewhat sterile; those emphasizing process tend to be diffuse and unable to focus.
- **« action now » versus « next year will be better»:** advocates of many approaches excuse their lack of results by statements such as «these things take time », and of course they often do; on the other hand the frustration of the « action now » school is often justified.
- **« experts know best » versus « grass-roots action » : there is** increasing concern that the experts do not in fact know best - particularly when they disagree violently amongst themselves; but on the other hand they are aware of dimensions of a problem Situation to which the non-specialists have not necessarily been exposed.
- **« brick signing » versus « building the cathedral » : in whatever** action is undertaken there are those who are strongly influenced by the desire to ensure that their particular contribution is recognized and this is indeed necessary in the existing reward system; and yet it is the programme as a whole, blending the efforts of many, which needs to be brought to fruition and is usually placed in jeopardy by Such concrete recognition of human development (c).

(b) As both Ashby's Law and Godel's Theorem would suggest.

(c) Could cathedrals have own built il **each** brick was signed ? • And yet that is the principle on which the knowledge system is based.

- « detached operators » versus « self-reflexive participants » :
it is widely assumed that those acting on problems are in some way white-coated and hygienically detached from them, as in a laboratory experiment (« If you are not part of the solution, you are part of the problem »), and indeed some measure of detachment is necessary to acquire the freedom to act; and yet those acting are part of society and need to be aware of the manner in which their actions contribute to the problem they claim they are attempting to solve and how they block appropriate understanding of its solution (« If you do not recognize how you are part of the problem, you cannot understand the nature of the solution required »).

One might cite other such dimensions by which we are torn in our approach to problems. But the point to be made is that the structures and process via which we approach problem clarification and solution model very effectively the factors which render us unable to bring the problems into focus and deal with them (d).

NATURE OF THE PROBLEM : CONCEPTUALIZATION

•The current banner under which society is attempting (once again) to bring its concerns into focus is the : « application of science and technology to development ». Could it be that there are elements in the conception of this banner which are themselves an obstacle to achieving what is purportedly intended ?

(a) **Science, technology and development** : there are many that assume that the meaning of these terms is clear and well-defined and that the problem lies with «application » (see below). And yet even a cursory search will reveal great confusion as to the manner in which » science », « technology » and « development » should be understood (5). At this level, for example, there are es many initiative to « redefine » development; to focus on the « changing purposes » of science (e); or to introduce the notion of alternative/appropriate/intermediate forms of technology.

But these initiatives would seem to be primarily concerned to shift understanding from an existing concept - now argued to be inadequate - to a new concept which will hopefully be more appropriate. It is perhaps necessary that at one level a definition should be assumed to be clear, such as for certain educational purposes. It is equally necessary to push simultaneously for a re-conceptualization. But it is unfortunate that the re-conceptualization should primarily be conceived in terms of - out with the old definition and in with the new » - however good the new may be. For it is absolutely certain that no such definition will attract universal support (even if it is not subject to misinterpretation), and that there will be competing definitions with all that that implies.

To reflect adequately the process in which we are embedded, what appears to be missing is a recognition that we are confronted with a situation in which simultaneously we have :

- those focusing on a single definition (of which there may be many of different degrees of sophistication).
- those moving from an inadequate definition (one of the above) to a new one (possibly one of the above)

« a need for a broader framework which could respect and facilitate these different conceptual innovations and manoeuvers and ensure some degree of continuity rather than an inbuilt guarantee of discontinuity and hiatus between successive « definitions », Irrespective of the necessary conceptual spadework to clarify new dimensions of « science », « technology » and « development », it is vital to resist the temptation to treat these terms as nouns rather than verbs. There is a need to recognize that :

- development is the process which facilitates and necessitates the redefinition of development
- science is the process which facilitates and necessitates the redefinition of science.
- technology is the process which facilitates and necessitates the redefinition of technology.

This somewhat paradoxical characteristic is at the heart of these processes (whatever their superficial or short-term manifestations). Development, for example, would not be development if it did not continually create a new situation in which its own nature was redefined, whether with respect to the image of man or to the goals and values of society, or to the structures appropriate to it. For at each stage it is more able to respond to the consequences of the prevailing perspective and to « ingest » them as an appropriate constraint on the new perspective whose emergence is thus facilitated and stabilized. The phrase « in the light of the emergent positive and negative feedback » might be therefore added to each of the three statements above. For it is these which introduce the normative dimension in process-oriented rather than ad hoc terms - the latter merely providing short-term understanding and response (however practical) and necessitating a hiatus before the subsequent version is recognized, namely a form of built-in discontinuity foreign to the continuity of social processes.

