2058

COMMUNICATIONS FOR TOMORROW'S PEOPLE

by
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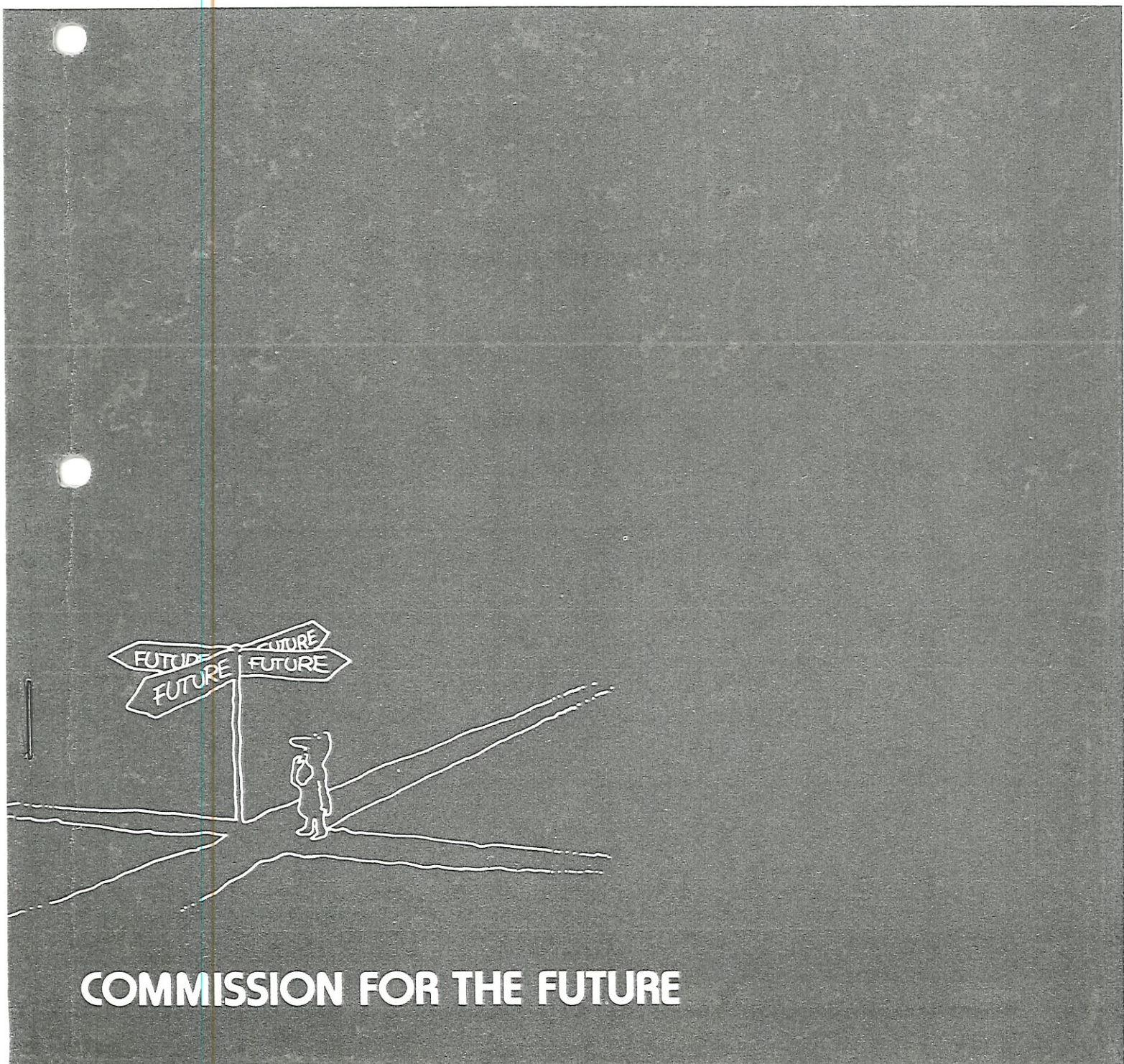
COMMISSION FOR THE FUTURE

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INTRODUCTION

We cannot predict the future with confidence, but we do know that New Zealand, along with other industrialised nations, is becoming a society where the production, processing and distribution of information are increasingly important in our everyday lives.

