

Its Constraints on Social Innovation^(*)

Introduction

This paper reviews some general problems associated with innovation in a complex social environment. Specifically it is concerned with the vital importance of innovation in the structures and procedures used in support of social innovation — on the basis that there are characteristics of existing organizations, meetings and information systems which can be a major factor in hindering or even preventing the changes they are themselves supposed to be facilitating. These and related points are explored in more detail in the following papers :

- Presentation of information and its educational role in response to complexity (in this issue)
- Organizational forms in response to complexity
- Organization of meetings for the discussion of complex issues
- Institutional « games » and strategies as a response to complexity.

Complexity : an overview

As the supporting papers make clear, many authorities are concerned at the increase in complexity of the social environment and mankind's apparent lack of ability to respond adequately :

« *What is significant of our present era is the emergence of a degree of social organizational complexity and a rare of coalescence of previously segregated populations that defy our current efforts at symbolic reductionism. Larger and larger parts of the lives of more and more people are being lived in conditions of environmental turbulence* ». (F E Emery and E L Trist. *Towards a Social Ecology*).

those problems tend to increase at an arithmetical rate *. (Yehezkel Dror, Prolegomenon to nlliv sciences: AAAS symposium

« *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. » (Hasan Ozbekhan. *Toward a general theory of planning*. In : Eric Jantsch (Ed). *Perspectives of Planning*. OECD, 1969, p. 144).

That these matters are of current international concern is illustrated by the fact that the World Future Studies Federation recently sponsored a postgraduate summer school on « How to cope with complexity; new trends and developments in humanities and social sciences » (Romania, 1976) which was the occasion for a Unesco symposium.

the simplistic response

Of necessity there is increasing awareness that previously isolated matters are now interlinked and that every issue has to be examined in terms of its potential relationship to other issues.

But in debate on any matter, there is seldom consensus on how issues should be distinguished and interrelated. One common response is to consider issues in isolation and assume there are no relevant interconnections. Where there is consensus on the importance of interconnections, the only other response is to attempt to consider everything in every forum of debate. (« Every issue in every context »). The impossibility of doing so is then used as an excuse for simplifying the issues and picking out those which are « most important ».

Consequently whatever the macro-issue under discussion, debating points on any related topics are considered relevant. However, since the relative importance accorded to such points is based on changing political considerations rather than substantive ones, such debates are unable to converge on any implementable programme of significance which takes account of the manner in which the problems themselves are interlinked. Such debates then become arenas in which the desire to resolve the issues is merely reaffirmed and the participants blame each other or third parties for not coming to grips with a situation they are unable to focus upon.

An allied approach assumes that no particular remedial project is of significance unless the whole system is changed. (« Everything must be changed before anything can be changed »). This tends to focus resources on total change at some future time and diverts resources from the particular projects which are feasible at the present time. Perhaps this will prove to have been the best approach.

Ironically, the proponents of a particular form of change tend to perceive it as the only viable or significant form (e.g. to a political activist only politi-

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cal change is of significance). They are consequently unable to detect the manner in which their action is counter-balanced, checked, contained or even undermined by other forms of change. It is not yet possible to determine how different kinds of change strategy can be blended harmoniously together into a mix which is appropriately innovative. No body has a mandate to attempt this, and no intergrative discipline exists to legitimate such an approach.

Complexity : the operational supports for innovative action

It is the argument of this paper that whatever the societal problem or the nature of the remedial project, such activity is at some stage (if not for its duration) dependent on the supportive operation of

- organizations
- information systems
- meetings.

The question is whether the prevailing concepts underlying the use of such devices in fact ensure that they are structured so as to be able to function effectively as support mechanisms in the face of a certain degree of social complexity. The accompanying papers suggest that there is evidence that they are not adequate to the demands placed upon them.