Similarly technology is essentially the innovative modification or reconceptualization of existing technological processes in the light of the letter's inadequacies but in terms of what they have rendered possible.

This paradoxical, self-reflexive or » self-organizing » characteristic focuses attention on the limitations of the linear concept of « progress » (primarily of western origin). This concept is well illustrated by the use of an appropriate annual increase of GNP as an indicator of satisfactory development. But even reconceptualizing « development » is usually only aimed at switching to another more subtle quantitative increase which will itself prove to be inadequate once its limitations are understood. Once « reconceptualization » no longer seeks for some quantitative basis of increase, but rather for some more subtle « pattern of complexification », a new dimension is opened up. Unfortunately, and characteristically, it is the difficulty of rendering such alternatives distinct and comprehensible which encourages many to continue the search for simple quantitative indicators of development. And in fact it is probably only with the simultaneous use of more complex mathematical descriptions and innovations in representation that the necessary subtlety and elegance can be adequately conveyed.

Lest this be considered a convenient escape, it is useful to refer to traditional non-western concepts of development and change which may be based on a circular rather than a linear approach. Clearly the Chinese classical concepts of change, for example, are elusive to the western mind. Were they to be represented mathematically as modifications in a phase space or as field effects, the mathematical « distance » or difference in sophistication between western and eastern concepts would be apparent. The challenge is clearly to find some basis on which they can be reconciled. Some exciting leads towards this are given by Erich Jantsch and C H Waddington (6).

But whatever the most subtle image that can be generated, the paradox remains:

- more refined versions will necessarily continue to be generated
- for reasons of comprehension or preference, different images of development will continue to hold sway simultaneously (despite efforts at conceptual imperialism).

The strength of the more subtle dimensions is that they place much greater stress on the individual's (in)ability to comprehend the nature of change or development (at some level) and his or her role embedded in it. To the point that, in a special sense, the degree of development of the individual and his environment is determined by that person's ability to re-conceive it in the light of a more powerful and wholistic image. Without exploring this any further, it need only be mentioned that this opens the way to « conceptual » for perhaps « attitudinal ») revolutions which would in some measure substitute for conventional structu-

(d) Many problem action debates can be caricatured by the situation in a meeting *room*, smoke-tilled to the point of reduced visibility and tear-lilted eyes, in which the societal problem under discussion is « air pollution » And ye! the process is so designed that no one will open a window (it the technology permits), suggest that it should be opened, or recognize how the situation models the « real » problem which Is the topic of the debate.

(e) An agenda item of this conference.

ral revolutions by reconceptualizing existing patterns of relationships (changing the significance attached to them) in existing structures without the need to destroy them in the manner frequently advocated. It may be that the most operationally effective approach to development could emerge from an individual's change of attitude to his/her existing context (thus redefing the knower-known complementarity), rather than by attempting to modify the world-as-experienced without bringing the experiencer into question.

There is something intellectually primitive in the constant striving to move from the now experienced as containing «wrong elements » (to be rejected) to a future condition in which these have been eliminated. In practice the « wrong » and the « right » as perceived by different groups tend to co-exist (even engendering one another) over very long periods of time despite the elimination exercises. It is time that attention was devoted to the reality of the interface between right and wrong rather than focusing positively on the one and negatively on the other ana exploiting the energy which the dichotomy generates in society (f). Whilst these remarks have primarily emphasized « development », they are also true of science and technology.

(b) **« Application to » : The** use of this term implies a manipulative relationship which has not proved successful in the past. This is only to say that if science and technology are to be conceived as processes, then they cannot be « applied » like some tool or lever to « jack up » the development process. How processes should be exposed to one another is not at all clear, as the fumbling interventions in ecological processes have so frequently demonstrated. It is almost as though « application to » is currently conceived as a 2-valent operator when the situation calls not so much for an N-valent operator, or for a continuing search for an (N+1)-valent operator, but rather for an approach which could tolerate, nurture and blend a full range of approaches (reflecting the varied preoccupations and levels of perception) in which N varied from 1 to whatever is possible in our society. Processes can not be successfully « applied to » one another. A more appropriate understanding is that they should « harmonized » as phases, a concept which could benefit from the thinking of those concerned with electronic circuit design where this is a well-defined problem. The concept of « frequency entrainment » is particularly suggestive of how several processes may bring each other into phase.

