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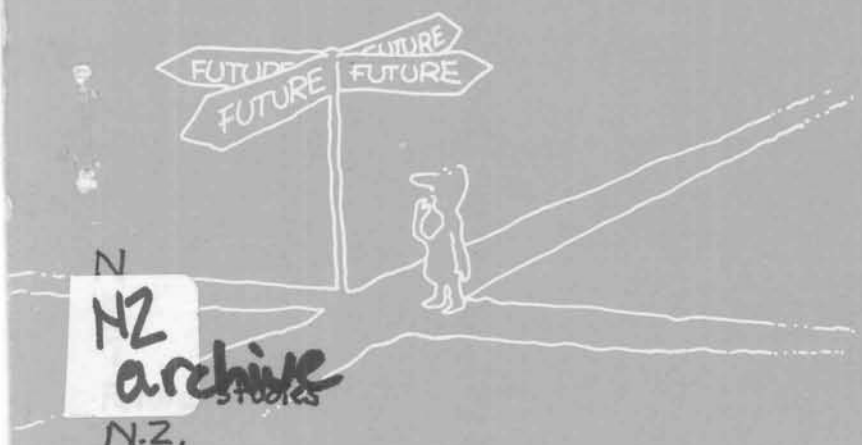


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# TOWARDS A COMMUNICATIONS AND INFORMATION POLICY IN NEW ZEALAND

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COMMUNICATIONS IN THE FUTURE

1. Towards a Communications and Information Policy for New Zealand. A discussion paper by Myra Harpham.

2. Information Occupations: The New Dominant in the New Zealand Work Force. An analysis by Michael Conway.

3. Communication Needs and Rights; Communications in four New Zealand Contexts. A working paper by P.W. Harpham, Marie Keir, Gerald E. Moriarty and George Van Valkenburg.

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# COMMUNICATIONS AND INFORMATION POLICY

## Purpose

The intention of this paper is to define the essential elements of a communications and information policy for the 1980s. It is suggested that there will be a close link between New Zealand's overall social and economic development and its approach to using the new computer and communications technology.

In the words of Kurt Waldheim, Secretary-General of the United Nations, "... failure to assert the primacy of policy over the technology is an alarming and increasingly dangerous phenomenon in the modern world. This danger is present in the area of communications. Unless it is removed, further communications developments may well produce consequences which are neither foreseen nor desired ..."

## Communication is Important

Communicating with each other means relating to each other; exchanging and sharing ideas and information with each other. When it is defined in this way few would question the need for people to communicate or the benefits of communication. It is obviously of crucial importance for the individual's development and for a satisfying community life. It is an economic requirement and a political necessity.

The time and distance barriers to communicating have been steadily reduced by the mechanisation and industrialisation of the means of communicating. Most New Zealanders have access to public or private transport, postal services, telephone, radio, TV. Copying machines are available in many libraries. All social institutions have been affected at the individual, the national and the international level.

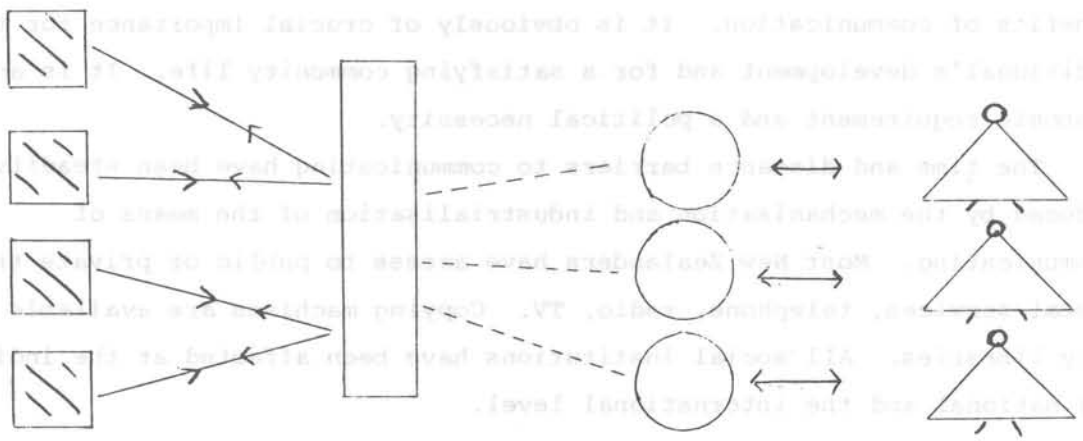
With the application of each new technological advance hopes for a social transformation have been expressed. The individual's right to inform and be informed could become a reality. The political process would become more democratic. Ready access to radio and TV would break down cultural and class barriers. Both government and business could be conducted more efficiently. In fact, although we now communicate with each other more than ever before, there is at the same time increasing segmentation of New Zealand society and increasing isolation of individuals. Improving the means of communicating may be necessary to bring about desirable social change, but it is obviously not sufficient.

