Part 2 : Matrix Organization and Organizational Networks

...turbulent environments require some relationship between dissimilar organizations whose fates are, basically, positively correlated. This means relationships that will maximize cooperation and which recognize that no one organization can take over the role of « the other , and become paramount. We are inclined to speak of this type of relationship as an organizational matrix. Such a matrix acts in the first place by delimiting on value criteria the character of what may be included in the field specified — and therefore who. This selectivity then enables some definable shape to be worked out without recourse to much in the way of formal hierarchy among members.

(F.E. Emery and E.L. Trist. The Causal Texture of Organizational Environments.)

The potential association technique is closely related to a technique used to handle complex multidisciplinary projects, such as the effort to get a man on the moon. Projects of equivalent complexity are the essence of development and the regeneration of urban areas, for example. This new technique, of proven worth, is known as the project or matrix organization.

The success of the program to get a man on the moon is not only a technological triumph. « Apollo 11 has been referred to as the most complicated piece of hardware ever conceived by man. The mind boggles when one tries to envision the total configuration of this undertaking from the millions of hardware parts through to the actual mission flight encompasses a world-wide communications network. The managerial dimensions of the task are staggering .... The administrative-management segment is perhaps less glamorous, and is prone to be overshadowed during the elation of accomplishment, but it is one that plays a vital role in achievement » (*).

Development, peace and environmental problems are coming to be perceived as enormously complex — whether they are as complex as the task of getting a man to the moon is not yet clear. Many people would have wished that the resources devoted to the Apollo project could have been diverted into development type programs. But whatever one's views of the significance of the Apollo project and criteria of success, there is no reason why the technique used to manage this complex multidisciplinary program should not be examined for relevance, as a technique, to the problem of relating the many organizations working to solve different aspects of the population-food-health-environment-peace crisis.

(*) W. Litzinger, A. Mavrinac, and J. Wagle. The Manned Spacecraft Center in Houston; the practice of management. Revue Internationale des Sciences Administratives 1970, 36, p. 2-8.

The management techniques developed by NASA are unorthodox because they must tie together : fundamental research on new approaches, development of research insights into realistic projects, contracting out aspects of the research , development
or manufacturing programme (to industry, universities, governmental agencies, professional associations, etc.) programme initiation, programme implementation, coordination of the programmes of a maze of semiautonomous departments and institutions, human relations of a high order to blend together creative talent, highly individualistic and sensitive to réstrictions to their autonomy in their area of expertise, and external relations (with the

The points made *here concerning the NASA management concepts are based on the article by W. Litzinger, A. Mavrinac and J. Wagle entitled « The Manned Spacecraft Center in Houston; the practice of management » (Revue internationale des sciences administratives, 1970, 36, p. 2-8). The criticism of traditional models of the dissemination of policy and other information is based on the 1970 BBC Reith Lectures given by Donald Schon, President of the Organization for Social and Technical Innovation* (« *The Listener* », *November-December 1970, BBC Publications, 35 Marylebone High street, London W1M 4AA; a book by Donald Schon « Beyond the Stable State* », *London, Maurice Temple Smith Ltd, May 1971, will develop the points made in the lectures). We strongly recommend that anyone concerned with the future of international organization study Donald Schon's views. They seem to be a key to the solution of the problems of the relationship between international governmental and nongovernmental organizations. It is only to be regretted that so many people of his calibre concentrate primarily on the problems of national organizations. Why are the views of such people never evident in the « Jackson Reports* » ? *This article is reproduced from* a new *UAI Study Paper entitled « The Next step in Inter-Organizational Relationships; the use of information, rather than organization, as the foundation for the inter-organizational activity of the future ».*

Figure 1	1 IGO A	2 IGO B	3 INGO A	4 INGO B	5 NatNGO A	6 Multinat. corp.	7 Govt. A	8 Govt. A	9 Founda-tion A	10 Founda-tion -B
Phase 1	X		X	X					X	
Phase 2	X	X	X		X					X
Phase 3			X			X			X	X
Phase 4		X		X	X				X	X
Phase 5	X			X		X	X			X

general public, the press, government, industry, the academic community, and special interest groups). At the same time priorities and organizational patterns are constantly changing. To succeed in this complex situation necessitates the abandonment of most of the standard rules of management practice. Each of the features noted above is present in the elaboration of development-peace-environment-food programmes. It is therefore probable that the NASA techniques may contain important clues for the improvement of such programmes. But programmes depend for their final success (in problem-solution rather than administrative performance terms) on the participation of many people from different backgrounds, organizations (e.g., government, industry, universities, professional associations, youth groups, etc.), and disciplines (economics sociology, psychology, management, statistics, agriculture, communications, etc.) within programme frameworks which are as unrestrictive on decentralized initiative as is feasible. Consider some of the elements of the NASA philosophy. NASA decided that it would act as technical manager of a government-contractor-university-team rather than be the designer and manufacturer of its various requirements — namely a team effort between essentially different types of organization. This meant an emphasis on contracting out work to non-NASA controlled bodies (whether government, industry, university or professional association).

Matrix Organizational Structure.

A very important decision was the switch to the concept of a « matrix organizational structure » in contrast to the traditional hierarchial,one-man-one-boss structure. Within this new structure, each participating body — whether controlled by NASA or not — is considered to be at the intersection of. influences from other parts of the structure and itself in turn influences several others. It is a system which tends to diminish the visibility of authority and to emphasize consensus as an operative mode. Every participating organization or department is therefore at the point of intersection of competing forces with each part giving particular expression to the overall system's goal. Operating decisions are part of the give and take of specialized units struggling for a share of the system's total resources.

A key part of matrix management is the presence of elements with the power of precise decision, able to freeze the dialogue of decisionmaking at ad hoc points. In place of a rigid hierarchy and the pressure to conform to directives from the top, matrix management tries to substitute operating unit drive for expression within a climate of mutual respect united around fundamentals.