The Ten Oxhedring Pictures 1. Undisciplined

« WISDOM »

An immediate response to the deliberate complexification introduced in the previous section is that it exceeds the capacity of anyone (especially including this writer) even to delineate it adequately. The questions raised flow beyond the categories and structures which can normally be used to contain and order such considerations. They easily lend themselves to the accusation of being « purely philosophical » or unrelated to the « real problems » to which priorities should therefore be oriented. And yet no » practical approach » can guarantee that its undertakings will not be out-maneuvered or nullified to the point of actually proving counter-productive - as has been demonstrated so many times over the past decades. The source of such strategic weakness is to be found in the more complex considerations on which it is apparently impossible to focus within any existing framework or by any existing process (g).

The concept of the - application of science and technology to development - reflects this weakness. As argued above it tends to be interpreted through poorly related substantive categories rather than processes. The level of « contextual comprehension » required to see the interrelationship of such processes has been but poorly explored and is necessarily difficult if not impossible to communicate with available techniques (7, 8, 9). It is useful to explore the possibility that the attitude appropriate to this complexity is one of « wisdom » - a term which has passed out of fashion with the rise of the specialized approach and the fragmentation of the family, despite the respect traditionally accorded to the elders. This attitude may perhaps be characterized as :

- process (verb) rather than category (noun) oriented (h)
- a level of comprehension beyond concern for knowledge of data elements and their interrelationship and an awareness of the function of different levels of comprehension (i)
- a built-in sensitivity to values relating to human development in harmony with the development of for respect for) the natural environment, from which it is only possible artificially to separate humanity
- a strategy or action-oriented stance concerned to effect development in the above sense and aware of the consequences of the necessary risk-taking which calls into question the status and existence of the actor
- a sensitivity to the issues raised by problems of comprehension and the difficulties of communicating whatever Is comprehended
- a sensitivity to the continuing education of those participating in any such exercise as a process which complicates the manner in which they function; participation is also a process of growth
- a sensitivity to the weaknesses in any form of action, whether visible or only to be revealed by their future consequences or by opponents of the action.

Clearly even the effort to establish such a list is presumptuous in the sense that it implies an ability to •• encompass » all these attitudes in their totality and to arrive at closure at a particular point in time

- an ability which is called into question by the underlying attitude. Any attempt at defining wisdom necessarily fails to capture the attitude on which it is based for which the defining operation is but a particular tool (amongst several), each with recognized in-built limitations (j).

If its nature defies precise definition, perhaps wisdom can best be referred to as that « standpoint » that consciously encompasse or embodies within itself, both the strengths through which it can act and the weaknesses which impede that action (k).

It is a conscious mirror of the condition it strives to supersede (I). Wisdom would seem to internalize an image of the environment in all its aspects in order to be able to adopt a strategy acting out of a sense of that wholeness rather than of some part of it only (m).

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luxurious apartment/office building (a sophisticated conceptual model ?) with slum dwellings (the concepts accessible to the man-in-the street) at

(g) Is it possible that Godels Theorem could be generalized to include problems of comprehension ?

(h) Cf. David Bohm's concept of « holocyclation » (10).

(i) Clearly, for certain purposes, it is both obvious and appropriate to treat the earth as - flat -: at another level it may be considered round and the sun

another, the solar system as a whole may be considered as stationary; etc. In the same way « development » and « science » lend themselves to comprehension from different (but related) perspectives.

the way in which the mind constructs reality. There is a limit inherent in the nature of explanation itself. Every description tries to be complete, but by the very nature of a description it cannot be

and not the territory. A description can only work because it is not the whole, and so it is a form of

of a pair of opposites, or concentrate only on a partial aspect of being. Then clear expression also becomes muddled by mem wort-play, affirming this one aspect and denying all the rest . The wise

In the light of Chinese taoist thought, wisdom would appear to be that type of awareness which « moves with », (is « in tune with », « in harmony with », or «transparent to ") the flow of change and development - a sense of the « tao » or wu wei non-action (n).Wisdom would there be the attitude which engenders and is engendered by development. Conversely the essential nature of development can be most fully understood by those who are aware of flowing with it. This mode has been effectively contrasted with conventional western thinking, by Erich Jantsch (24). Numerous efforts at alluding to its elusive nature have been made in zen sayings, for example, and in descriptions of « non-action » as the « emptiness » from which effective action should necessarily emerge. These reflect levels of comprehension on a continuum of progressively more subtle standpoints (o) each giving rise to a more adequate pattern of action than the previous one, although the « adequacy » is only apparent from subsequent standpoints, themselves inadequate from those preceding them.