A number of terms have already been coined to describe societies where information plays a dominant part. The "information society" for example, has been defined as a set of social relationships based on an information economy. In turn an "information economy" exists wherever over 50% of the GNP is generated within the broad information sector.

In the past we have recognised three sectors in the work-force: agriculture, manufacturing and service. However information production, processing and distribution are now commonly grouped together in a fourth sector, the information sector[1]. Indications are that the information sector is satisfying the criterion for an information economy in many OECD nations including New Zealand. Much of the activity of the information sector is in servicing the growing information needs of the agricultural, manufacturing and service sectors.

The growing role information plays now and its certain dominance in the near future are due largely to the combination of computer and telecommunications technology.

Computers are able to store and sort vast quantities of information while telecommunications create a vehicle for the movement of information thus linking individuals within cities and countries. The "wired city" and the "network nation" are labels used to describe these developments. Together the technologies provide an electronic, global, "nervous system".

New Zealand appears to be following these overseas trends; we already have a good communications infrastructure. The actual number of information-related occupations is increasing in all sectors of the economy and our communications technologies are fast being updated. How long will it be before we are truly an information society?

The changes possible are determined by a complex set of inter-related factors. The available technologies are only one group of factors. Others are the values we hold, the dominant political ideologies, and the economic and political pressures exerted on New Zealand by other countries.

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[1] For a detailed explanation of the information sector see "Information Occupations: The New Dominant in the New Zealand Work Force". Michael Conway in Network New Zealand Working Papers. CFF. August 1981.

Some agreement about what future we prefer can help us work
out our development priorities. The preferred future can be
used as a context within which we make decisions. The major
problem will be in creating a society in which diverse
aspirations can be accommodated.

THE PREFERRED FUTURE

Work by the Commission for the Future suggests that many
New Zealanders would prefer a future society that: conserves
and sustains the use of natural resources, provides employ-
ment for all those who want to work, emphasises import sub-
stitution rather than expanding exports, encourages
industries which are mixed in scale and technology levels
is more co-operative, features social and economic equality,
has well-developed regional and community government and
fosters strong links with Pacific nations.

This future New Zealand is conserving, co-operative,
egalitarian, participatory and democratic. As far as we can
tell this is achievable if we follow certain policies and
select technologies that are appropriate to our needs.
However, this future is at variance with some of the trends
and policies within today's New Zealand. This suggests that
we have a pluralistic society and so must think about how we
use technology to satisfy diverse aspirations.

As much of the infrastructure already exists, we can assume
that the technologies for the provision of and communication
of information will play a large part in this process.

The preferred future just outlined is compatible with a
complex communication system and further growth of an
information industry. Technologies on their own can have
massive effects on people. The type of change and the
current speed of change in communications is not clearly
understood. What is even less clear are the effects on
society of these changes.

TYPES OF CHANGE

Change in the industrial nations is normal, yet unpredictable
and will continue to be rapid, with uneven effects.
Improving communications and the growing availability of
information are not the only sources of change. In addition,
nations will become even more interdependent as economic
ties and trade and defence agreements proliferate, and the
influence of large banking and business firms spreads across
national boundaries.

At the same time, each nation will itself become more
complex. Technological changes will cause adjustments in
every other aspect of society: the family, work, community,

political and legal structures, transport systems are just
some examples. This web of factors means that a change in
any one area will cause rapid reactions in all others and
New Zealand cannot help but be affected.

The changes will be selective. For example, within one
country unexpected failures in business or outbreaks of
social unrest could occur in one region and leave others
quite unaffected.

These types of changes have been described as spasmodic or
turbulent. We need strategies that will deal with them.
Effective communication and the transfer of information
between groups becomes critical in situations where little is
predictable or stable. Thus information technologies while
causing some of the changes, can at the same time be used to
plan and modify the effects of the changes.