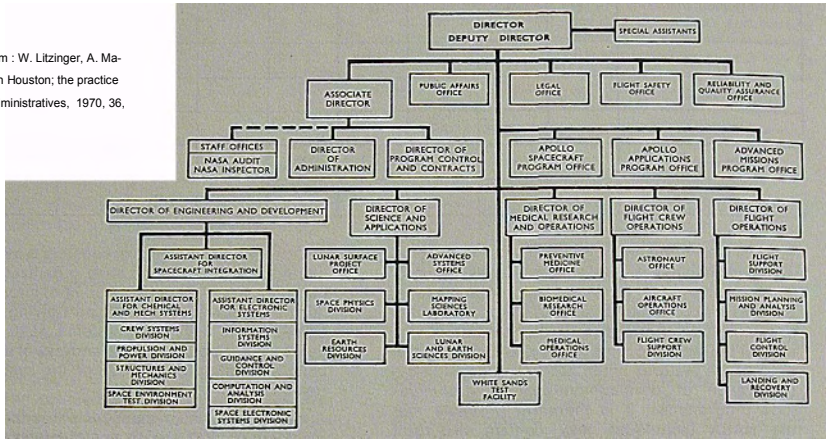
Why the expression « matrix » organization ? Consider a simple example in Fig. 1.

The project is divided into 5 Phases and requires the participation of 10organizationsofvarioustypes. Organizations participate to a different degree at different Phases. At each Phase there is a problem of coordination between the participating bodies. Between Phases there is the problem of ensuring continuity. Phases may of course overlapone another or run in parallel. In a real case several departments from each organization might be involved at different. Phases, and there would probably be many more Phases. The matrix would be very much larger. In a matrix organization each Phase has its own coordinating body which exists only for the duration of the Phase. The manager of the coordinating body has no formal line of authority over the participating functional units — but he does have deterministic authority over the units which do participate. Within the project as a whole, therefore, the activities of one participating body are coordinated by several such bodies — the one-man, one-bose approach is dropped — with the result that the span of control becomes very large.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston, Texas

Figure 2.

Reproduced from : W. Litzinger, A. Macecraft Center In Houston; the practice des sciences administratives, 1970, 36, p. 2-8.



« Issues like human relations, trust, people understanding one another — which we used to think of as the frills of a business organization — now become absolutely central. When TRW Systems was running the Minuteman project, the heads of each of the resource pools and of the projecting group met together for an hour at eight o'clock every morning, every day of the week. Not because they were nice fellows or thought that human relations were a good thing, but because the informational complexity of running a matrix was so great that without that sort of meeting they couldn't manage at all. »

(Donald Schon. BBC Reith Lectures 1970. The Listener, 3 December 1970, p. 774).

Each organizational unit can therefore be seen as an area of tension between the forces of integration and fragmentation which cut through the system. Matrix management attempts to enhance both these tendencies.

Disintegration tendencies derive, in a development-environment-food problem example, from : the « economists » responsibilities to propose mechanisms to improve the availability of funds to developing countries. Similarly « human rights NGOs » must focus on the social aspects and consequences of development. The « peace researchers » must attempt to isolate factors which hinder moves towards the reduction in international tensions and an increase in world stability.

The « medical organization » must attempt to strees the importance of health in relation to development, pollution and malnutrition. The « pure science bodies » must stress the importance of new understanding of ecology, control of natural phenomena, etc. The « mass media bodies » must stress the importance of informing and educating the general public on their responsibilities. And so on.

Each such autarky — and it is as such that NASA views many of its sub-systems — is however related to the others. Certain unifying techniques are provided. These have been well illustrated by the contrast between the traditional formal organization (one-man-one-boss) structure as shown in Fig. 2 and the new diagrammatic representation as in Fig. 3. In the NASA case, the first is judged as no longer reflecting the reality of the matrix environment. The second is considered to be a closer approximation to the management dynamics. This is more than a « space age » portrayal of a structural-functional system. Just as the components of our own social system are held in juxtaposition by the forces of nature, so also does each « planet » in the matrix organization owe its position to more than just gravitational interaction with the « sun » or its « moon(s) ». Each planet interacts with all components of the system to bring about a balance or stability which serves to maintain the system. But is this solar system diagram relevant to the problems of interrelating IGOs, INGOs, Multinational

Figure 3
MANNED SPACECRAFT CENTER
SOLAR ORGANIZATIONAL SYSTEM

Reproduced from : W. Litzinger, A. Mayfield, and J. Wagle. The Manned Spacecraft Center in Houston; the practice of management. Revue internationale des sciences administratives, 1970, 38, p. 2-8.

corporations, Governments, National bodies, etc. ?

There never has been any question that they could all be considered as linked within some overall structure with formal lines of authority such as in Fig. 2. Even in the case of limited groups of organizations the formal lines of authority are practically non-existant — this is one of the greatest « weaknesses » of international organization.

Solar System Model

But suppose that instead of focusing on the formal lines of authority we look at the flows of information, resolutions and law, namely the information which regulates — directly or indirectly — activities within the world system. We could perhaps draw out some sort of rigid hierarchy with the United Nations at the top. Each line would then represent some flow of regulative information. But just as in the NASA case this could not be considered an adequate picture of the way such processes actually work. In particular, many organizations would not wish to think of themselves as beholden to others — there is a much greater impression of autonomy and freedom of action. In addition, we can not clearly see how information flows from the UN down to the national level — the lines in the « world organization chart » are not all known. In many cases the information flow lines can be only dotted in. We are dealing with a system of autarkies.

It is therefore much more useful to think of the organic relationship between all the organizational elements of the world system as based on the solar system model. Each area of interest functions quite independently within its own « planetary » orbit, together with its own sub-interests in their respective « lunar » orbits.

