

# COMMUNICATION AND INTERNATIONAL ORGANIZATIONS

- new tools for the Second Development Decade
- a look towards the near future and its advantages for INGOS

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*The Second Development Decade — Opportunities and Co-operation for NGO Participation)*

The next ten years, the period of the United Nations Second Development Decade, will see changes in the field of computers, communication and information processing whose impact on society and organizations is not well understood. This note is an attempt to pick out some possible consequences for international organizations which can use them to maximize their contribution to the development process.

## **Planned developments in the computer and communication fields**

1. During the next ten years, national and international computer networks will be created and linked. Some of these will be specialized, some will act as links between national libraries and data banks, some will provide general computing facilities.

2. Computer data banks on every aspect of the operation of society will be created with increasing frequency and with larger coverage and be accessible to a differing degree to groups and individuals with differing qualifications (e.g. the credit rating of 45 million individuals in the western U.S.A. is currently on computer files and available to subscribers).

3. The computer networks will become more and more accessible at low cost to the general public and to bodies with limited resources. As an example, current costs in London to rent a computer terminal (like a telex machine) installed in one's own office, are \$ 72.00 per month, plus \$ 14.00 per hour used. This gives all the calculating possibilities of a large computer system. Such costs will tend to decrease to the point where a computer terminal will become a normal piece of office equipment like a telephone. Terminals can be shared.

4. Computer terminals and the data banks to which they may be connected, will become much easier to use. Computers can now be addressed in a form of Basic English (or French) and this is being developed to the point where the computer will teach the new user and help him over his early errors. Children can now do their homework on computers, high school students learn to use them for complex calculation.

5. Subtle relationships in survey and statistical data will be automatically structured to highlight important trends in a readily understandable manner. This will be accomplished by using computer terminals possessing a television-type screen (1968 estimate of cost per hour in 5 to 10 years was \$ 1.00 to \$ 2.00 in the U.S.A.). These can display graphs and diagrams which are of great importance as communication aids in attempting to convey concepts to those who dislike interpreting unstructured tables of statistical data. This will make decision-making much more sophisticated and unambiguous. The user can 'interact' with such display screens using a 'lightpencil' to introduce new information or point to areas on which more detailed information should be displayed.

6. Associated with the developments in the computer field will be the increasing ease of direct communication between distant points on the surface of the earth by telephone, telex or 'visi-phone'. In addition, the use of videotape systems will increase and facilitate the impact of an individual in many areas over long periods of time.

7. An early step in these various revolutions will make use of these devices economical and ac-

cessible to an even earlier date. Before they become cheap enough to be available in the majority of offices, central bureaux will be created at which people can use them or from which they can be hired for a limited period of time. It cannot be emphasized too strongly that organizations using computers do not have to own or rent a whole computer costing thousands or millions of dollars. Just as one does not have to invest in a whole telephone exchange to make use of one telephone, or purchase a conference centre in order to hold one meeting a year, so one can rent computer terminals and communication equipment according to one's needs. The cost of renting and using such equipment is decreasing.

### **General social impact of the computer/communication revolution**

1. The current suspicion of 'inhuman' computers and sophisticated communication equipment will disappear as a result of a greater awareness of the considerable contribution they can make to bringing people closer together and to facilitating contacts between groups and individuals with similar interests. There is a parallel here with the introduction of the telephone which revolutionized life within a city. People have learnt to project themselves through the telephone to increase the frequency of their contacts and overcome barriers of distance and cost of travel — the telephone is no longer considered as an 'inhuman', unnatural instrument. The changes envisaged may be expected to revolutionize the life of the global community in a similar manner.

2. The telephone, radio and television increased the ability of small powerful groups to influence and control larger groups of people. The new equipment will considerably increase this ability. New compensating social mechanisms will be required.