POLICY MAKING

To ensure that New Zealand follows a chosen direction towards
a preferred future, we need guidelines. Policies provide
these guidelines for making appropriate decisions to help us
reach our goals. Policies also help us focus the development
of New Zealand society more clearly.

Policy-making is a deliberate process in which a set of
decisions is made by nations or organisations to determine
their future behaviour. The process occurs at a number of
levels. At the highest we find parliament passing laws in
attempts to guide the nation through the regulation of
behaviour. This may no longer be the best way to shape
New Zealand and to guide it in a desired direction.

For instance, current national policies on communication and
information exist explicitly or implicitly in many forms.
They include legislation which deals with communication
through radio, television and the postal and telegraph services,
with information in printed form or in the form of art,
artefact, film and sound. These are the Broadcasting Act 1976,
Copywright Act 1962, Indecent Publications Act 1963,
Libraries and Mechanics Institute Act 1957, National Library
Act 1965, New Zealand Film Commission Act 1978, Newspapers
and Printers Act 1957, Official Secrets Act 1957 and Post
Office Act 1970.

The Indecent Publications Act covers censorship of written
material, the Official Secrets Act deals with the restriction
of official information. A glance at the content of selected
Acts shows that many of them will be out-of-date in 30 years
time. Few appear to cover the issues which will be raised by
the combining of computers and telecommunications. New
policies and new ways of regulating behaviour are needed.
Alternatives to our present system of making legislation must
be considered. Most important, new policy or law should
anticipate rather than react to changes.

Good policy at any level relies on clear goals and objectives. In addition the process of making policy, because it eventually affects us all, should involve as many groups as possible and should not be restricted to political and business leaders who represent the values of an elite. Many policies which exist now appear to have been made on an ad hoc basis with no overall objectives clearly formulated. Some broad objectives which should be kept in mind are: participation in making decisions, particularly political decisions, conservation of resources, equitable access to information, and the freedom to communicate.

More specific attention should be paid to policies on information technology, communications and on information itself. In addition, strategies for wide participation in decision making should be worked out. Each of these areas of necessity, overlaps with the others and all address important issues. Details of some of these follow .

TECHNOLOGIES AS MEANS TO AN END

I make the assumption that communication and information technologies existing now, or being developed, will be able, in their various combinations, to provide all our information and communication needs in the next thirty years.

Their major advantages are not only in the expansion of communication and information opportunities but also in the conservation of energy. Components such as micro-chips and optical fibres are made from raw materials like silica which is in abundant supply. In addition, energy conservation and a reduction of environmental pollution are features of both the manufacture[2] and use of these technologies. Energy savings of any kind are likely to continue to have high priority.

Another advantage is the flexibility that information technology allows. Technology which is adaptable to rapid change may be preferable to technologies with limited functions and capabilities. The adaptability of their soft-ware gives information and communications technologies their characteristic flexibility.

Thus information technologies can be manipulated to our social ends and the technologies should not be seen as ends in themselves. For example, they have the potential to allow extreme political and social manipulation or, alternatively, an open and participatory society. The

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[2] In the manufacture of micro-electronic components a world-wide reservoir of potential labour has developed. This means that trans-national firms contract out, for example, the manufacture of chips to countries with the lowest wages. The problem is that this leads to the exploitation of workers, especially women, in developing countries. Any future work has to examine such practices and suggest ways of meeting the social needs of people in developing nations by sharing any benefits from the technologies more fairly.

political climate of the future will ultimately depend, not only on the technologies themselves but on the values of those in power.

At the practical level what can communication and information technologies do for us? As a first example they may replace travel. Travel is popular today as it provides opportunities for people even from totally different cultures to see and speak to each other. But it is also highly energy-intensive. With prices for fuel escalating, substitutes for travel especially business travel, will become more attractive. Communication through mechanisms such as video-phones and teleconferencing is possible now but not widely used. These technologies use significantly less energy than planes, trains, cars or buses and, at the same time, provide two-way communication which can be an acceptable substitute for personal meetings.