« OPERATIONALIZING » WISDOM

The preceding sections have noted the lack of sucess of existing approaches in coming to grips with the complexity of our situation, as well as noting some characteristics of that complexity («development » etc) which make it easy to slip into patterns of action whose built-in weaknesses only become apparent in the longer term and to those who happen to be sensitive. It was then suggested that only by moving beyond such categories as « science », « technology » and « development » or such operators as - application to - can a wholistic standpoint begin to emerge which, by its very nature interrelates the divergent perspectives, incompatibles, complementarities, etc which fragment current understanding and any sense of direction. This said, however, what can be done to facilitate the emergence and expression of this attitude or standpoint ? It is only too clear (as discussed above) that the existing approaches to improving strategy multi-focus sensitivity are failing to

3. *In Harness*

breakthrough other than in a scattered and somewhat diffuse sense. It may perhaps be argued that this is all that can be expected under the circumstances and that it is foolish to hope for, or to seek, any « quantum leap » into a new level of awareness of how these questions may be approached. Even if this second view is correct, it is nevertheless instructive to work out what has not been done, that could be done with existing technology, and which might catalyze such a breakthroug Namely what is the experiment that has not been attempted ? Just to recap in the light of earlier comments, it is not simply a question of generating new models, institutions, indicators or other such specific instrumentalities which necessarily compete with each other and their predecessors and are usually, these days, very short-lived as a vehicle for new insights. Rather some kind of communication environment is required to facilitate, and provide continuity to the ongoing process by which any such specific tools are engendered, considered, criticized and superseded.

Without aiming to be complete, some of the characteristics required of this communication environment are determined by the need to counter the following tendencies usually associated with the generation of the specific tools above :

- diffusiveness, namely the prevailing tendency to explore new issues without any concern for how such explorations are to be integrated into a larger pattern; most information systems cater to and reinforce diffusiveness.
- erosion of collective learning ability arising from diffusiveness, general lack of continuity and inability to store and interrelate elements of knowledge in a form which encourages creative retrieval.
- domination, monopolization and manipulation of research patterns, including problems of elitism in knowledge generation.
- lack of concern with knowledge integration; inability to integrate alternative (competing) perceptions and paradigms.
- boring, repetitive, self-defeating debates verging on conceptual incest (with all the consequences of inbreedingt.
- inability to move between simple and complex responses to an issue according to need and without disparaging either.
- inability to face « hostile » perspectives creatively, namely without ignoring, rejecting or misrepresenting them (8, 14).
- trivialization of knowledge generation due to the relationship between the evaluation and reward system and the publication of documents (reports, etc) or formal verbal presentations.

4. *Faced Round*

- failure to separate specific increases in knowledge from the verbal introduction, explanations and « packaging » by which they are presented or conveyed (i.e. tendency to « drown » insights within lengthy papers) (15).

CONFIGURATIVE CRITERIA

The above criteria are all expressed negatively and it is not clear that practical and constructive corrective measures can be formulated and implemented. Examining the above points however, many of them may be interpreted as due to an

man therefore, instead of trying to prove this or that point by logical disputation, sees all things in the light of direct intuition... The pivot of Tao

positions can be seen in their right relationship - (12.p.42-43).

(n) « The non-action of the wise man is not inaction... From emptiness comes the unconditioned. From this, the conditioned, the individual things. So from the sage's emptiness, stillness anses : From stillness, action. From action. attainment » (12. p.80). . The wise man, then, when he must govern, knows how to *do* nothing » (12, p 71).