What is the meaning of « adequate » in this context ? Fortunately, this has been clearly established through a general law (Ashby's Law of Requisite Variety) which emerges from cybernetics and the mathematics of control in all systems :

« *The abundance of alternative control actions (variety of control actions) which a control mechanism is capable of executing must be at least equal to the abundance of the spontaneous fluctuations (variety of fluctuations) which have to be corrected by the control mechanism, if the control mechanism is to perform its function effectively. In other words, only a greater amount of variety in a regulator can control the variety in a given system; only variety can destroy variety.* » (W R Ashby. Self-regulation and requisite variety, in : Introduction to Cybernetics, 1956).

This means that unless the organizations, meetings and information systems used to respond to a problem complex embody in their structure a degree of complexity equivalent to or greater than that of the problem complex in question, then their response will not be « adequate » as remedial action. In other words, for example, a simple organization structure cannot eliminate a complex problem. This is intuitively obvious but its consequences for the manner in which

Interaction between social change and personal change

The following quotations indicate the importance of the relationship between innovation in society and the prerequisite changes in the individual for such innovation to ensue, and to be considered significant :

The fact which confronts us is that cultural change is limited by the restrictions imposed on change in individual human nature by concealed neurotic processes. At the same time there is continuous cybernetic interplay between culture and the individual, i.e. between the intrapsychic processes which make for fluidity or rigidity within the individual and the external processes which make for fluidity or rigidity in a culture. It would be naive to expect political and ideological liberty to give internal liberty to the individual citizen unless he had already won freedom from the internal tyranny of his own neurotic mechanisms... Therefore, insofar as man himself is neurotogenically restricted, he will restrict the freedom to change of the society in which he lives. This interplay is sometimes clearly evident, sometimes subtly concealed; but it is the heart of the solution of the problem of human progress.

(Lawrence S. Kubie. The nature of psychological change and its relation to cultural change.

In : Ben Rothblatt (Ed) Changing perspectives on Man, 1968).

We can 'either involve ourselves in the recreative self and societal discovery of an image of humankind appropriate for our future, with attendant societal and personal consequences, or we can choose not to make any choice and, instead, adapt to whatever fate, and the choices of others, bring along.

(Center for the Study of Social Policy of the Stanford Research institute. Changing Images of Man, 1974).

The relations between world culture and the unified self are reciprocal. The very possibility of achieving a world order by other means than totalitarian enslavement and automa-

tism rests on the plentiful creation of unified personalities, at home with every part of themselves, and so equally at home with the whole family of man, in all its magnificent diversity... In brief, one cannot create a unified world with partial, fragmentary, arrested selves which by their very nature must either produce aggressive conflict or regressive isolation. Nothing less than a concept of the whole man — and of man achieving a consciousness of the whole — is capable of doing justice to every type of personality, every mode of culture, every human potential. At this point a further transformation, so far not approached by any historic culture, may well take place.

(Lewis Mumford. The Transformations of Man, 1956).

*Il faudrait que les mentalités évoluent avec les transformations du monde, mais l'esprit humain est naturellement conservateur et la résistance au changement, si elle se manifeste de manière éclatante dans les structures, existe d'abord dans les esprits... Le décalage permanent entre les situations et les mentalités qui résultent de cette résistance tend à augmenter puisqu'il y a accélération du changement... Cependant la résistance au changement est telle qu'il arrive que l'on se borne à greffer des structures complémentaires sur les structures anciennes, sans s'interroger sur leur compatibilité, ou même que l'on reproduise fidèlement les structures anciennes... Le problème central est donc bien celui des * structures mentales ». Certaines d'entre elles ne correspondent plus aux réalités et nous encombrant : elles suscitent l'apparition d'un conflit de modèles, c'est-à-dire un divorce entre les représentations que nous a léguées le passé et celles qui sont nécessaires pour appréhender le monde d'aujourd'hui... Nous sommes inadaptés à la croissance et au mouvement.*

(Centre d'Etudes Prospectives. L'Homme Encombré. Prospective, 15, Avril 1969, pp. 48-49).