Many other communications and information functions are likely to be automated in the next 30 years. The electronic office where business information is transferred from one place to another by machines is likely to replace many of the conventional offices of today.

The exchange of money for goods and services is becoming redundant with the spread of electronic funds transfer - a process which is already well underway through the use of credit cards. We could anticipate a virtually cashless society in the near future.

The automated factory is already being developed overseas; software now exists whereby the automatic controls on machines have communications functions built in. Numerically controlled machine tools for example, can be programmed to carry out a wide range of metal-shaping actions. In addition robots can be used to pick and place objects on assembly lines. Work stations which use both robots and numerically controlled machine tools and which therefore need fewer human workers are already being used in countries such as Japan. As such machines become cheaper and labour costs higher, predictions are that manufacturing will eventually become highly automated.

The Nora-Minc report from France, a country which has spent some time planning for a telecommunications and information future, predicts a move towards the automation of large-scale export industries and the growth of high technology small-scale industries which will develop customer designed products. The third level of employment will be in the socially-oriented industries which provide services. For example, restaurants and other eating places may continue to proliferate as well as leisure occupations. Caring services could expand a great deal. The report suggests these will not only provide increased employment opportunities but could also occupy a majority of people.

Automation will extend even to the home. Assuming that many
households will have efficient communication centres in their
combined telephones, television sets, personal computers and
computer terminals, the potential exists to provide self-
services from the home such as funds transfer, travel bookings
and information retrieval of almost any kind without other
assistance. Many houses will themselves be automated. They
will have computers to monitor energy use, to provide security
by sounding alarms in the case of fire or break-in, and to
assist in general household management such as cleaning and
the ordering and preparation of food.

With such greater access to information, people will be able
to carry out for themselves from their homes functions which
are today the preserve of professionals. The diagnostic
side of medicine, education, and much legal work, for example,
could be dealt with from the home communication centre with-
out the direct aid of professionals.

The role of the future professional will increasingly
become that of developing programmes for lay use. It is
therefore likely that the professions will lose much of their
mystique as people are given the tools to generate and use
knowledge and skills on their own.

If we take education as an example the following indicates
what we might expect to happen. Education is an information-
intensive industry which has concentrated on the first 10 to
20 years of life. Its major function has been to teach
basic skills in knowledge, values and social behaviour and
prepare young people for an independent adult life.

In the next 30 years, young people will still need to acquire
these basic skills and specific work-related skills but
because of changes in knowledge and the need to change
occupations a number of times, education will be a recurring
requirement. Information technologies will be used to make
education more flexible and adaptable to individual needs.

Teachers at all levels will play a key role in assessing a
person's information and skill needs. They will put students
in touch with other people who are able to communicate
specific information through video, by teleconferencing or
by creating software designed to teach certain skills or
knowledge.

Future education which accepts the use of information
technology could feature classes or lectures where a teacher
augments learning with video and various computer programmes
which teach either groups or individuals.

Another option is one similar to the learning exchanges which
operate now from public libraries. This would entail one
teacher catering for a small number of sutdents on a personal,
cottage industry basis.

Information technologies will make it possible for students and teachers to have the choice of working in the conventional way by attending classes at fixed times in fixed locations, or of working at their own time and pace from any location of their choice. This will apply to people at work who need to acquire extra skills and knowledge.

In this type of society a teacher will become a catalyst for learning instead of someone who directly imparts knowledge.

Its quite clear from the examples given that automated home, the electronic office, the automated factory, while providing excellent services for people at the same time mean that fewer jobs, as we now define them, will be available for human beings. Although optimists believe that information technologies will open up many new types of employment, these are unlikely to compensate for all the jobs lost. Some people forsee the growth of the "black" or informal economy (where people are occupied in work such as household maintenance without a wage or salary attached to that particular job). Another trend could be the revival of a barter economy where people pay each other in kind instead of with cash or by transfer of funds.