(o) The subtle relationships between such standpoints have, for example, been illustrated by two well-known series of 10 zen «ox-herding pictures » in which the ox may be interpreted as any for all) objectified conditions(s) over which mastery is sought. The successive levels of comprehension of this task bear the following names in the Kaku-an series : searching for the ox: seeing the traces: seeing the ox: catch.no the ox: herding the ox; coming home on the ox's back: the ox forgotten, leaving the man atone; the ox and the man gone out of sight; returning *to* the origin, back to the source; entering, the city with bliss bestowing hands (13. p.127-144).

N.B. The 10 illustrations in this article are from another series.

absence of a « configurative » feature. By this is meant that the context for the generation of knowledge is not structured such as to facilitate any trend towards focus, integration, or paradigm transcendence. Rather any innovation in knowledge tends to « create « or « occupy » new territory, namely there is a sense of « open expanding frontier » and a lack of need to respond to tensions arising from the « sympathy » or « antipathy » of the innovation to previous or parallel innovations. There is no innovation « population pressure»; there is always the freedom to escape confrontation, the significance of alternatives, and responsibility for « pollution » of the psychic environment by previous efforts. Each feels free to cut up the conceptual universe according to some new set of categories, thus defining as irrelevant for non-existent) any alternative perceptions.

The question therefore arises as to what are the consequences of introducing limitations on this degree of freedom. Clearly, and typically in controlled settings (e.g. a conference, an institution, programme or an information system), participants, may be required to focus on a pre defined topic, geographical area, time period, method, ideological framework. etc. This appears to avoid the problems and even gives the illusion of an integrated (« whotistic ») perspective, but in effect only ensures that others are brought up in other such settings - none of which are able to handle the question of mutual irrelevance or incompatibility. Such a specialized approach constitutes a very primitive response to the problem. The question is whether « irrelevant » or . opposing » perspectives can be juxtaposed in such a way as to respect the felt « distance » between them, recognizing links of « sympathy » or « antipathy ». The results of such juxtaposition would depend upon the number of distinct or « incompatible » perspectives and can be described as a - configuration » (7, 16). The elements of a configuration cannot usually be related within a single theoretical framework, namely there are « discontinuities » between them bridged by praxis as. for example, between the business management concerns of : finance, production, human relations, marketing, research, etc.

Such configuration would define and limit, to some degree, the freedom of the perspectives by showing how their relationship to their peer perspectives can be perceived (p). Two questions are :

(a) whether such configurations can lead to the emergence of more comprehensive, sensitive and strategically valid attitudes.
This is a matter of experiment.

(b) whether any existing communication technique could facilitate the emergence of such configurations. Communication technologies are now very sophisticated so that an appropriate experiment could be undertaken.

6. *Unimpeded*

CONFIGURATION FORMATION : FACILITATIVE TECHNOLOGY

There now exists a new communication technique which has many features which could prove valuable in facilitating processes which lead to the emergence of « collective wisdom ». One label by which it is known is « computer conferencing » (17. 18, 19). To its users it appears rather like a combination of : a conference telephone call, telex, word processing, data storage/retrieval, and a number of related applications. As such it is believed that it will have a dramatic impact within the ongoing revolution in the information/communication industry and the spread of (home) computer terminals and widespread access to data networks. Although this technique is currently used mainly to facilitate complex patterns of message exchange amongst 5 to 50 people (possibilly at distant locations), its use in this way is highlighting previously disguised communication problems which the technique itself can be developed to solve to some extent. This particularly applies to some of the problems identified above.

Some of the advantages include :

- possibility of » registering » precise substantive contributions in statements which are a fraction of those normally required for an academic paper (15)
- possibility of « indexing » each such contribution so that they may be interrelated in complex patterns (20)
- communication in written mode in such a way that participants can either contribute simultaneously or with whatever delays they consider appropriate, and at whatever speed they consider comfortable (possibly with intermediate translation, such that each receives communications in preferred languages)
- possibility of using the same technique simultaneously, to clarify meta-problems. inter-personal obstacles to communication (style, etc), tentative insights, etc.
- possibility of indicating relationships of « sympathy » and « antipathy ». (i.e. opposition, support, contradictions, etc) between contributions (8)
- possibility of experimenting with alternative patterns of re-ordering the substantive insights in search of more meaningful or comprehensible patterns.

Clearly these possibilities constitute a new kind of environment within which concept configuration can emerge.