Each body influences every other body, just as the gravitational influence of each planet influences every other planet. Stability is maintained because all bodies revolve about a common central point. But in the case of the world system there is no body which sits at the central position as a meeting point or origin for coordinative information. For some a « world government » would take this central position. For others a governmental structure organized in terms of the concepts current in national government would be a disaster. This position can therefore be considered a future or potential development — an idea for which we do not yet have an adequate organizational form. This approach does not however prevent us from treating this common (or « virtual ») point as the centre of a solar system model. (The « inhabitants » of a particular body do not have to think of it in these terms — just as it is possible for someone on the surface of the Earth to say both « the Sun rises » and « the Earth revolves around the Sun ».)

As a first attempt at organizing thinking in these terms, governmental, business-industry, and non-profit-academic organizational forms have been treated as three planetary systems in Fig. 4. This therefore stresses the importance of the equilibrium between the three basic types of organization present in the social system.

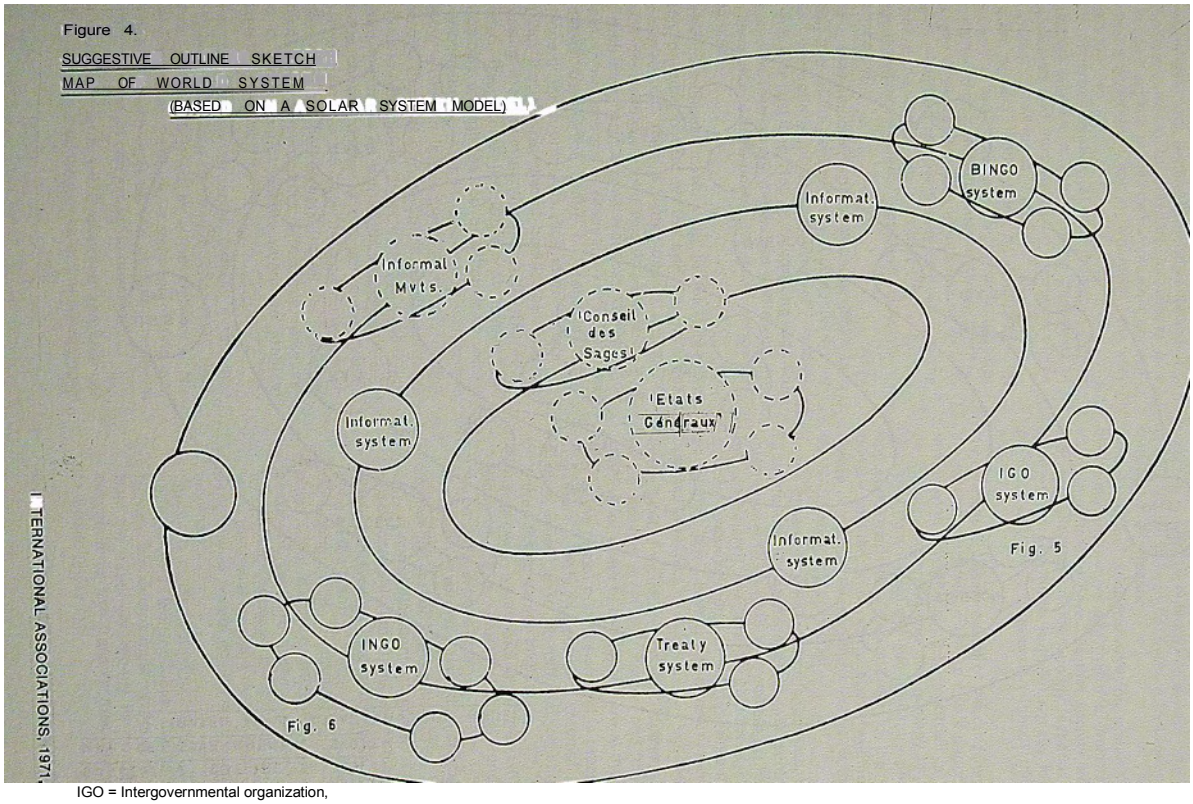
To include more details, we can now treat each of these planets as a solar system in its own right.

The first treated in this way is the governmental system shown in Fig. 5. This stresses the geographical territorial aspect of the coordination problem. Namely that the planets closer to the centre represent the most coordinative bodies (e.g. the United Nations). Further out, the smaller regional intergovernmental organizations are shown, then the national governments, then local governments.

The second system is that of the non-governmental, non-profit organizations. This is shown in Fig. 6. Again the non-existent « plenary conference » of all international nongovernmental bodies is shown at the centre — this is a potential or future development for which the adequate organizational form and function had not yet been evolved. In the nearest orbits around this move the various coordinating conferences of INGOs. These have different degrees of substantiality, depending upon whether there is an organization with a secretariat, a committee with no secretariat, or merely an infrequent meeting. Each of these bodies may of course have its own « moons » in the form of sub-committees or working parties. In this case, the larger the orbit, the more specialized and limited is the coordinative function in both geographical and subject area terms.

A similar attempt could be made to sketch out the business-industry complex in terms of a solar system model. Significant features would be the multinational corporations, world trade centres, etc. In each case we now have a way of looking at a maze of independent and semi-autonomous bodies. In each case the important point is that this approach shows how justified each body is in considering itself independent — but at the same time attention is drawn to the extent to which each body is related to others. It is a truism to say that everybody is dependent upon everyone else in society, but we have enormous difficulty in balancing this integrative concept against our individually felt justification for a sense of independence and freedom. This is what a solar system model accomplishes. It balances centrifugal and centripetal forces, justifying both.