The important point is that information and other automated technologies may force us to reconsider our conventional perceptions of work and come up with ideas for people to occupy themselves in ways which are both dignified and which are useful to themselves and to the community. This will probably entail the separation of income from jobs in the conventional sense. The wide use of automated technology for production could provide enough for a basic income for entire populations which individuals could supplement with other income in any way they choose.

ISSUES

* To what extent is it socially acceptable or desirable to substitute telecommunications for personal contacts including travel?

* How will we reconcile increasing automation and the provision of work for people?

* How should we change our attitudes toward work and income in the future?

* As automation makes some human skills redundant, how do we choose and maintain useful skills?

COMMUNICATION AND ITS ORGANISATION

Communication is the process by which information is trans-
ferred from one source to another. This process can operate
between people, between machines or between people and machines.

New Zealand now, and in the future, relies on social co-operat-
ion to function as a society. While communication is necessary
for this group co-operation to exist, it is not, in itself,
sufficient.

What is needed as well is appropriate social organisation that
assists communication on a large-scale basis. This is
regarded as a more difficult problem than the development of
technologies themselves.

Organisation for Making Decisions

Communication structures can be used to foster either the
centralisation or decentralisation of power. Centralised
arrangements characteristically show power vested in a few
people, whose position gives them authority to make decisions
on behalf of the many. Communication is mainly one way,
from the top down, and is primarily used to instruct rather
than to encourage understanding. Access to information is
the prerogative of the few rather than the many.

Decentralised structures by contrast tend to feature
distribution of power to as many people as possible;
communication is two way and geared to understanding as well
as to information and instruction; access to information is
available with few restrictions to those who seek it;
decisions are made after discussion by all those likely to
be affected.

Organisation of Work

Centralisation is a geographical as well as a political
issue. Regional development and the geographical
distribution of work can also be shaped by communication
structures.

In New Zealand, if the various information industries were
organised so that they were centralised, then the major
populated areas in the North Island would continue to draw
off opportunities for work and population from the rest of
the country thus forming greater concentrations of work
establishments and of people.

If a policy favouring regional development were adopted,
the technologies available would have the ability to link
the head offices of information industries in any location
with subsidiaries in any other part of New Zealand. If

information becomes the prime commodity, remote parts of
New Zealand, in present day terms, could become viable
commercial and industrial locations in the future with
information as their major product.

In the cities, decentralisation would have advantages in that
employees could choose whether to work in buildings supplied
by their employer for set hours, or from their own home at
times that suited them personally. This arrangement could
also provide the opportunities for people in the same locality
to set up improved social networks.

The disadvantages are that moves such as this could lock many
more women into a situation where they stay at home not only
for child care but also for work, and become even more isolated
than many are now.

A dispersed workforce could also affect the abilities of the
unions to organise their members unless, of course, the same
technologies used for work are also used by the unions to
communicate with their home-based members.

Using information technologies in this way can be justified
only if people are free to choose where they work.

If the organisation of work, or more correctly, of occupying
of our time becomes flexible and decentralised, then our town
planning will have to adapt to or even anticipate the changes.
Buildings such as office blocks, retail stores and university
lecture theatres, all of which are used for a maximum of about
10 hours a day for a very specific activity, will become too
expensive to build. The trend could well be to smaller,
community-based, many-purpose buildings. The structure of our
towns and cities may thus slowly change. Whereas we now
associate specific places with certain activities for example,
our home with relaxation, child care and housework, our office
with working for an income, a cinema or sports field with
recreation such distinctions will become blurred in future.
Then we may be able to satisfy almost any information and
recreation needs as well earning our income from home. The
only activity computers will not help us meet will be that of
physical activity.

The effects of such changes on neighbourhoods and communities
cannot be predicted with any confidence and careful monitoring
should be carried out to assess the changes and to make
suggestions for using the technologies for the desired
social ends.

Besides affecting the organisation of work and town planning,
information technologies will have major impacts on our
culture and will have personal effects in other ways.