### **Impact on organizations**

#### **1. Nature of Meetings and Conferences**

Low cost videotape prerecording of conference paper presentations and projection of the result at the time of the conference onto large screens, will become common. This should considerably modify the factors which draw people to conferences and the manner in which conferences are arranged. As an example, the person giving a talk may prefer to prerecord, making full use of

the possibility of feeding in display, graphic and general film materials as well as editing and rerecording the result to get an effective performance. He can then either not attend the meeting or pass the major portion of his time there in informal discussion only. Alternatively, copies of the video recording could be distributed to participants before the meeting by post. Time taken up by formal declarations during the meeting can therefore be reduced and 'taken as seen and heard', whilst time spent on the business arising from such declarations, presentations, formal reports or other matters can be increased. This will increase the effectiveness and value of the meeting as a forum for discussion, and decision.

A person who does not wish or is unable to attend the conference, could be sent a copy of the videotape recording which he can then play back through his own television set at his own convenience. Libraries of such videotape recordings will be created and these may to some extent replace the function of conference proceedings as well as ensuring the existence of dubbed versions in many languages, possibly with a reduction in translation costs.

This approach may lead to a reduction in expense on document production, particularly since the material presented in visual form may be a more effective communications tool. Using these techniques, one individual will have a far greater ability to give lectures or talks in many languages, in many places and with the possibility of having the best version of his talk repeated as long as is necessary (as in the case of gramophone records). A good speaker or expert will therefore be able to reach and influence a much wider audience much more effectively. The leaders of an organization, for example, will have much greater impact on members. Clearly these techniques lend themselves especially to training courses at every level and are therefore of great significance as a stimulus to the development process. These techniques will aid considerably those organizations which attempt to influence society in one way or another (as opposed to specialist groups). The effect of a good speaker, which may be lost or unusable through a dry conference report, remains vivid and is enhanced by the range of display material which may be in-



*Many UN Specialized Agencies now make use of or possess computers. The view above is of the computer used by the World Health Organization for handling information on health that is received from all parts of the world. It is also used for some administrative purposes.*

introduced — to the point where the major impact may be visual rather than based on the logical structure of the talk. This will lend itself to much abuse and the emergence of a group of professional video speakers. Using these techniques, an organization with few resources could have a wide impact. This will pose problems of how to restrain 'irresponsible', 'extremist' groups having heightened effectiveness, and that of how to absorb the consequences of their activities into the social structure. Organizations will find themselves forced to adopt these techniques to counteract the effects of other groups disseminating opposing views, or else lose support or have the results of years of painstaking educational activity eroded away with weeks. Symposia via 'conference telephone calls' or 'visiphone' will become more economical than travel, where the individuals live in widely dispersed areas. This will help to increase the quality and frequency of small meetings to the point where some symposia will blur into informal contact between the participants on a continuing weekly basis.

The visiphone technique or telephone (plus a machine which in effect transmits the effects of blackboard type illustrations over the telephone) will permit live conference talks (and even congratulatory salutations) by persons who would otherwise be unable to participate for time or cost reasons. Again this will increase the impact of effective speakers and increase the participative capacity of those in demand or control. All the above points show that organizations will be able to become much more dynamic and effective at lower cost and should prove of great importance to organizations whose staff should make frequent trips to many countries.

## **2. Control and Tempo of Organizations**

The techniques which will modify the nature of conferences, lectures and symposia will also modify Committee, Board and Executive Council meetings. It will be much easier to avoid travel and build up a quorum for such 'visiphone committee meetings'. This will mean :

- effective individuals and these in demand will be able to hold responsible positions in more organizations and be fully active in those positions.
- the speed at which decisions can be arrived at will increase, meetings will be held more

frequently or whenever a minor crisis demands it.

- sub-committees will be able to get through their work much more quickly and report back, thus speeding up the whole tempo of operation of the organization.
- the impact of the board on the daily operations of the organization may increase. The customary delay factor, which can be used or abused, will be reduced.

These effects will not be confined to the less formal organization meetings where no signatures are required. Devices exist which permit formal signatures to be added to documents over long distances, aside from those which can transmit copies of documents over distances. Formal agreements can therefore be brought into force without the need to incur the cost of travel.

## **3. Research and Survey Activities**

The power of the computer in this area is now well known. What is less well understood is the power with which a maze of statistical data can be reprocessed to present it in such a manner as to highlight significant trends in a readily understandable manner as an aid to complex decision-making.