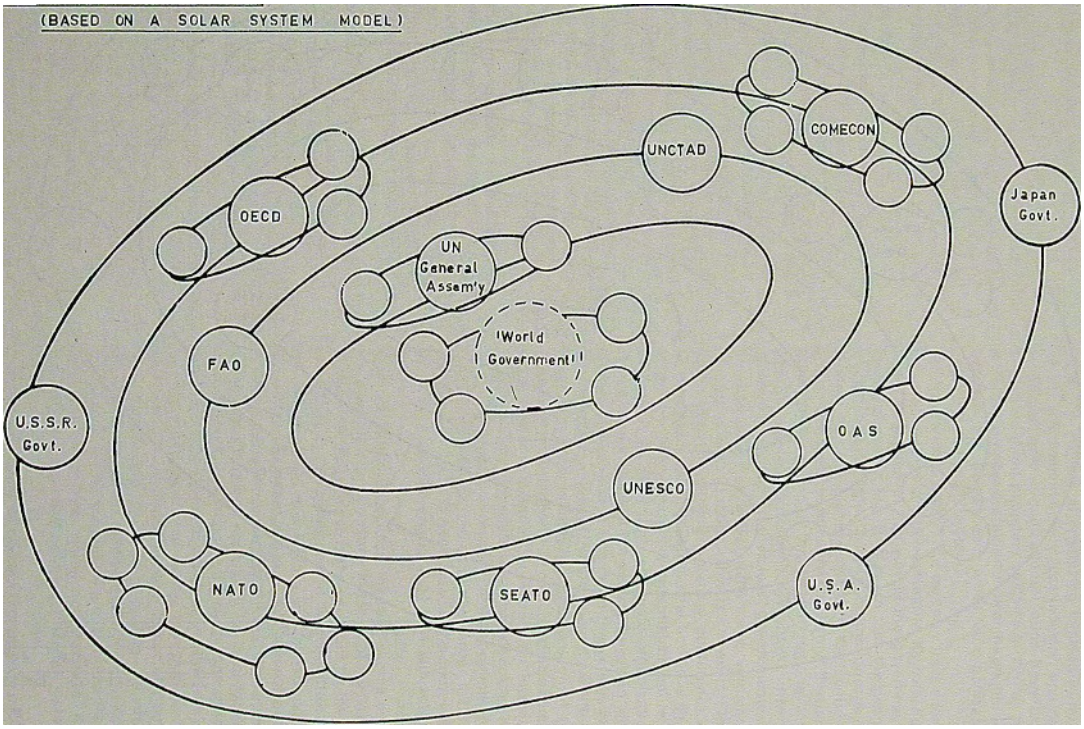
In a rapidly changing society one must expect the features of the solar system model to evolve. Potential structures which have acted as focal points may take on an organizational form. Existing planets



IGO = Intergovernmental organization,
INGO = International nongovernmental organization (non-profit).
BINGO = Business INGO (Multinational corporation).

Figure 5.

SUGGESTIVE OUTLINE SKETCH
MAP OF GOVERNMENTAL SYSTEM



cease to be considered useful and may disintegrate _ « releasing » any dependent bodies (which retain their usefulness) to gravitate into some new orbit. A solar system model can * contain » conceptually and portray such social dynamism in a very adequate manner.

Another important feature of the model is that it can suggest or draw attention to the possibility of new structures and thus speed up evolution of the social system to new forms.

The solar system model can be interpreted in another way. If two bodies are placed close together on the model, then communication between them — the transfer of new concepts and information on new problems — will be relatively easy compared to the case where the bodies are far apart on the model. Increased distance means increased difficulty in communication.

This is a very important point because there is a tendency to treat the centre of any such social system as the « controller » of all « dependent » bodies. From this it is just one step to suggesting that the centre should instruct all dependent bodies on the action they should take under any given set of circumstances.

This view completely loses sight of the fact that precisely because bodies on the periphery are not at the centre they have a better understanding of problems developing in their sector. And it is because such peripheral bodies feel that they should modify their own actions to respond to the problems they detect, before the centre has registered the importance of these problems (due to the communication lag) that the peripheral bodies feel justified in stressing the importance of a high degree of autonomy. The centre just does not respond to crises quickly enough, on top of which it is usually so over-burdened — when attempting to control everything — that it is not sensitive to information on « minor » (from its own perspective) crises. These are therefore allowed to grow, until the centre can recognize the crisis as worthy of its attention with disastrous consequences to the peripheral bodies in the sector in question. A more organic approach sees the peripheral bodies handling all the problems to which they can respond effectively, only referring to more central bodies when the problem overflows their sector.

The centre-periphery or solar system model has recently been criticized by Donald Schon (BBC Reith Lectures, 1970. Published in « The Listener », November-December, 1970.) in a very interesting way which throws much light on the direction in which forms of organization can expect to develop.

He is concerned with social changes and changes in institutions, as a consequence of the spreading of something, whether it be a new product, a new concept, a new technology, or a new type of institution. Social change becomes a by-product of the diffusion of information.

He argues that society's diffusion systems change over time and evolve and that this evolution is absolutely critical to how it is that society works and that management of the society depends on our ability to spread things in it, for novelty to arise at points and then to spread throughout the rest of society.

He takes as *a* classic model of the diffusion process the solar system with a centre and a periphery to it In following his criticism it is important to note that he is only concerned with the analogy to the diffusion of « light » from the sun as centre point. He is not concerned with the analogy to the « gravitational » influence of each body (whether at the centre or not) on every other body, as is the case in the NASA solar system model.

In the case of international organizations, the centre in the following argument could represent either the international NGO (with its members or its public as the periphery), the United Nations system (with national organizations and the general public as the periphery). The « novelty » is peace or development-oriented thinking.