CULTURAL IMPACT

The importation of technologies from other cultures is as old as the development of technology itself. Today we are familiar with the idea that imported technology usually modifies the host culture, not always in acceptable ways.

The use of television is an example. Some countries note that the content of television programmes bought from other nations such as the United States or the United Kingdom imposes both a cultural dependency and a speeding up of cultural uniformity around the world. Television and the ubiquitous transistor radio mean that there are very few places where people do not have access to one or other form of the mass media. Increase use of satellites for transmission of film and sound will further compound the effect.

There is likely to be an even greater merging of expectations, life-styles and of consumption patterns as more and more people are exposed to a limited number and type of programme through the mass media.

While the introduction of transistor radios and television has attracted mass audiences and has thus had mass social effects, the new communications offer other options.

Now technologies such as video and personal computers are available, a personal selection of entertainment and information is possible. The opportunity is there, for those who can afford to buy the equipment, for a parallel system in the future - one which offers unlimited access to the mass media and, at the same time, the opportunity to tailor what is available to individual needs.

Next, the effects on language must be considered. Language is not just a means of communicating ideas. It is actually formed by and in turn forms the way in which people think. It is possible that language and therefore perceptions and philosophies will become more homogeneous with world wide exposure to the mass media.

Information technologies apart from the mass media can affect language in other ways. As computerisation and teleprocessing techniques become more common a closer relationship between people and these machines will develop. Machine language will become more extensively used.

The spoken and written language we now use may be modified in that its adaptation for machines could cause it to lose much of the nuances which impart flexibility. It is likely to become more standardised not only in written form through the use of keyboards and in coding, but also in spoken form through the relatively limited vocabulary and tonal inflection of talking computers.

The difference between human and machine languages is in their concept. Human languages grow from the needs of people to communicate with each other. Machine languages grow from the requirement that humans communicate with machines.

An important consideration is that our personal communication relies heavily on facial expression, on the gestures of our hands and other non-verbal signals. By communicating through machines we will lose much of this.

New Zealand may not be able to resist modifications to its culture and language if the use of information technologies becomes commonplace. What happened to the Maori language in the past gives some idea of the effects of the dominant culture on a human language. Machine languages of various kinds will certainly affect our written and spoken language even more than they have at present.

Another aspect of our culture likely to be affected is leisure. Computer games, playing the stock market or learning a new language from a personal computer are examples of some of future options. Electronic recreation will vary in the degree of active or passive participation required and in the degree to which it encourages contact with other people. Some examples of the latter are chess playing, competitive TV games, and teleconferencing.

Our special culture is also embedded in our art, drama, sport, and dress. All these can be made more bland, more universal, by contact through mass media with dominant cultures outside New Zealand. Pictures have, to a degree, already replaced words in symbolic importance. The use of video screens, holography and the like could make presentation and packaging in picture form more effective than verbal exchanges have been. While some people argue that the "global village" concept is one which will enable us to understand each other better and more able therefore to co-operate with each other, there could also be losses in national identity and individuality.

The information society and network nation described in this article are artefacts of white, middle class males and there- fore reflect primarily their values and needs. While appropriate use of the technologies could give advantages to other groups in society, we must take into account that, especially for the Maori and Pacific Islanders, an electronic- based culture may be repugnant. Many of their spiritual values find no concordance with many late 20th Century technologies. Our future should explore these concerns and provide for the needs of all groups, not just those which dominate now.

In many societies information is already abundant, but not necessarily accessible; accessibility to information is essential for an individual to be able to make educated decisions at the community or personal level.

For freedom of personal choice a person must also have a realistic understanding of the alternatives which exist. Each person should have information which enables him or her to criticise, accept or reject other information.

When someone is misinformed, deceived, hindered from obtaining information or bombarded with more information than they can handle, their ability to make choices is impaired. They may also become alienated and withdraw from an active part in community or even personal affairs. Information overload is particularly problematic. When there are innumerable facts to weigh and many options to consider, a person's immediate response may be to reject the need to work out from a morass of detail what is the best decision in the long term.