In addition, if survey results are stored in computer data banks, they can be made available selectively for automatic retrieval by users in other centres or exchanged against their information via the computer network. The future problem will therefore not be the location or lack of adequate information, but that of structuring many related factors to indicate alternative possible decisions to non-experts in positions of power as well as the public which needs to judge their effectiveness.

## **4. Voting Procedures and the Concept of an Organization**

Sophisticated techniques of voting to allow for a considerable variety of possible subtle distinctions and means of safeguarding against abuse, will become feasible because of the calculating power of the computer. Each voting member (or member of a committee) could be allocated characteristics agreed to be significant and fair in evaluating his contribution to the organization. Under present circumstances, such a

complex 'vote would require hours or days of work to 'count' the result, with all the associated suspicion of errors, etc.

Such a voting procedure could also be designed so that a member's voting power on each of a range of issues depended on as many agreed measures of his experience on each as were relevant. He might therefore have one vote on one issue and fifty on another. Such techniques would mean that the concept of a voting member will change from 'either / or' to a range of degrees of participation within the organization (depending on the subject under discussion). This will make possible a much more subtle make-up of organization membership, reflecting more closely the relative interests, capabilities and qualifications of members. The variety of organizational structures will therefore increase and will make possible the existence of bodies where links between the possible members would currently be considered improbable or unstable.

The current range of types of organization is limited because of the need for simple voting and control procedures and easily understandable membership groups. The calculating and display power of the computer will permit complex groupings of many types whilst retaining the simpler parts of the voting procedure where essential. The new types of organization which will gradually come into favour, may pose considerable problems if they seek legal status or recognition — until the law recognizes the clarity of the definition offered by computer programmes.

These new varieties of organization may be first adopted by mass movements and pressure groups which have previously worked through informal organizations. An important result would be that, although conventional organizations would be of longer life and better recognized, these new organizations would tend to be issue oriented, have large and highly involved memberships, active support and large financial resources, and would therefore overshadow the conventional organizations during their period of activity. It is this type of organization which may prove of greatest value in the developing countries. An important consideration on any issue will then be not the number of existing organizations concerned, but the number of organization oriented individuals and

groups which may link together effectively within days to represent their interest with each new development.

Clearly these techniques make possible the existence of organizations which only 'cohere' and 'exist' on particular issues, or which might have a wide voting membership on one issue, but a very limited voting membership on another. This takes us to a point where the concept of an organization as a distinct and well defined structure (other than in computer terms) is replaced by an emphasis on the potential components of that structure at any one time and the stimulus necessary to call each of them into play. This emphasis on organization dynamics is foreign to traditional thinking in formal organizations but is very close to the normal intuitive understanding of the operation of small groups, informal organizations and pressure groups.

### 5. Long-term Decision-making

Because of the ease with which a widely dispersed membership can register opinions on any issue with the executive body, a new problem arises. One function of representatives elected in the traditional manner was precisely to overcome this space and time barrier to the expression of membership views. Since this function will no longer have the same importance, the other function, namely that of providing long term guidance based on superior knowledge and experience, will be highlighted and subjected to a greater degree of critical examination. The man-on-the-spot will be less able to use communication and meeting frequency delays to protect his executive position and long-term policies.

The whole question of the relative decision-making power of membership, representatives and executives on different types of long and short term issues will require re-examination to ensure the necessary safeguards and yet maximize the effectiveness of response of the organization. The calculating power of the computer will have an important role to play in the solution to this problem.

One solution would increase the voting power of persons allocated responsibility for particular types of long-range decisions to counterbalance short-term voting swings. The system could incorporate a wide range of flexible and

use-free safeguards and could be made very sophisticated. For example, the extra (voting power of such persons could be made to vary according to the size of certain minority view votes, or partially on the basis of a preliminary mass vote. In all such cases, the computer guarantees rapid error free results, despite the complexity of the voting system required to mirror the safeguards demanded by members.