## The New Computer and Telecommunications Technology

Generally speaking most developments in communications technology have increased the ability of people to relate to each other without face to face contact. Recent developments in computing have made it possible to significantly increase our ability to select from a greater variety of information and efficiently process it into desired packages for instantaneous transmission to anyone anywhere. Hundreds of specialised services could be made available in fields such as news, information, buying, selling, banking, insurance, health, education, travel, welfare, entertainment, socialising. Computer hardware and software combined with new modes of transporting information have lowered the barriers to shared human experience even further. Our capacity for exchanging, sharing and finding common ground with others has theoretically been increased many times. We may, therefore, be facing a change in societal organisation and individual lifestyles as great as that brought about by the private motor car.

Figure 1 contains the essential elements of a modern computer and telecommunications network.

Figure 1: A computer and telecommunications network



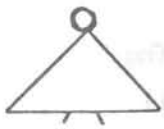
Information providers; people who provide data, entertainment, news, advertisements, messages, specialist advice and services for others.

Computer system(s); they store, package and transmit information as required.



Information carriers; telephone lines, electromagnetic waves (radio, TV, light), cables, which transport information between transmitters and terminals.

Information terminals; devices like TV sets, telephones, computer terminals which store, process, display or otherwise communicate information transported to them. They may also transmit messages and requests for information.



Information consumers; the people who want to send and receive messages and requests for information.

The rest of this paper will explore how such communications networks can effect major economic, social and institutional change. Fortunately, it is possible to have some degree of control over the final impact on society because the new technology can be introduced and used in a number of ways. However, the very existence of options for its use means that new areas of conflict will arise. These may need monitoring and eventual resolution by government intervention. Ownership and control of the various parts of a communication system is one of the potential areas of conflict. The types of services provided and the ease of access to them are others.

A natural brake on the development of an information based society is the current cost of installing very high capacity information carriers such as optical fibre cables or satellites. Such carriers, transporting information in digital (pulse) form can make possible almost unlimited two way transmission capacity for voice, picture, data and facsimile reproduction. The implications of this are considerable. It would be technically possible for the major information flows of society to be concentrated in the hands of a few people. With radio, TV, telephone, and mail using the same carrier network there could well be an intensification of conflict over ownership and control of the various parts of the communication system. The timing of the introduction of these technologies will depend on a reduction of their installation costs coupled with the development of a mass market for information goods and services. This would keep the cost per transaction low in spite of the investment involved and would encourage even more users.

In the interim and depending on finance available the existing telephone network could be exploited further to provide many new services as soon as cheap terminals for facsimile transmission and visual display become available. High quality TV-type transmission would not be possible via the present telephone network.

## The New Technology and the Economy - New Opportunities, New Conflicts

1. Efficiency in the service sector could be increased by substituting new means of communicating for old. For example, instead of sending letters by post they could be sent to and from terminals located in homes and businesses. This is already being done to some extent in New Zealand.
2. The computer and telecommunications networks could provide the infrastructure for a whole set of new industries producing information goods and services. Education services as and when required could be a reality, as could marketing information for exporters or even consumer's institute information about a product of interest.

Established services such as banking, insurance, telephone, broadcasting could ultimately share the same infrastructure as these new industries. All would depend on computer services to process their information, on information carriers to transport it and on the availability of information terminals to receive it. The same terminal in a home or an office could be used to request and receive many services. It is this convergence of the infrastructures of what have previously been separate institutions that is likely to be the source of new conflicts and new questions about the direction of New Zealand society. For example, while the capacity of our telecommunication system remains limited it will be legitimate to ask which services have priority in its use. Also, what priority do we give to equality of access to services and to equality of opportunity to be information providers?