CONFIGURATION FORMATION : FACILITATIVE SOFTWARE

Two types of investigation of this technique could be usefully envisaged :

(a) « Small » **group** (e.g. 5-12) : Here the object would be to determine whether the technique could be used to order the insights of the individuals into configuration which would reflect appropriately the perceived sympathies and incompatibilities of their positions. This investigation would be most significant with individuals with a wide variety of perspectives who agree that some pattern(s) connecting their perspective need(s) to be discovered. Note that use of the technique to date has been confined to groups with a common topic (usually technical) of interest (19). Note also that it goes beyond the classical small group « communication net » experiments, especially if the number is greater than 6-12 (13. 21). One approach would be to combine the approach with face-to-face sessions so that participants could mix written exchanges (ie. via computer) with face-to-face exchanges in smaller groups (2-4) or as a plenary group. This would offer a means of using the advantages of both modes and of overcoming their disadvantages.
The modes could be mixed :
- simultaneously: namely, written exchanges facilitated during face-to-face meetings

(p) The distinction between « peers » within a configuration and between **different** configurates (one being - more adequate - or superseding the other) needs to be discussed separately (7)

7. **Laissez *Faire***

- sequentially: namely, face-to-face meeting sessions between written exchanges of whatever duration was considered necessary (e.g. 4 hours written; 1 hour face-to-face)
- intermittently: namely sequentially but with face-to-face meetings at much longer intervals (e.g. once a month, or once a year).

Note that the three approaches could themselves be combined.

The concern would be how to reinforce insight pattern formation and to facilitate the generation of patterns whose subtlety would make them too fragile to persist for sufficient time for any collective comprehension within any conventional face-to-face setting. The possibilities of this approach remain to be explored. Use of this technique to date has considerably increased the ease of message exchange but is only just beginning to confront the problems of pattern formation and the possibility of special software or « groupware » design to assist this (20).

(b) **Large groups** (e.g. 15-200) : Here the object would be to determine whether (the technique could be used to «filter» insights of participants and « funnel » them to concerned sub-groups. The problem is that participants need assistance in processing the number of insights continuously generated in a group of that size. They want access to the insights which reinforce or extend their current positions. They also need exposure to (opposing or alternative) insights which stimulate them to rethink those positions. Finally they are creatively stimulated by occasional exposure to some insights which are not related to their own preoccupations (e.g. as intellectual « roughage »). The filtering and funnelling should also lead to the emergence of groups of participants focusing on sub-sets of any larger pattern. Conventional indexing procedures are not sufficiently sensitive to the requirements of such a dynamic setting. Software amendments can be made as the needs and possibilities become clearer.

8. *All Forgotten*

Clearly experiments of type (a) and (b) could be blended into support for ongoing activities as a new type of communication environment.

CONFIGURATION FORMATION : GROUPWARE PROBLEMS

Of special importance in connection with existing or emergent insights is the manner whereby participants push themselves into interaction patterns as a result of exposure to insights which are not immediately supportive of their own position.

At the simplest level, there will be those who are in favour and those who our against a perspective. This can be called a 2-level configuration and is the one most characteristic of intellectual discourse for of its absence). Clearly, as has been discussed elsewhere (7), 3-level, 4-level and higher level configuration patterns may emerge under favourable conditions (q). In each case it is the pattern of constraints between the viewpoints asserted which is as important to the stability of the configuration as the viewpoints themselves (r). This leads to the notion of « tensed conceptual networks » discussed elsewhere (14, 21). Suitable software developments may facilitate transitions between configurations and help to provide stability (s) for them (so that they can be the subject of collective reflection) :

- in the search for more subtle patterns
- in switching between configurations according to the matter on which concern needs to be focused.
- in switching to simpler patterns to facilitate communication of some new level of insight.

The communication technique may therefore be used as a kind of « receptacle » or « container » which interrelates a variety of concerns and focuses them in relation to some common center (t) for an adequate period of time. The configuration design of each such container could be facilitated by suitable software but the approach needs to be explored (23). Clearly it is very different from conventional classification and indexing (whether of the coordinate or facet variety). Although it has a relationship to the concept of « evolutionary indexing ». Presumably the development of such software would be associated with a computer library of possible or better-known configurations which could be tested for appropriateness.