## **6. New Organization Constitutions and Agreements**

Once the relative voting power of organization memberships or their representatives is defined by a set of rules or 'map' within the computer, it is then the features of this map which become the subject of debate in agreeing upon an organization constitution. The map gives a very precise indication of the voting power of each group in well defined situations which may change over time. It will permit very flexible constitutions and agreements, thus defining clearly structures which would currently be thought improbable, unstable or uncontrollable. The map need not only be based on the conditions existing at one time. The map could be a map over time, such that the relationship between the voting power of the two (or more) parties to the agreement or merger could change on a flexible schedule. A multitude of complex safeguards could be built in. The map is in effect the structure governing the changing relationship between the parties. Over time, for example, the rate of increase of the voting power of one party (as expressed by the slope of a 'surface' on a multidimensional map) may become a subject of debate. This slope need not be constant and may make provision for many intermediate reductions in voting power if certain specified conditions arise which require safeguards to one or other party. Such maps in delicate situations could be exceedingly complex and possibly only aspects of them could be displayed at any one time, even on a visual display screen. Nevertheless, they can be thoroughly tested automatically by using the computer to simulate a very large range of conditions which the map must be built to survive, according to the requirements of the participating bodies.

The implications of the new types of voting opened up by the calculating power of the

computer, extend to situations where overlapping classes of minority interests have to be protected whilst at the same time ensuring the allocation of adequate resources and power to a less influential majority.

Aside from voting power, techniques will be available to permit bodies potentially interested in forming an organization or subscribing to an agreement to test or simulate all the possible ways in which the contract or proposal could lead to damage to the interests of one or more of the parties under any foreseeable circumstances. Allowances and safeguards could be incorporated and retested until all parties were satisfied and had an agreed basis for collaboration. This will help to overcome problems of initial mutual suspicion and distrust and will encourage steps to create new agreements or support new policies.

## **7. Conference Organization**

Organizations, and particularly the individuals responsible, will be able to prepare more thoroughly for meetings by simulating all the decisions that must be taken in order to get a 'feel' for the techniques required and the problems that are liable to arise. This will enable the headquarters to ensure that an inexperienced individual or committee in some distant location obtains (at no embarrassing cost) all the accumulated experience on how to organize the type of meeting favoured by the organization.

The usual problems of selecting and booking meeting rooms and hotels will be solved by passing queries through a central booking office. Conferences as a whole will be organized using critical path analysis techniques.

## **8. Inter-organization Links and Collaboration**

A consequence of the increased flexibility in vote allocation will be to permit organizations to allocate a percentage of the vote controlling them to other bodies whom they think should have some voice in their affairs. This can be very carefully controlled to cover all possible contingencies and protect both parties. 'Recognition' may be given added meaning by an allocation of nominal voting power on certain matters.

This allocation of votes can be unilateral or bilateral but since each body is different, the area in which each permits the other to vote could

vary from subject to subject, dependent on the current situation, or subject to an agreed variation over time. A straight exchange would not be necessary or desirable where it is agreed that one organization is more 'important' than another.

In this way, organizations can flexibly extend their sensitivity and response to those bodies in their environment whose views they value. A wide range of 'membership' (not divided into artificial categories) then becomes possible and practicable.

The many safeguards possible in this type of voting procedure should permit exchanges of a certain degree of voting power between different types of organization under different conditions, e.g. votes allocated by business organizations to environment oriented NGOs, voting power exchanged between IGOs and NGOs, with similar interests, methods of ensuring the participation of some groups in organizations whose activities affect them.

The possible safeguards and the flexibility guaranteed by the computer/communication networks will facilitate the emergence of many 'umbrella' bodies as coordinating points for the activities of member organizations. These bodies, given the sophisticated voting procedures, may only 'exist' for very specific issues or for very short periods of time before disappearing or transforming themselves into organizations with other functions.

Inter-organization collaboration may therefore be based mainly on rapidly changing patterns of contacts (with many recurring subpatterns of different duration) which will give rise to a variety of ad hoc 'umbrella' bodies of relatively short duration. These will however have a much wider membership plus well coordinated functioning links to the national and local level, as well as many levels of special interest sub-groups. It will only be possible to follow and understand these complex shifting patterns and sub-patterns, and contribute or respond to them, by using the full facilities of computer controlled displays and associated communication networks.