3. Some manufacturing of the hardware requirements of an information infrastructure could be carried out in New Zealand. Telephones are already made here and terminals of various types could also be assembled. Perhaps our resources of silica could be the base for optical fibre manufacture (one of the new cable technologies). The issue of how much overseas hardware and expertise is needed or desirable is another area of conflict to be resolved.

4. Information industries using a computer and telecommunications network require sophisticated computer software. This industry could also receive a boost in the demand for its services, although again there could be conflict in determining how much overseas help is necessary or desirable.

5. Since network communications can operate as effectively at the international level as at the national or community level our capacity to market overseas could also be enhanced. Up to date knowledge of customer requirements and transport availability could increase our competitiveness. A danger inherent in improving our communications with the outside world at the expense of internal improvements is that a form of communications imperialism could develop.

The expansion of the OASIS system giving access to US data banks without parallel development of New Zealand data banks could adversely affect our own libraries and information services, holding up our cultural development and increasing our technical dependence. An analogy can be drawn with third world countries that established sophisticated transportation links with the outside world with no comparable internal transportation system. In such countries the benefits of development have not spread widely and increased dependence rather than increased self reliance has been the result.

This is an area which needs monitoring and careful resolution of any conflict in the use of resources for improving international or national communications.

6. Reduction in the use of transport fuels could arise if teleconferencing (either audio or visual) became common. Some use is already made of telephone conferencing in New Zealand and the potential for group exchange of views is much increased if interlinked terminals are used. This is a whole new area of human communication which will require new skills and new group dynamics to make it effective. A number of experiments have been carried out overseas and a little experience is also available in New Zealand in companies and government departments with their own computerised information systems which can be accessed by remote terminals.

A further transportation and telecommunications trade-off exists in the potential of the new technology to allow some individuals to work at home or in local work centres, often at times convenient to themselves. New types of employer-employee contracts may be necessary in this case bringing new problems in industrial relations.

This section has outlined the more obvious economic effects that could flow from applications of the new computer and telecommunications technologies. It is important to note that these applications are more than just substitution of new technology for old in specific industries. They will reach into all sectors of the economy, blurring the distinctions between some industries and rippling through all. It also seems clear that an improvement in communications of this magnitude will provide opportunities for new industries with mass market potential and change the nature of much employment. Such a shift of economic activity into the service and information sectors is called a shift to an information society.

We can only speculate about the nature of economic relationships in a fully developed information society. For example, there is not an obvious physical limit to information resources in the same way as there are physical limits to say mineral or energy resources. The potential for growth appears unlimited. The same information package can be sold again and again by the same vendor. A person passing on information to someone else is not deprived of its use in the same way as he or she would be if they passed on a second hand car. These are only a few of the differences between information goods and material goods, but they serve to indicate that the conventional economic theory of the market place may not be capable of describing and monitoring an information based society.

There is nevertheless a useful comparison that can be made with the beginning of the first industrial revolution. That revolution in the processing of raw materials required the parallel development of an efficient high capacity transport system of roads and railways. This new revolution in the processing of information requires the parallel development of an efficient high capacity telecommunications system.

The New Technology and People

1. Jobs are likely to be lost in industries such as banking and postal services where new technology is substituted for old. However, to the extent that New Zealand adopts new applications of the technology, new jobs will be created. Figure 1 gives some indication of the possibilities. They range from jobs arising from expanding the capacity of our present telephone network and the laying of new cables to jobs in new businesses providing a wide range of information services and appliances.

2. It is possible that the new communications technology will aid regional development and stop or reverse the drift to the cities. Industries will no longer need to be in a main centre in order to have access to the information and marketing services they require. Availability of a range of network services, medical advice for example, will reduce the isolation and lack of facilities that have traditionally contributed to depopulation of the rural areas.

3. The possibility of working from home or in a local work centre could become a reality in occupations such as computer programming, word processing or providing advice or information to others. A few people are already doing this in New Zealand and it is bound to have attractions for many others depending on their circumstances at any time.