support structures are conceived, designed and used are not so clear. An interdisciplinary conference was held in 1968 on the effects of conscious purpose on human adaptation, under the sponsorship of the Wenner-Gren Foundation for Anthropological Research. The conference considered the ability of man and his institutions to recognize and respond to the complex of social problems. In her concluding remarks at the conference, the editor of the proceedings notes one conclusion on which there was some consensus and which helps to clarify the points above :

« Each person is his own central metaphor... Any kind of representation within a person of something outside depends on there being sufficient diversity within him to reflect the relationships in what he perceives... The possibility of seeing something, the possibility of talking about it... depends in every case on arriving in yourself at a comparable complexity, which depends in turn on the kind of diversity existing within yourself. Another way to put that would be to say that if human beings were totally non-comparable in the degree of their internal complexity to what's outside, then there would be no chance of any kind of valid internal representation of what lies outside them... We can't relate to anything unless we can express its complexity through the diversity that is ourselves... Now, the question of consciousness brings up the fact that we have incomplete access to the complexity that we are. We've blocked out a great deal of it... by rejecting it... we're just not organized to be aware of it » (M.C. Bateson, Our Own Metaphor, Knopf, 1972, pp. 285-288).

Clearly this point is only made explicitly with regard to the individual, but it also applies to the social structures through which individuals work collectively. The chairman of the above conference, using the phrase « We are our own metaphor » (ibid, p. 304), implicitly acknowledged one participant's recognition of this with respect to the dynamics of that conference.

In a very real sense therefore a meeting, for example, through the way in which it is organized and functions.

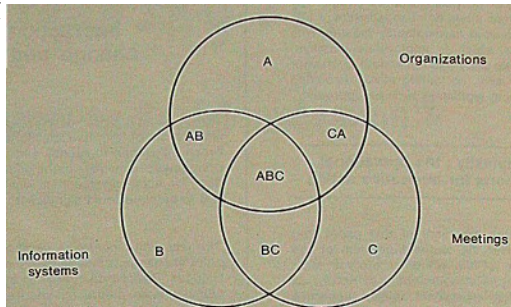
- mirrors the participants' collective ability to represent the society about which they are concerned, and
- mirrors any lack of integration between perspectives and priorities (in the external world) represented by participants, and the consequent ability of society to respond to that complex situation.

The organization and dynamics of the meeting itself may therefore represent very clearly, through its own defects, the defects of the society or social group whose condition it was convoked to alleviate. Similarly, an institution or an

(Box 2) :

Interrelationship between operation support structures

« That any



Complexity contained by operational support structures
 ABC Organizations, meetings and information systems effectively interlinked.
 Complexity uncontained by operational support structures

- A Organizations unrelated to meetings or information system
- B Information system unrelated to organizations or meetings
- C Meetings unrelated to organizations or information systems
- AB Organizations effectively linked to information systems but unrelated to meetings.
- BC Meetings effectively linked to information systems but unrelated to organizations
- CA Meetings effectively linked to organizations but unrelated to information systems.

NOTE : This illustration is clearly an oversimplification, but it does show that only under « condition ABC » can the problem complex be in focus. Omitted from the diagram are:

- Other operational supports (e.g. legislation, technology, etc.).
- The necessary integration between operational supports of the same kind (e.g. organizations), if several are required to contain the problem.
- The effect of the lack of integration under certain conditions or during certain periods of time.

information system constitutes, through its structure and operations, a formalization of a perception of society and of any (in)ability to respond adequately to its problems.

For this reason it is important to look very carefully at the structure and dynamics of these operational supports for innovative action to determine whether they are in fact capable of

- bringing into focus the problem complex on which they were designed to act without distortion or oversimplification
- interlinking the intellectual and other resources which can usefully be brought to bear on the problem complex.