## **9. Consultation between Organizations**

The techniques which will modify the nature of conferences and committee meetings will also

affect the consultative or advisory relationship between organizations.

A meeting in session will be able to contact or 'call into' the meeting (or visiphone meeting) a distant representative of an organization which wishes to make statements or whose views are needed. Such views could then be expressed via a prerecorded videotape (thus ensuring an edited 'best' version) leaving the representative free to answer any comments 'live' and provide extra details where necessary.

Organizations will therefore be able to meet consultative responsibilities with greater ease and at lower cost and without the need to stop other activities whilst waiting to be called to speak. They should also be able to respond more quickly to demands of the meeting by setting up their own visiphone committee meetings prior to a session later in the day of the organization with which they have consultative status. Similarly, organizations will be able to register (with full backing of their Committees) their views on some incident days or hours after it arises, in the form of a full videotape statement (or a transmitted document). This could incorporate all the supporting visual and statistical evidence which it is difficult to make vivid in a typed report (which must itself be approved via a cycle of committee meetings).

Voting procedures could be extended to permit very flexible voting links between organizations which normally exchange or would like to exchange observers. Instead of the current rigid definitions of an observer, such persons could be allocated a varying voting power depending on the type of issue under discussion.

Where the consultative relationship involves collection and transmission of information and survey results, this may be made completely automatic. Each NGO, for example, could have statistical or bibliographical data on its field of interest filed in computer memory. Those parts of the data which it wished to be made available to other organizations, IGOs, NGOs, etc. would be appropriately tagged indicating who could receive what. Such bodies could then interrogate those computer files open to them, or if they regularly updated their own data on a computer, could arrange for this interrogation and transmission of information to take place directly from computer to computer without human inter-

vention. The consultative relationship would then come to have a very precise meaning in terms of flow of information in both directions. Where the consultative relationship involves collaboration on programmes, the changes may be even more dramatic. The many organizations potentially concerned with a problem within governmental, non-governmental or business spheres will be clearly evident. The manner in which their resources can be best grouped and used will be, to a greater extent, a matter of calculation. Emphasis will be taken off the distinction between organizations, so that complex links between the three major types of organization will be used to ensure maximum programme effectiveness.

#### 10. Membership oriented Organizations

Organizations and groups will be able to file their fields of interest in data banks linked by computer networks. By this simple process, individuals and other bodies will be able to locate and contact such organizations much more easily. Similarly, individuals will be able to file their own fields of interest. In this way, contacts with potential members will be very considerably facilitated. This will eventually be taken to the point where each modification of an individuals registered interests or an organization's registered programme activity will automatically place each in touch with a new pattern of contacts. This will have a considerable impact on mailing list management because each change of interest will in effect build up or reduce mailing lists automatically. The most dynamic organizations will arrange their operations so that with every programme modification (or automatic detection of bodies interested in their field), automatic mailings of membership application or periodical subscription forms, general literature, etc., are made.

As the current individual credit card schemes are extended, automated and standardized, we can expect that a person will be able to file a membership or subscription application from a distant terminal without the need to write letters or arrange for fund transfers. Such automatic contacts could even take the form of indications of support on some particular stand taken by the organization in the face of a current controversy — without however representing support for all aspects of the organization's activity.

The speed of communication will create the impression that every action of the organization will bring about a wave of new membership and indications of support or opposition which are all registered automatically and lead to some pre-planned distribution of literature. Direct membership votes on any issue will be considerably facilitated.

#### 11. Organizations with several Levels of Membership

Where an organization operates through specialist, regional, national, state and local committees, the computer will assist the executive by providing a clear, overall, easily understood picture of what is happening at each level. This helps to highlight communication and coordination gaps and barriers to the flow of information. It can also be linked to a system to ensure that each level is aware, as much as is necessary, of the activities at other levels. The total result will be to make the organization a more coherent and integrated structure and to help people at different levels to understand how it operates, in what way they are contributing to the overall programme, and in what way the overall programme is relevant to their own special interests.