4. There would appear to be scope for computer assisted instruction via the communications networks. Co-operation between technologists and educationists will be necessary to determine the part that such educational packages can play in a field where human interaction is important.

5. The new technology makes it possible for individuals anywhere to express their views to each other on matters of importance to them. Interest groups and issue groups could form and organise easily. The combination of computer conferencing facilities and readily accessible information could accelerate values and attitude changes. A national consensus could be reached and a referendum taken with relative ease if the home or even the community terminal became commonplace.

6. The availability of specialised services and entertainments via a terminal in one's own home has advantages and disadvantages. Although more choice in scheduling one's life is possible, direct human interaction could be reduced below the critical level for social and psychological well being.

7. Computerised conferencing via a communications network could make it easier to keep in touch with family and friends at a distance. This possibility of enlarging the effective network of support available to individuals could have positive effects on social cohesion. On the other hand the ease of 'keeping in touch' would strengthen diverse interest and

cultural groups and support diversity in society.

8. The new forms of two way telecommunications could facilitate informal barter and exchange of goods and services on a one to one basis. This has implications for the economy and for taxation. Groups of people regularly involved in such exchanges can be seen as supporting free enterprise or as taking part in small scale socialism!

9. The increased capacity to collect and process information about individuals means that there is an increased potential for monitoring the activities of individuals or even attempting to direct them. We can expect to see an intensification of the conflict about the best balance between freedom of information and privacy.

If the new technology has only one or two of the effects listed in this section it would, over a period of time, produce considerable change in people's lives. Major changes in either the amount of employment or the type of employment or both will occur. The question of the best use of our resources of capital and labour will need clarification and differences of opinion are bound to arise.

The amount of communicating at a distance we do will increase and change in nature provided reasonably cheap universal services like the telephone give equality of access to the communication networks. Failing this we must face the consequences of a further division of society into the information rich and the information poor.

If people are to benefit from these changes then education is important. For employment there needs to be training and retraining for new jobs. An understanding of communications and information systems as well as some practical rules for their use in meeting needs will be essential if people are to be masters of the new technology and not its servants. In addition, people need to be involved in discussions about the services that will be made available in their homes. Economic interests and people's interests may be in conflict here.

We can speculate that, in the longer term, growth of an information based society could mean that human interactions gradually become a commodity to be bought, a consumer item. Industrialisation of communications could insulate person from person in the same way that the industrialisation of agriculture and manufacturing insulated people from the natural environment and the need to produce their own food and shelter. Along with this speculation goes another which suggests that the information society will be a leisured society in which people will have far more opportunity for relating directly to others and to their environment.

## The New Technology and Information

Control of information and how, when and to whom it is disseminated is a critical factor in determining the distribution of power in society. Figure 1 shows that if the new technology is widely adopted then control of major information flows in society could be exercised at five points. Thus, the information providers could control selection of information. Those providing computer services would have access to all information being processed by them. The information carriers could control what information was transported and when and to whom it was delivered while the terminal providers could influence the form of information received and the extent to which two way systems of communication develop. The consumers of such network services also have the ability to influence information flows through the market place and through the political channels available to them in a democracy. It is this last factor - the wishes of people - that has resulted in our present government-owned and controlled post and telephone services. These are geared to meeting universal needs on the basis of equal distribution of costs for basic services. It has also resulted in the parallel development of privately run courier services to meet the particular needs of smaller groups within society on the user pays principle.

In order to establish the desired balance between private and public ownership of the information and communications networks of the future, New Zealanders need to clarify their attitudes to freedom and control of information, the emphasis they place on participatory as opposed to representative democracy and the importance they attach to cheap universal services as opposed to services provided on a free market basis. A further important matter to consider is the potential of this technology to improve and increase two way human communication and to provide new opportunities for creativity and innovation. If we are not to become simply passive consumers of new mass market information products and services then it will be essential to ensure free access to the computer systems and the carrier networks of all who wish to be information providers. The dangers of monopoly and of licensing systems are as great in the information market place as any other.

Apart from questions relating to the control of information flows in society there are other questions relating to information such as legal responsibility for reliability and acceptability of content. Current policy regarding copyright, censorship, privacy, security, right of access to information, defamation may need to be adapted or changed to cope with the new possibilities available for the selection, storage, processing and transporting of large quantities of information or particular pieces of information between people and between nations.