An obvious corollary of Ashby's Law (cited in the Yearbook of World Problems and Human Potential) might read :

*attempt to control a psycho-social system with a control system of less complexity (i.e. of less variety) than that of the psycho-social system itself can only be made to succeed by suppressing or ignoring the variety in the psycho-social system so that it is less than the relative simplicity of the control system. * Such « suppression » tends to lead directly to violence and the multiplication of other problems.*

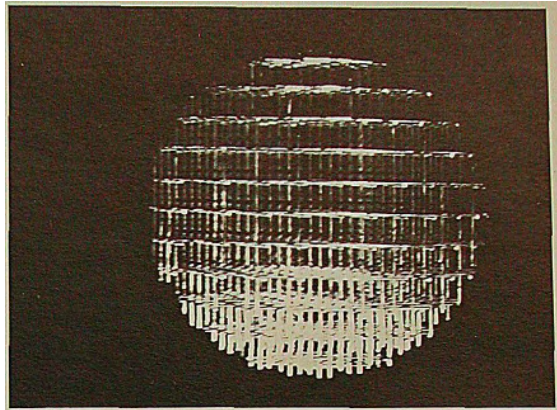
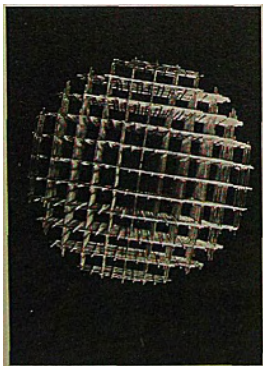
Complexity and the change agent

Although it is not the main concern of this series of papers, it is nevertheless important to link the perception that « Every person is his own central metaphor » to a point made in Box 1.

It is a paradox of social innovation, whose intent is in some way to develop man and his condition, that the effectiveness and scope of the programmes to do so are necessarily bound and constrained by the degree of personal development of those involved in their conception and implementation. In addition, it is through their development and use of organizations, meetings and information systems that individuals provide themselves with « learning environments » and the necessary experiences to support their own personal development. It is for this reason that it is also important to look at the place of « games » played by people and institutions (see the fourth paper in this series) as a way of structuring their experience in such environments. Such games may actively oppose or hinder innovation, or possibly support it under conditions which remain to be determined. They are obviously also an important equilibrium-maintaining device in a society excessively sensitive to change. The paradox, both with respect to the individual and to his operational supports, is that innovative responses have to be engendered by outdated structures and processes. The question is, can the key innovative concepts specially needed at this time only be generated and delivered through innovative structures or are the outdated structures adequate to the task ?

Interlinking operational supports for innovative action

The previous section discusses the ability of organizations, meetings or infor-



mation systems to contain separately the complexity with which they were designed to deal. In practice, however, these operational supports are used in a mutually dependent fashion. (Organizations depend on information systems, meetings are used by organizations, etc.). Now, whilst one of these operation supports may contain the complexity with which it has to deal in an adequate manner, the other supports on which it depends may not, thus negating the effectiveness of the whole : In effect, in order for a problem complex, handled adequately in a meeting (for example), to be « transferred » to an organization or to an information system, the latter must be of matching complexity (both to the meeting structure, and obviously to the problem complex) for the problem to remain < contained > during and after the transfer. In fact, it may be necessary to use the mutual reinforcement of meeting, organization and information system to keep track of an evolving problem complex, or even to use a number of carefully interlinked meetings, organizations and information systems to ensure containment. The design of such linked support structures has not been adequately considered in relation to problem complexity.

The situation may best be summarized by the diagram and commentary in Box 2. This shows, for example, the weakness in having an excellent meeting without adequate organizational follow-up. Although this is intuitively obvious, there is clearly a significant danger in assuming that a pro-

blem complex is contained because of the positive aura of highly successful operational support — which is usually all that is required as evidence of activity to suppress possible criticism in the political arena. Clearly there are other forms of operational support which could have been considered here (and included in Box 2) Examples are legislation, funds, human resources, etc. These are, however, all a subject of much attention in organizations, meetings and information systems. The latter are therefore in one sense « more fundamental » but, as the accompanying papers show, nevertheless do not appear to receive the attention they merit (partly because of the embarrassing questions this would raise about the adequacy of the forum through which this was done).

Attention of this kind would ensure that an operational environment was created which would promote and support a multiplicity of mutually reinforcing innovative projects and approaches, rather than isolated, vulnerable « one-off » projects, as at present. •