#### 12. Production of Newsletters and Periodicals

The current revolution in the publishing trade as a result of computer typesetting will change the methods of producing periodicals and directories. A large international organization might, for example, decide to produce a limited international edition of its newsletter but transmit selected sections of this through the communication network to be incorporated automatically as 'international news' into different regional or national newsletters. Similarly, the larger national organizations would transmit selected sections of their newsletters for automatic incorporation in state and local newsletters. No recomposition or communication by post would be required, nor would large stocks of periodicals have to be distributed over long distances. A further stage already in operation will be the direct distribution of all items of news or information specified by the reader as being of interest to him. These will be printed out on a device in his home or office. This technique lends itself to financial support from advertising revenue as well as being essential to govern-





## VISUAL DISPLAY UNIT PERMITS «CONVERSATION» WITH COMPUTER

People who know nothing about a computer can use one simply by pointing an electronic probe at a new image display unit introduced by International Business Machines Corporation.

The low-cost IBM 2760 optical image unit provides a two-way conversational link with System/360. It can be used by nurses who update patient records, design engineers who estimate manufacturing costs, insurance agents who plan client coverage, and in many other applications. The display may be located wherever it is needed — at a hospital nursing station, in a laboratory, factory, warehouse or branch office. Linked by telephone lines to a remotely-located computer, the display permits users to get information into and out of the data processing system in terms completely familiar to them. They don't even have to know how to operate a keyboard.

Presented with a question and a list of possible answers, the user simply points an electronic probe — called a « light pen » — at the appropriate response displayed on the screen. The response is automatically transmitted to the computer which moves the film to the next part of the job.

**Variety of Applications :** a) In use at a hospital nursing station, for example, a nurse might insert a film cartridge on patient care into a slot on the front of the unit. Triggered by the computer, the first few images would ask

her to identify the patient. Then, with the tip of her light pen, she would tell the computer exactly what information she wanted to record. As subsequent images flashed in front of her, she might note that medication was dispensed. More images would appear, asking her the medication's type, dosage and frequency. When finished, she could ask the computer to print out a full, updated patient report.

b) In use at an NGO development service centre, in a UN Specialized Agency, or at a regional or national HQ, a programme or project officer might insert a film cartridge on project status into the front of the unit. Triggered by the computer, the first few images would request him to identify the project. Then with the tip of the light pen, he would tell the computer exactly what information he wished to record. As subsequent images flashed up, he might note new resources allocated to the project. More images would appear, asking for information on the resource type (funds, personnel, materials, etc.), amount, and frequency. When he had finished, he could ask the computer to print out a full, updated project report.

If the computer had links with other display units, it could simultaneously print out the updated report in other offices, in the same building in the same city, country, or even other countries. If the computer also served other organizations, then in this way all bodies interested in the progress of a particular project could be kept informed.

ment and business. It may therefore be introduced very quickly as a computer controlled extension of the telex network.

### **13. Fund Location and Allocation**

Once organizations register their fields of interest in national and regional data banks linked by computer, it will be possible for bodies requiring funds to identify the fund allocating bodies with the same area of interest. Similarly, fund allocating bodies will be able to select the most appropriate channels through which to distribute funds to stimulate the solution to particular problems and/or assist organizations in need. Floods of unnecessary requests will be avoided, to the benefit of both parties, by matching interests precisely. Such a system will ensure rapid and effective use of available funds, but will at the same time highlight those bodies which are underfunded in terms of the responsibility placed upon them by society to attack certain problem areas. A clear and unambiguous picture of this type will be a strong stimulus to fund raising bodies.

### **14. Programme Budgeting**

The increase in the tempo of organizational activity and the calculating power of the computer will lead to modifications of budgeting procedure. Instead of approving a rigid and detailed budget for one or more years in advance, the allocation of funds will be organized to permit flexible response to programme opportunities and crises...