9. *The Solitary Moon*

ACTION INTEGRATION

The computer conferencing technique responds to three aspects of the strategy problem :

- formation of concept configurations, clarifying relationships between incompatible concepts
- comprehension of concept configurations otherwise difficult (if not impossible) to grasp as a whole
- indication of the configuration of action linkages corresponding to the concept linkages and thus opening the way to new styles of organization and programme integration.

And, as suggested elsewhere (1), such a configurative approach facilitates, and is facilitated by, the emergence of more configurative attitudes in the individual and in interpersonal relations - namely the more subtle dimensions of human development.

of solid planetary bodies (characterized by elements with complex concentric electron shell patterns) following the fragementation and subsequent cooling of portions of the original solar gas (characterized by elements having a single electron shell with two configurations). The communication technique « cools » and re-directs the energies of a two-position debate so that a variety of

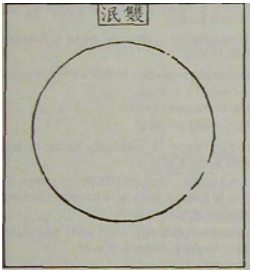
(r) It is not unlikely that advice such as the following is based on precise understanding of configuration which could be used as a discipline for intellectual dialogue : « For those who seek Enlightenment there are three ways of practice that must be understood and followed; first, disciplines for practical behavior, second, right concentration of practice are analyzed. they will reveal the eightfold noble path, the tour viewpoints to be considered. the four right procedures, the five faculties of power to be employed, and the perfection of six practices» 122).

(s) By analogy, the concept of the « half-life » of an element subject to decay.

(t) Other helpful analogies are the configurative designs of radiotélescopes, radar antennae, parabolic mirrors for solar power, or electromagnetic containers for plasma in fusion experiments.

CONCLUSION

The preoccupation of this paper has been with the conditions necessary to move beyond current forms of dialogue and discourse in order to facilitate the emergence of what has traditionally been termed « wisdom ». This unfashionable terni is at present only reflected in what is called in French a « Conseil des Sages » - a structure which is used very rarely, and within which « wisdom » may perhaps be considered a euphemism. And yet outside such arenas one is already in the domain of specialization and insensitivity to alternative perspectives. It is such structures that can provide the « keystone » to counterbalance the interests of competing specialities and provide a framework within which the « hubris » between such zones of conceptual



10. *Both Vanished*

coherence may be respected. An arena is required within which the perceived chaos between systems, and some measure of ignorance of their functioning, may be confronted as a continuing reality in order that better questions may emerge.

In recommending the use of computer conferencing, the stress is on the need to apply science and technology to develop continually the « application of science and technology to development » - with all that this implies for continuing redefinition of the nature of the preoccupation and the status of those involved. This goes far beyond the design of information retrieval systems, such as conceived by the ICSU/UNESCO World Science Information System (UNISIST). which are locked into traditional definitions of science, and are insensitive to interdisciplinarity, social values, practical relevance, non-elitist alternative perspectives, and the human development of its practitioners.

The answers available from such retrieval systems are at present only those to uninteresting questions which reinforce the initial specialized perspective of the questioner. They do not answer the question which the questioner does not know how to ask or for which he does not recognize his need for information. The recommended communication environment implies a degree of « self-reflexiveness » (foreign to the conventional think-tank mentality) in which the dynamics within the « Conseil des Sages » are consciously perceived as modelling the problem complex and knowledge resources which It is attempting to match. The recognized by-product of success is then the non-incidental collective human development of those participating in the configuration-building process. With the present rapid development of data networks, it will prove possible to undertake much consultation, education, and other advisory work between individuals and institutions in distant countries using computer conferencing systems. This is already happening in the USA (19). This could place developing countries in a much better position in relation to those from whom they wish to receive such assistance :

- continuing contact over longer periods
- greater variety of possible contacts, permitting continuing access to alternative viewpoints
- more sensitive relationship emerging from such on-going dialogues
- better definition of need and better matching of resources to need
- better contact amongst groups of users in different developing countries to clarify their conception of their needs.

The recommended communication environment therefore provides a unique way for refining dialogues, linking dialoguing groups, and ensuring appropriate interaction with those able to provide new insights or benefit from them. These may have concrete programme oriented (ad hoc) preoccupations or they may (also) attempt to explore the significance which emerges from deepening the nature of the dialogue - perhaps the most important function for society of any « Conseil des Sages ».

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