In the limited model, which he criticizes, the novelty to be spread is at the centre and the potential adapters or users of the novelty are at the periphery. This is the model of diffusion that is practised in the classroom. It rests on a series of assumptions :

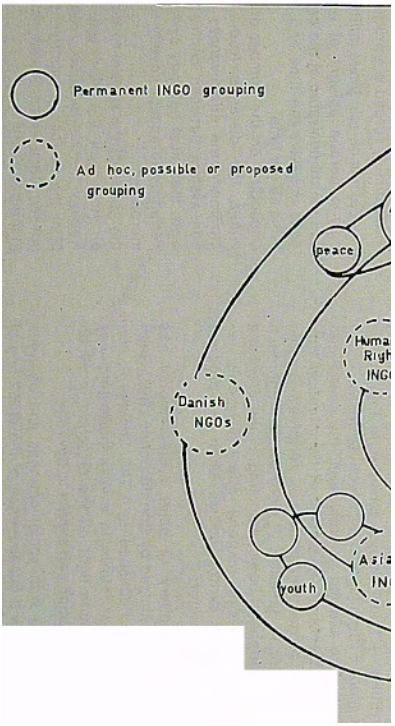
— that which is to be diffused or spread exists before the spreading begins
— the growth or spreading of new things takes place by the movement of these things out from the centre to a periphery
— that which is spread is a product or a technique

The model has certain limits built into it :

— only a certain amount of energy or resources can be concentrated at the centre (i.e., the centre does not have the time and energy to do everything all the time)
— depending on the number of points on the periphery, the distance from the centre to the periphery, the effectiveness of the communication system between centre and periphery, the work that must be done by the centre to get the periphery to accept novelty may be considerably increased
— the ability of the system to function is dependent on how well the feedback mechanism works. Namely the centre must respond to information from the periphery, modify its own behaviour in consequence and transmit new information back to the periphery.

Figura 6.

SUGGESTIVE OUTLINE SKETCH



HAP OF NON-GOVERNMENTAL SYSTEM
(BASED ON A SOLAR SYSTEM MOPED

INGO = Internationa! nongovernmental organization.
NGO = National nongovernmental organization.

« Proliferation of Centers » Model.

A modification of the simple centre-periphery model has been developed in response to these limitations. Schon calls this the proliferation-of-centres model. In this case the original primary centre is replicated so that a new kind of centre is now created in the middle and a series of miniature centre-periphery models now operate on the periphery. He cites as an example the Roman Army in which the primary centre in Rome trains and develops the capability of the colonies to function as secondary centres. In this way the scope of operation is enormously increased. Whereas previously activity was bounded by the distance to the periphery and the resources of the centre, now new centres can be replicated at convenient distances from the periphery, pushing the limiting boundary further away from the original centre.

The replication is not perfect, however, and such social structures tend to fail when the periphery and secondary centres get out of control — the traditional conflict between the centre and the region or branch. But as Schon says :

> *« Perhaps the major source of failure in the* proliferation-of-centres *model has to do with the rigidity of central doctrine in relation to what's going on at the periphery. You have what looks, after the fact, like the stupidity of the Third International with respect to revolution according to the likes of each country, the stupidity of the Church, for example, in the delays they practised before allowing the liturgy to be Chinese in China, the stupidity of Coca-Cola which for a long time insisted on providing brown liquid for Africans when Africans didn't like brown liquid : they liked orange liquid. The need to modify the central message according to the requirements and the lights of the periphery poses great problems for the proliferation-of-centres system, because the whole structure of the system, its effectiveness, depends upon the simplicity and the uniformity of that message.*

It is apparent that such systems were not organized to be sensitive to change. Schon notes however that they did adapt, and « learn », but only in spite of forces opposing such adaptation :

> « *The great proliferation-of-centres models of the late 19th and early 20th centuries turn out to have been learning systems in spite of themselves. That is to say, when change occurred which was responsive to the special conditions which obtained at the periphery, the centre always found it necessary to disengage, to react against that change, no matter how adaptive the change may have been. The overall pattern runs roughly this way. A primary centre* emerges, it *develops a diffusion system, it replicates. itself in many secondary centres. The primary centre specialises in the creation and management of secondary centres and in the management of the overall network, and then the diffusion system fragments, the centre loses control, the network disintegrates, the secondary centres gain independence, or they decline, or they themselves assume the role of primary centre. The reasons for that decline or lor that disintegration may be several. I'hey may have to do with the limits of the infrastructure, the limits of the technology for the flow of information if the centre can't reach the outposts adequately. They may have to do with a constraint on the centre's ability to manage that complexity. They may have to do with the motivations of the agents of diffusion. »*

Schon contrasts this model which is currently used in most large organizational systems, whether governmental, business or nonprofit, with a model which he describes as being pioneered by certain types of « business-system » corporations and the youth-peace-civil rights movement in the U.S.A. In the latter case, for example, there is no clear centre — or rather a shifting centre, and no stable message. Theories arise spontaneously, modify themselves and bear only a family resemblance to one another. Nothing is radiating out from one centre to a periphery.

> *« It's a kind of amoeba, with very unclear boundaries, with no clear centre, with no clear structure, but with a very powerful, informal, interpersonal network that pulls the whole thing together. And not only does it survive, but it turns out to be darn near invulnerable, and its invulnerability in part depends on precisely those ways in which it is different from the centre-periphery model. There is no clear, stable centre, nothing to strike at. »*

Such social organization depends very heavily upon the existence of a highly effective communications system but also upon the « strange and wonderful networks of interpersonal connection stretching over the entire nation which enable the pieces of this system to connect together. »

The movement and the business-systems firm are therefore highly able to transform themselves without disruption and to modify their behaviour in response to the requirements of changing situations — despite the fact that they are apparently the most antithetical to one another, their methods of organization appear to be converging upon a common organizational structure :

> « *The classical models for the diffusion of innovation took a product or a technique as the unit to be diffused. The business systems firm and the youth movement are biased toward a functional system of thought and action as the unit to be diffused. The classical model is a centre-periphery one; the business-systems firm and the social movements associated with youth and Vietnam have a pattern of systems-transformation which is not centre-periphery. The classical model has a fixed centre and clearly defined leadership; the youth movement and the business-systems firm both tend to have shifting centres and ad hoc leadership as the requirement arises. The earlier system had relatively stable messages and a pattern of application of* a

A NEW ECUMENICAL GEOMETRY PROPOSED

Whilst preparing the article on « Matrix Organization and Organizational Networks » for print the editors were delighted to discover that one international nongovernmental organization was already applying the solar system type model described in the article to its own area of special concern. Meeting in Addis Ababa in January, the 120-member 24th Central Committee meeting of the World Council of Churches « countered the institutional and financial crises of the Church with speeches, statements and declarations that should usher in a new chapter of the modern ecumencial movement. »

The report of the Chairman of the Central Committee, Dr. M.M. Thomas, Director of the Christian Institute for the Study of Religion and Society in Bangalore (India) is of particular interest. Extracts (including the heading above) are produced below from the Ecumencial Press Service's « This Month ».