A Communications and Information Policy Agenda

It seems that many choices are possible in the way New Zealand applies the new computer and telecommunications technology. Some choices will affect the way the political system develops, some are economic alternatives and all will have effects on people and their relationships to each other and society's institutions. Some people would also argue that we can even choose to adopt the new technology or not.

The conflicts of interest that are likely to occur will make it essential for New Zealand to develop a communications and information policy which is capable of giving guidance for the resolution of immediate conflicts and is flexible enough to provide a stable environment for the orderly choice and introduction of future applications of the technology. We need to establish a sound foundation on which choices can be made if we wish to have any chance of shaping New Zealand society and ensuring that it functions to meet people's needs. To do this policy makers need to be sensitive to the goals of New Zealanders - those that are common to all as well as those which reflect the diversity in society and those which may foreshadow future developments. They also need to be clear about the overall direction being charted for the country by the government of the day. Unless these factors are taken into account any policies developed are unlikely to receive much support and will be subject to early amendment.

An additional important element of the policy makers' tool kit is awareness of the range of views there are about the long term future of information based societies. Three main views can be identified. There is the view expressed by George Orwell in his novel "1984" in which an all encompassing communication system was used for the control and manipulation of people. An authoritarian government could more readily hold power given the centralised control of large quantities of personal and other information made possible by the new technologies.

Another view is that the new technologies of communication will strengthen democracy, increase choice and provide opportunities for self realisation. Those who hold this view emphasise the potential of the technologies to promote variety in work, leisure and socialising patterns, to give people greater access to all forms of knowledge and allow them to participate more freely in the decision making process. All this, of course, depends on using decentralised or matrix forms of communications networks which are controlled by many different people and groups. The third view of the future is less optimistic than the second. It anticipates a new set of social problems arising from a mindless use of the communications media which causes people to opt out of participation in real life experiences which require physical proximity to others. This could come about whether a centralised or decentralised communications system permeated society. It is continuous and indiscriminate use of the communications networks that will bring about this particular form of emotional disturbance. To prevent it, individuals would need to be forewarned and given the skills necessary to understand the opportunities and dangers inherent in human interaction via computer and telecommunications networks. This suggests that the education system has a vital role to play in preparing people for this new wave of technology.

Awareness of these views about the possible long term results of introducing the new technologies should help policy makers to make policy choices today which are not inimicable to the interests of future society. Thus today's decisions need to strike a balance between opposing views such as monopoly versus widespread competition, centralisation versus decentralisation, widening access to information versus the desire for privacy and the strengths of diversity versus the simplicity of homogeneity.

Finally, policy makers need to be conscious that the procedures available to them can be used to develop policies which can range from reacting to crises to promoting fundamental change in society.

The choices and the potential conflicts discussed in this paper make up part of a communications and information policy agenda. Policy making procedures and their possible outcomes such as laws and institutional changes form another part. The agenda is complete when people's goals, the present direction of New Zealand society and the range of possibilities for its long term development are included.

The table below organises and summarises the contents of this policy agenda. With its help a strategy for the use of the new technology can be developed and the need for any regulatory mechanisms established.

AGENDA FOR COMMUNICATIONS AND INFORMATION POLICY MAKERS

| | |
|---|---|
| Conflicts of Interest | Overall resource allocation<br>Ownership, control and structure of communications system<br>Access to communications system<br>Information property rights and responsibilities<br>Choice of technologies<br>Choice of billing procedures<br>Extent of institutional change<br>Employment<br>Education priorities<br>Choice of services<br>Extent of consultation with interested parties |
| Range of Policy Making Procedures | Reactive - intended to produce an immediate response to events; aiming to preserve the status quo; based on the assumption that the future will be like the past.<br><br>Supportive - intended to support and advance the current development strategy; aiming to control the future on the basis of the goals and perceptions of the majority of today's New Zealanders; based on the assumption that the future will be like the past.<br><br>Anticipatory - intended to affect the future and produce a change in the current development path; giving importance to the goals and perceptions of established minority groups and pressure groups.<br><br>- taking account of the results of long term futures research.<br><br>- concerned with effects on the whole structure of society. |
| Policy Outcomes | Laws; regulations, guidelines, institutional change, public education, research programmes. |