### **15. Organizations directly involved in the Development Process or concerned with the Detection of new Problem Areas**

A major advance in the detection and prediction of developing problem areas will take place. The resulting information will be displayed in a manner which will highlight important problems and the organizational, financial and material resources with which they can be attacked. A computer system now operating for commercial purposes, uses techniques which will eventually permit groups, organizations, foundations or individuals to register via a computer, perhaps anonymously, their proposals or interest in participating in programmes in a particular field. Any body willing to formulate, initiate, coordinate or finance programmes, could at any time test the number, and perhaps the type, of bodies with a particular interest. Initial proposals and

invitations could then be circulated automatically via a computer addressing system without the need to reveal the identity of recipients. The initiator would then receive replies from those interested in his proposals, permitting him to prepare a preliminary meeting to launch the project.

Any programme coordinator for general and particularly United Nations programmes could automatically monitor the current and proposed projects in any specialized areas and thus ensure that the specialized project coordinators received all appropriate information on the general or related specialized programmes with which they could align their activities or from which they could obtain support.

Visual display units would enable all concerned to obtain a general or detailed picture of the pattern of change and interaction between programmes and would automatically signal areas of imbalance (including unchecked control).

### **16. Organizations forming ad hoc Pressure Groups or responding to Crises**

Such organizations, once the issue or crisis has been detected, will be able within hours to set up a communication network linking all bodies with a similar stance or concern for the problem. In a second stage, they will be able to send out information from regional and local centres to mobilize expert or public opinion. Distribution of such information will be automated to the point where as individuals or bodies hear of the crisis and register their concern in a data bank, the pressure groups bulletin will be mailed automatically and the address incorporated in a temporary mailing list. It is already technically quite feasible for individuals or bodies which register their concern in this way at some terminal, to have the latest bulletin or instructions for direct action printed out immediately (in the same manner as does a telex machine.) At the same time, it will be possible for the pressure group to have displayed, in an unambiguous form, the organizational complex which opposes their point of view or prevents effective action from being taken. The organizers can therefore design their plan of campaign with detailed knowledge of the opposition's organizational complex and the decision-centers, points of influence and areas of support within it. Great pressure can be im-



(Photo : Bell Telephone Laboratories)

A New and Powerful Approach to World Problems. The combination of man — the creative director, and computer — the superlative performer, is the heart of the computer graphics concept. The result is a powerful team with wide-ranging problem solving possibilities.

mediately applied with precision, by direct and indirect means, on the individual or body holding up or responsible for the next decision in the evolution of the crisis.

This illustrates the manner in which pressure group action will be considerably speeded up on certain issues where at present months and years are spent in contacting individuals and groups to organize an effective campaign. Because the decision-centres are clearly highlighted, campaign time and resources can be marshalled with great effectiveness and directed to give an optimum result. Needless to say these techniques will be used for both 'good' and 'ill', but resources of each side on any issue should be much clearer. Display techniques should facilitate clear public understanding of the strengths of each side and therefore be a strong stimulus to support of one side or the other, particularly since registered support will be seen to have a registered effect. In addition, long-term subtle pressure group action should be greatly facilitated and it is perhaps here that only computer techniques will permit the detection of the effects and directions of such campaigns to permit counterbalancing actions, if necessary.

#### **17. The Individual faced with a highly complex changing Organizational environment**

The current difficulty for the individual of penetrating and understanding the significance to society and the relevance to himself of the maze of interlinking organizations and departments which constitute the world system, will be resolved. Techniques are currently available which would permit the organizational network to be displayed under computer control. A computer visual display terminal has considerable advantages as a technique for the communication of new concepts. As the world system increases in complexity, this may prove to be the best means of simplifying and making realistic education concerning it and the many roles and avenues of participation open to the individual, the citizen and his groups. The computer can orient its display of the organizational network in terms of those bodies familiar or of interest to each individual and allow him to 'explore' neighbouring organizations less familiar to him. He can then be led to an understanding of how his known organizations and problems are 'nested' within an organizational

and problem area environment. He can build up a meaningful 'feel' for those originally conceptually distant from his starting point. Displays of this type can permit the student to simulate the result on the organizational network of 'wiping out' a single organization or class of organizations which he has been led to believe are of limited value, or he can observe the effects of modifying the network to fit his preconceptions. Of greatest importance, he can work out and locate which organizations or groups offer an avenue of fulfillment for him, or alternatively precisely in what way he must initiate some new activity to achieve such a measure of satisfaction.