We leave it to readers to judge the problems of the approach mentioned by Dr. Thomas in the light of the views on the solar system model examined in the article. The WCC is concerned with the progressive definition of a « centre » as a concept around which everything revolves, the diffusion of the message from the centre, the relationship of its member organizations to that centre, the need to permit them full autonomy and freedom to explore and respond to the problems that they detect, and the need to establish relationships with organizations « beyond the periphery ».

At Uppsala and since, we have been discussing the relation between the horizontal and vertical dimensions in the work of the World Council of Churches. I think the horizontal work has all been done now.

But it seems to me that another figure from geometry which has been employed from time to time in WCC discussions is more meaningful — that of the centre and the other paris of the circle, such as for example the radii, which extend from the centre and are kept in place by the centripeta, pull of she centre, and at the same time express or define the centre, and the periphery where everything is seeb as marginal. So the questions we would ask are :

(i) *What is the centre or central concern of the fellowship in thought, life and activities of (he World Council ?*

(ii) *Do the many aspects of the life of the Council radiate from and express this central concern, and if so how ?*

(iii) *Do some activities of the Council give undue importance to things which are marginal ?*

These are questions which are being raised by the world outside the World Council constituency and sometimes, as in the recent past, by parts of the WCC membership itself. We should be grateful to them, for these are questions the Central Committee must ask itself as it seeks to evaluate the policies it lays down and the programmes it asks the Executive Committee and the staff to implement.

The distinctions between the centre, the radius and the periphery become, increasingly important as the Council seeks, under the mandate of the Uppsala Assembly, to enlarge the circle, on the one hand, and to become more militant on the other.

The Council, which began with an overwhelming predominance of churches of the established Protestant traditions from Western Europe and North America, has now in its fold not only most of the Orthodox churches and many of the churches of Africa, Asia and Latin America related to established Protestant missions but... churches which are deeply oriented toward indigenous African culture and for Pentecostal spirituality. This expansion of membership has brought into the circle of the World Council the human hopes and despair of the countries and cultures in ail parts of the wide world in the midst of which the churches struggle to witness to their faith and life in Christ. This is what I mean by the enlargement of the circle. Allong with this has come to the World Council membership, as expressed through the assemblies, a new sense that the Council should not merely be engaged in the study of comparative ecclesiology, comparative theologies of mission and comparative social ethics as in the, churches, but also must seek together to define more precisely in the light of common faith their common goats with regard to unity, witness and service, and within certain limits make the Council itself an instrument of the churches for mutual help and efforts to realize these goals...

The Centre

Obviously, the centre of the Council is given in its Basis, according to which the WCC is « a fellowship of churches which confess the Lord Jesus Christ as God and Saviour according to the Scriptures and therefore seek to fulfill together their common calling to the glory of the one God, Father, Son and Holy Spirit ». The fellowship of churches which we are is centred in our common confession of faith in Jesus Christ and our glorification of the Triune God... The central concern is theological — not in the sense of a reality apart from our total life, but of one which expresses itself in the pull which it exerts on the totality — Christ-centred and therefore seeking and action. The new theological advance here is that the principle of catholicity is offered as criterion not only of the life of the the Christian community but also of the life of all mankind. Thus the WCC sees that il is committed, in its central confession of Christ and his Church and as one of its essential constituent aspects, to a new ethics of catholicity by which « we must judge and repudiate tragic distortions of humanity in the life of mankind ».

It is this faith-ethics commitment that Uppsala considered the very centre of the Council's fellowship, because the unity of mankind is « part and parcel of God's own relevation ». This is behind the suggestion mooted at Uppsala that churches which deny the ethics of world community should be considered guilty of heresy — not just of moral heresy but of clear theological heresy. And it seems to me that some Christians and probably some member churches may be finding it difficult to understand the centrality of this theological focus... All the programmes of study and action in the World Council today are attempts to clarify the nature of this dialectical theological centre to which we are committed...

The Radii

Recently many parts of the constituency of our member churches have been in serious dialogue with traditional or emerging cultures and religions. The Asian and African churches, as they have grown to maturity and become new united churches or come together in regional councils, have been awakened to the need for shaking loose from the Western confessions and for finding new ways of confessing and communicating the faith and of expressing their common life in terms of the thought-forms and life-forms of indigenous cultures, which have been traditionally shaped by religious visions other than that of Christianity, and which are now being reshaped by the impact of secular ideologies and Christian ideas. These churches are also called upon to participate in the building of their nations and to work for common social and political goals in active cooperation with people organised in other religious communities and with parties and groups formed around secular ideologies.

Similarly in Europe and the Americas the churches have been compelled to enter into dialogue not only with the growing secular culture but also with the secular humanistic faiths of both liberal and Marxist persuasions which infuse it...

Beyond the Periphery

Recently the World Council has organised under its own auspices conversations on faith and politics with world Jewry, Muslims and Marxists. And as authorised by Canterbury, a consultation of Christians with representative Hindus, Buddhists and Muslims was organised at Ajaltoun to explore questions of inter-religious dialogue on Man and his temporal and ultimate destiny in the context of the struggle for world community and increasing inter-religious contacts. Following it, a consultation of theologians at Zurich evaluated Ajaltoun and explored the Christian theology of dialogue.