## Conflicts of Interest

The table states the conflicts of interest in a general way. Each type of conflict mentioned could itself be the subject for further research. However, examples of most types can be found in the first part of this paper. Thus under "overall resource allocation" are the conflicts of interest between investment in computer and telecommunications technology and investment in other sectors of the economy. There is also a conflict to be resolved in deciding how to allocate investment between international communications links and internal communications. Under "information property rights and responsibilities" come such problems as freedom of information and privacy, copyright and standards of information. Under "employment" are the controversial subjects of job loss through the substitution of new technology for old and of the extent to which New Zealand should manufacture its communications hardware and software here, creating new jobs to replace the old.

## Policy Making Procedures - some examples

### A Supportive Policy Option

This policy option is chosen to support the present development strategy of achieving export led economic growth by adding value to our natural resources. Agriculture, forestry, selected manufacturing, tourism and large scale energy industries are given a high priority when allocating capital and labour resources. It is assumed that markets will continue to be available for our products and the raw materials we need will continue to be available for import. In short our future economy will have many similarities to our present economy. Some problems with this view are recognised however, and it is believed that to improve international competitiveness we need to increase productivity by the rapid substitution of new technologies for old. Computer and telecommunications technologies are seen as important for achieving this goal.

Many New Zealanders see this strategy as the only realistic approach to the practical problems of keeping things going in a manageable way. It appeals to pragmatic people, trouble-shooters, moderate reformers and people who are content with their present life or their future prospects in this type of economy. It also appeals to people who are critical of the present state of affairs but believe it cannot be changed.

If policy makers used the above foundation from which to develop a communications and information policy then it would be likely to contain the following elements.

1. There would be no overseas investment in improving the internal information carrier networks. Improvements would proceed slowly within the resources of the post office or the broadcasting corporation.

2. To assist exporters some resources would immediately be allocated to advertising and improving access to the OASIS service. The post office would also provide the devices needed to allow New Zealanders to use overseas information and communication services directly.

3. The government would continue to own the information carriers. To encourage efficient use of available capacity it would place no restrictions on the use of the carriers. It would, however, retain its lower rental charges for night time transmissions. Information services and the computer systems would be in the hands of the private sector to develop on a free market basis.

4. The existing technologies used in the present telephone network and broadcasting system would be extended and exploited as far as possible before the introduction of high capacity carriers such as optical fibre cables.

5. Charging for use of the information carriers would be on the basis of a rental depending on the device attached to the lines - a telephone, a computer, a terminal. Other services would be charged separately by the information providers and those running the computer systems.

6. New communications technologies like electronic mail and electronic telephone exchanges are less labour intensive and more efficient than the old technologies. The only barrier to their introduction would be the present import duty on computers, terminals and the other hardware necessary before substitution of the new technologies for the old can take place.

7. Some educational resources would be allocated to raising the awareness of children about the uses of computers and communications networks. Opportunities for vocational training in these fields would also be increased.

8. If the capacity of our information carriers could not meet all the demands placed on them at any time, business users would be given priority.

9. The Communications Advisory Council would be retained in its present form but allocated more resources so that it could increase its staff and enter the field of technology assessment.

In this approach to the further development of computer and telecommunications technology in New Zealand there is no attempt to facilitate the achievement of any social goals. There is no recognition that this technology may be one of the major change agents of society in the next twenty or thirty years. There are no guidelines provided for the resolution of any future conflicts of interest.

An Anticipatory Policy Option

This policy option takes account of futures research which suggests that more new job opportunities in the future will occur in the new information and information related industries than in other sectors of the world economy. Because of the marked economic advantages of automation in the primary, manufacturing and service sectors, employment in those areas is likely to be a decreasing proportion of the total employment available. The implication of this for New Zealand is that if we wish to pursue the objective of full employment here we need to give higher priority to the development of the information sector.