The high information content and summarizing power of such displays should make them particularly useful features of television news programmes as a means of illustrating the meaning of proposed changes to the organizational network.

#### **18. Safeguards and Privacy**

There are many means of introducing safeguards into computer systems to guarantee necessary privacy. Just as it is possible to have e-directory telephone numbers, within a computer system one can specify to whom one's number should be given and for what purposes. In addition, if this privacy is not provided, there are many means of using the information stored to ensure benefits to the individuals and society which would not otherwise be available — and thus in some cases circumvent the purpose for which the systems were originally created. To justify safeguards and privacy, we need a much clearer understanding of the circumstances under which it is 'beneficial' and those under which it leads to 'abuse'.

#### **19. Timing**

Since computer systems are associated with technological development, it must be assumed that the possibilities mentioned above will become economical at different times in different countries. Even the most 'speculative' possibilities are, however, currently operating in other spheres or are technically feasible if required. The impact on society will arise from the increasing availability of such tools and the consequent reduction in costs. For organizations with similar problems (in computer terms), a means of accelerating progress towards the use of these techniques is to commission common

computer programmes and/or share the use of the same computer terminal.

### Conclusion

A major effect of these dramatic changes is to enhance the flexibility, variety and public impact of associations and these are currently their major assets. The various changes will not only favour the large organizations with extensive resources. There are many ways in which organizations with more limited resources can use these techniques to great effect, if they wish to — even to the extent of revolutionizing the relationship between associations and the governmental and business communities. Business enterprises and government bodies are now setting up large centralized computer and communication centres and many remote terminals (e.g. the World Trade Centres, U.N. and national government computing centres) which increase their ability to coordinate and control their programmes. That they need these tools to control change is illustrated by the following quote from the introduction to a 1968 management conference session of the College of Management Control System (The Institute of Management Sciences) : « Evidence is mounting that the environment which managers seek to control — or, at least, to guide or restrain — is increasing in turbulence and complexity at a rate that far exceeds the capacity of management researchers to provide new and improved methodologies to effect management's intentions. Faced with the consequences of forced technological change, and the concomitant changes in the social, political, psychological, and theological spheres, there is real danger that the process by which new concepts of management control are invented and developed may itself be out of control relative to the demands that are likely to be imposed upon it. » The important opportunities for associations, NGOs and other bodies will arise as soon as they start to make full use of the existing communication and computer networks to enhance their ability to respond rapidly to new problems by forming dynamic working link-networks between all bodies and individuals temporarily concerned with each problem. Only by using such techniques, will they be able to fulfill their function of counter-balancing the excesses or omissions of, or collaborating effectively with well funded programmes in the future.

Associations and NGOs cannot be passive observers of these new techniques and their use by the government and business communities. Many of the changes will drastically affect the relationship of the individual to society and involve new types of restriction on persons whilst facilitating many new types of freedom.

It is only through full use of these techniques by associations that their advantages and disadvantages may be understood, and human rights adequately protected in the fast changing world of the future.

Perhaps the three main points to be examined in this connection are the right of the individual to know

- what organizations are controlling and modifying his environment, how they are controlled and how he should register the objectionable effects of their activity;
- the environments affected directly and indirectly by his own job and interest group activity;
- the whereabouts and nature of information stored about himself and his interest groups. With the emphasis that such knowledge should be made accessible and meaningful using all the necessary audio-visual techniques. Within a few months, NGOs will be able to benefit from the conclusions of the capacity study of the U.N. and governmental bodies concerned with the development process. This has been conducted with the aid of a team of independent management consultants. NGOs could consider the value and means of collectively arranging for a broader independent study. This could cover :
  - the role they will have to play to complement and supplement effectively the U.N. activities;
  - the information systems they will need to do so and the extent to which the planned U.N. systems will suffice;
  - how best to design and link their own information systems, possibly with the U.N. systems, to facilitate programme implementation and the attack on complex interacting problem areas (e.g. the consequences of development for the natural environment, urban conditions, mental health and youth) upon which governmental organizations often cannot flexibly and rapidly focus.