…I would say that the only effective answer to syncretism (understood as confusion between the living God and idols at the spiritual centre) is a proprer positive theological approach to indigenisation, cooperation and dialogue. And here more than in any other field we need to define the centre of our faith, where Jesus Christ as God and Saviour is alone ultimate and excludes all other gods and saviours and schemes of salvation whether religions or secular, at the same time distinguishing the ultimate Centre from the penultimate area of symbols, ideologies, values, institutions and experiences of Christianity, other religions and secular ideologies where interpénétration is necessary and possible and where our concern is to see how they may be redeemed from the spirit of idolatry and selfrighteousness and from the inhumanity arising from them and transformed into expressions of the Humannm and the common humanity of ail men in Christ and bearers of the faith, life and message of the Church...

central message; the latter ones have evolving messages. The earlier systems were limited in their scope by resources and energy at the centre and by the capacity of the spokes; the latest systems are limited only by the qualities of the technological infrastructure of the time. The reason I dwell at such length upon this development is that I think it contains within it the seeds of what it means to be a learning system in our time. »

Schon then uses these ideas about organizational structures as learning systems to look at governmental structures, namely the third basic type of organization. He first notes that one negative but not entirely inappropriate way of looking at government agencies is as a series of memorials to old problems. As a general rule agencies come into being around problems that are perceived as critical problems and then go on living long after those problems have been solved or become insignificant.

The « learning » system

Public organizations have proved singularly inept at responding to new situations — in functioning as a learning system. Any problem that can be named has a number of very interesting ideas for its solution. The difficulty has been that of carrying out any policy for social change to respond effectively in terms of such solutions. Schon scotches the idea that inability to respond has been due to the lack of commitment to the needed programmes in that one could equally well argue that the failure of these policies and our inability to implement them, rests on a radically inadequate theory about the process of implementing any policy. The current theory of public learning is based on the following :

— that the issues and problems are given, that we know what they are, and although we may investigate them, the investigation does not usually take into account the process by which the issues came to be perceived as important in the first place;
— that it is possible to make a radical distinction between the formation of a policy and its implementation;
— that the process by which a policy comes to be implemented is a centre-periphery process with government disseminating policy from its centre point;
— that policy, once developed, can remain steady over a long period of time which permits aspects of the policy to be handled by compartmentalized units which correspond to the departments and agencies of government, namely one-agency-one-policy;

Against this theory he raises three questions :

— how do ideas come into good currency, how do . issues come to be powerful for action, how do we decide what needs to be worked on ?
— how can government change in response to a new problem ?
— how can government go about developing and carrying out a policied solution to a new problem when it is clear that the problem has to be worked on but it is not clear what the solution is, and when no solution is going to be adequate for more than a short time ?

As an example he cites the problem of the cities and notes that no governmental agency in the U.S.A. is not involved in this problem. Namely the problem fragments the existing pattern of agencies with each agency tackling that aspect of the problem relevant to its own concerns. The same is true of development and intergovernmental agencies. Another example is the current problem of the environment. The current solutions to this difficulty are :

— to form inter-agency committees, which according to Schon have never been known to work and quickly fall victim to the baronial instincts of the various agencies so coordinated;
— to reorganize and consolidate the system of agencies, which again falls victim to the temptation for each modified agency to continue to function in the old way but under new headings, each with the support of its traditional constituency;
— to create a new agency, but if the number of new problems found to be serious each year is increasing this will lead to a proliferation of agencies, particularly if there is only an ineffective mechanism for dissolving them;
— to create a series of pools of competence which are relevant to the implementation of policy in a broad sense. These would be drawn upon on a temporary basis by project organizations such that people and resources move effectively backwards and forwards between their pools of competence and project organizations as they are created and dissolved for the life-cycle of a problem. This is in effect a description of one variety of the matrix organization described earlier.

  It has the advantage that it permits loyalty to and identity with government at a very high level of aggregation or generality, i.e., not to a department but possibly to the national government per se. The movement of people in and out of specific projects helps to avoid over-identification with a given organization with all its consequences for the creation of organizational memorials to dead problems. This is a problem for the UN to consider.

  The information system which Schon points out would be necessary to help identify the new problems and draw together the appropriate team makes this type of social organization

resemble the potential association described earlier. There is one important difference however. In this case the information system is still controlled from the centre. It is the centre which identifies which problems are critical and then decides which competence pools should be drawn upon. In the case of the potential association, no such centre exists.

Schon notes that the centre can disseminate policy in a number of ways :

— the policy may be promulgated;
— the policy may take the form of a law that is enforced;
— resources may be made available which encourage the actuel implementation by agencies wishing to obtain funds;
— government may formulate policy and invite participation — funding the regions or agencies which do and depriving those that do not. Schon noted that this is the principal method used in the U.S.A.

The weakness of the centre-periphery model as used by government and the United Nations is illustrated by Schon's example of a U.S. Federal Government programme to ensure the dissemination of the latest medical expertise to practising physicians in 55 regions, are :

— the actual goals of the regional agencies are in fact different from these of the central -agency and they therefore used the allocated funds in their own ways with some degree of conscious or unconscious subterfuge on the part of the regional agencies;
— it was discovered that the effects of large-scale medical insurance might not be to assure care but to increase medical cost;
— no region was found to be like any other region and it was difficult to modify the programme administration to handle each case on its own terms;
— each region had to be regarded as open-ended, namely there was no model of medical care that could be imposed and could last for any region.

There could therefore be no central policy.