The new technology also appears to provide us with opportunities to achieve social goals which seem unattainable at present but which nevertheless are held by various groups in society. For example, groups as diverse as the womens' movement, environmentalists, Maori activists and educational reformers have common goals such as the desire for increased participation in planning and decision making, reduction in the scale of government and business, encouragement of diversity, more emphasis on the social and psychological growth of individuals and less on the consumption of material goods, more emphasis on co-operation and less on competition. Sociologists regard this pressure for change as being an adaptive response to an increasingly turbulent and complex environment in which hierarchical centralised forms of organisation have become increasingly inflexible and unresponsive to the needs of individuals. They suggest that acceptable applications of technology would be those which helped decentralised, flexible organisations to succeed, which supported an increase in local and regional autonomy, which improved the diffusion of information, thereby increasing the individual's ability to be in control of his or her life;and which provided more opportunities for communication between individuals as opposed to one way transmissions which form the bulk of present radio and TV broadcasts. These applications would increase the ability of individuals to cope with and be in control of change.

There is also a body of opinion in society which supports authoritarian centralised solutions to many of today's problems and which believes that complexity and change would be made more manageable for them if society were more homogeneous. The same groups and individuals also tend to support a greater degree of control on the free flow of information and a more regulated life than the groups mentioned earlier. In the western world this is considered to be a maladaptive response to today's problems as it reduces the value of the individual and also his or her scope for development. The new technologies are equally capable of being applied to achieve this end but if this happened it could set us on the path to the society of Orwell's "1984".

If policy makers kept these possibilities and opportunities in mind while devising an information and communications policy for New Zealand then it would be likely to contain the following elements.

1. Resources would be allocated for research and consultative planning:
   - to assess the possible social and economic impacts of the technology in New Zealand;
   - to establish national communication goals in line with national social and economic goals;
   - to advise on communications and information policy;
   - to actively monitor and publicise the results of present policy;
   - to explore the adequacy of New Zealand's present laws governing information flows in society, information property rights and access to information;
   - to inform, and get into dialogue with the public about all these matters.

   This would require expansion of the Communications Advisory Council and its staff or the setting up of a multidisciplinary task force of people from both the private and public sectors.

2. In order to keep options open while this research and consultation programme was underway conflicts of interest would be resolved on the basis of a set of principles which would include the following:
   - no decision or actions should permanently widen existing social inequalities,particularly inequalities of access to information and inequalities in communicating information;
   - there should be positive support for the establishment and use of New Zealand based data banks;
   - no decisions or actions should favour the development of private sector monopolies in any part of the computer and telecommunications networks;

- no decisions or actions should favour completely centralised data banks in either the public or the private sectors;
- applications of the technology which would help to create a decentralised society should be given priority;
- there should be an attempt to balance jobs lost in New Zealand through substitution of the new technology for old and jobs created in New Zealand by new applications of the same or other technologies;

The purpose of these principles would be to provide guidelines to encourage adaptive responses to conflict and change as outlined at the beginning of this section.

This approach is the first step towards a fully anticipatory policy which would be formulated after the period of research and consultation. The final policy would spell out more clearly the social and economic objectives to be sought in the future with the aid of computer and telecommunications technologies. It would also outline how the technologies could be used to achieve these goals.

The immediate issues such as conflicts over job losses, the adequacy of the present telephone networks or the use of the new technology to achieve today's objectives are not necessarily addressed by this type of policy.

A Communications and Information Policy for New Zealand

This paper has analysed the expected effects of computer and telecommuncations technology in terms of conflicts of interest that could arise or be intensified. It has also indicated the potential of the technology to transform society; to do much more than just improve the efficiency of what we can do already. Predictions and speculations about this transformation are both optimistic and pessimistic.

If we believe that we can control many aspects of the future on the basis of informed choice today then the future must be policy driven, particularly where this type of technology is concerned. Any policy formulated needs to address both today's issues on behalf of the goals of today's people and also to envisage desirable future goals and a future society which might be attained through selective new uses of the new technology. In the words of Daniel Bell, "The problem of the future consists of defining one's priorities and making the necessary commitments".

The policy options discussed earlier revealed the limitations of a one sided approach. It would be far more realistic and practical to build a communications and information policy for New Zealand which had aspects of all three types of policy - reactive, supportive and anticipatory.

It is hoped that this paper will help to provoke discussion and debate on this topic which will eventually lead to a widely accepted yet futures oriented communications and information policy for New Zealand.

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