« *All one could say was that there were certain themes of policy — themes, for example, like the shortage of medical manpower.* The generation of central policy had to be inductively derived from the regions, and regions became developers of variations upon policy themes. *The centre couldn't therefore go out and evaluate what the regions were doing according to any central model. They could only press the regions to develop evaluation systems of their own which were appropriate to their own policies.* The centre could pull the regions together in a kind of learning network so that they could learn from one another *in their own efforts to carry out transformations of the system of medical care.*

Now the regional medical programme — not as il was conceived but as it developed — has begun to be a learning system for government in the mode of implementing policy. It isn't in the centre-periphery model but looks more like the network model of the business-systems firm or the student movement. It stand in contra-distinction to the idea of government as an experimenter for the nation, of government as a trainer of the nation. It fits the notion of loss of the stable state. It fits the notion of change as the foreground condition against which governmental action must work. Where the public problem is new, there is no established policy solution or institution corresponding to it. The centre's role is to announce themes of policy to the periphery, to initiate facilitate and support learning effortsr : the movement is then as much from periphery to periphery, from point to point on the periphery, as it is from centre to periphery. It is an inductive rather *than a deductive process, and it is a process comparable, in its overall character, to the learning systems which we have seen in the evolution of business firms and of different systems for technological innovation.* «

From this we see the need for the additional requirement that the regions be able to adapt central policy themes. Schon does not go so far as to describe a system which would :

— assist regions to detect problems to which they could respond by initiating policy which might later be generalized by the centre;
— assist bodies not previously within the system to signal problems to it and to facilitate any joint programme formulation and implementation.

1NGO Policies

This is an even looser concept which would permit many more organizations to be interrelated in society's response to problems whilst making maximum use of the fact that unknown and unrecognized bodies may in fact be more able to detect problems before they develop to unnecessarily critical proportions. It is this concept of an organization which is foreshadowed in the potential association which permits the creation of transient organizations (whether matrix organizations or not.) It is this sort of approach which can be used by international non-governmental organizations to relate themselves and their programme within a loose network of « INGO policies. » INGOs must be able to collaborate effectively with UN and UNDR programmes when they take on a matrix form as they are bound to do in order to master the multidisciplinary and multi-agency problems. Hopefully the United Nations will develop its own approach to permit its agencies to relate through such an information system to the activities and problems of INGOs.

Whilst the United Nations should expect to be able to formulate central policy themes, the INGOs (as

secondary centres) should be able to develop detailed policies and introduce variations for their own sectors, just as the governments develop policy for their own countries. Once the United Nations or any other such centre (e.g., the OECD) can respond to peripherally developed policy variations, it will have ceased to be a rigid promulgator of necessarily, out-of-date policy and will have adapted to the role of catalyzing a « world learning system ».

Schon summarizes his views as follows :

« *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 society. And the overlay is always out of phase in relation to what's underneath:* at any given time there is always a mismatch between the organizational map and the reality of 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 the problem. The result is that one is thrown back on the knitting together of elements in networks which are not controlled and where the network functions and network roles become critical...
That means that the inside of the system is a temporary system which is fluid and able to shift. Change becomes the foreground condition rather than the background condition....functional systems must be able to provide security for their members at the level of functional systems and not at the level of specific organizations within them...
We have young radicals who would like to create community organizations which are separate economic, political and social units, and we have young people who would like to go off into the woods and form communes. All these efforts towards decentralization are reactions against the repressive and dehumanizing character of central government and of central institutions. But this response is not an adequate one : *the same technological changes that produced the loss of the stable state connect every piece of society to every other and* no separate enclaves can survive. If decentralization is a response, it must be connected decentralization. »

NGOs in particular should not be deterred from looking at the current ideas emerging from business management research for clues to new methods of organizing their own activities. The fact that the business system's, the youth-peace-civil rights movement, and possibly even the Mafia, are all converging on the same flexible structure in response to similar problems clearly illustrates that it is the operating advantages of these new structures which should be considered and not the objectives for which they are used. Unfortunately many NGOs tend to imitate the UN's organizational structure, with its built-in inter-Agency coordination problems, rather than experiment with flexible evolving structures adapted to the new understanding of problem complexity and the need for organizational networks.

The solution to the problem of inter-organizational relationships lies not in a monolithic centralized organization of coordination but in an adequate world-wide information system in which all can participate freely to determine with which groups and problems they should temporarily concern themselves — namely a network of social activity coordinated by information and not by organization.

Résumé français de l'article (p. 154) :

LES ORGANISATIONS « EN MATRICE » ET LES RESEAUX D'ORGANISATION.

Les conceptions du management mises au point par la NASA (U.S.A.) permettent, et même exigent une grande flexibilité et une grande autonomie de la part des divers organismes (sociétés industrielles, agences gouvernementales, centres de recherches, facultés universitaires, associations professionnelles etc.) qui participent au programme. Ceci est essentiel au rassemblement des connaissances nécessaires pour réusir la tâche complexe de mettre un homme sur la lune. De telles conceptions créent une tension fructueuse entre la fragmentation résultant du besoin d'autonomie des organismes spécialisés et l'intégration nécessaire à tous les niveaux pour réussir l'exploit. L'image de ces relations est plus clairement donnée par un modèle de l'organisation basée sur celle du système solaire (Fig. 3) que par l'organigramme traditionnel (Fig.. 2). Pariant de ces idées, on peut envisager l'utilisation de ces nouvelles possibilités de relations entre organisations indépendantes pour mettre en évidence une solution aux problèmes de relations entre les grands groupes d'organisations (Fig. 4), entre les groupements gouvernementaux (Fig. 5), et finalement entre les organisations internationales non-gouvernementales elles-mêmes (Fig. 6). Le modèle « solaire » de la NASA s'appuie sur les relations — multiples et multilatérales entre organisations illustrées par les forces de gravité entre les corps célestes en mouvement continu dans un tel système dynamique. Par contre, la tradition bureaucratique et étatique est basée sur des relations unilatérales, et ainsi beaucoup moins complexes, illustrées par la diffusion de la lumière à partir du centre d'un tel modèle solaire — un modèle qui reprend ainsi les caractéristiques de l'organigramme traditionnel. Un résumé d'une analyse des limitations de ce dernier modèle fait par Donald Schon montre clairement la direction de l'évolution des systèmes d'organisation vers une conception basée sur des réseaux d'organisations interdépendantes sans centre principal bien défini.