Politically the potential of information technologies to manipulate is well known. Centuries of experience have shown how effective propaganda can be, even without the use of modern communications.

To avoid both alienation and excessive manipulation an ideal may be for people to have free access to information, plus the techniques to sort that information into a coherent form, and arrive at genuine options. Each person is then left to make a decision from those options.

However, the provision of techniques to sort information is not enough. A person must be able to use communication in a question and answer-type exercise; otherwise the computer will become as television is now, feeding information to a passive audience who has no opportunity to question and criticise that information.

All this indicates that we shall, many of us, be using computers and terminals as part of our daily lives. It is thus possible that some people will spend more time with machines than they do with other people. Instances have already been cited overseas where a person is being treated for their own inability to communicate with other people because they have become emotionally bonded to their computers.

Information technologies will be effective only to the extent that they offer two-way communcation between a person and a machine, as well as encouraging communication between people in a way that satisfies their needs.

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|                              ISSUES                                   |
|                                                                       |
| The flexibility offered by information technologies makes it          |
| possible to organise a nation, its politics, work, community          |
| life and leisure in any way.                                          |
|                                                                       |
| *  If the ideal is to open up decision-making and                     |
|    organisation to the people, how best can we use the                |
|    technologies to achieve this?                                      |
|                                                                       |
| *  How far will we use telecommunications to decentralise             |
|    work and settlement?                                               |
|                                                                       |
| *  What effects will any changed work and leisure patterns            |
|    have on urban planning?                                            |
|                                                                       |
| *  How will families, households and communities be                   |
|    affected?                                                          |
|                                                                       |
| *  If communications improve even further, what effects will          |
|    this have on our cultural identity?                                |
|                                                                       |
| *  Will increased use of information technologies increase            |
|    or decrease personal contact between people?                       |
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What we communicate is information. Information can be defined
in several ways. For instance it is a resource which is
renewable and it is a commodity to which we can attach a
monetary value and buy and sell. As needs for information grow
its management poses challenges in the future.

Information also affects the relationships between people.
Those who have better access to information are usually in a
more powerful position than others who have more limited
information access.

INFORMATION AS A RESOURCE

Information is different from other resources which we use in
the sense that it can be possessed by many people at the one
time, and it cannot be depleted by use. Thus, much of our
information can be regarded as a renewable resource which can
be stored and used many times. It generally loses its value
only if it is inaccurate or is out-of-date. Information today
takes a variety of forms. It is probably true to say that we
rely heavily on information in the written form; film or sound
as forms of information are less important.

This may not continue in the future. The storage of information is likely to be less in written form and more in the form of data banks on discs, on microfilm, on cassette for both sound and film recording and in the form of holographs. This type of storage means that information can be transmitted very easily from one point to another.

At present information exists in abundance but is not always accessible. As the transfer of information becomes easier and more thorough, people should benefit through more rapid applications of knowledge in areas such as horticulture and manufacturing, freer contact between people with common interests and more choices in personal activities

INFORMATION AS A COMMODITY

As a commodity which is bough and sold there are certain strictures which apply to information as well as other merchandise. Some of these involve ownership, payment, quality, and legal and illegal practices.

Ownership and Payment

Where ownership is concerned, whoever generates new information or buys information from another can be called the owner. However, difficulties arise over the ownership of the information because of its nature and its contents. An example is the difficulty of ensuring secure storage of information such as that on trade or defence. It is also hard to prevent motivated people from obtaining particular pieces of information. This may reduce its value when some people pay and others do not for the same information.

Placing a market value on information poses other problem First it is difficult to determine the value of information without disclosing its contents and thereby lowering its value. Then, unless the information is in an identifiable package, placing a price on it may post problems with how much information is included in any agreed exchange. In addition, pricing information to obtain a profit may make it too expensive for some consumers. This is a problem where people are unaccustomed to paying for much of the information they receive. The protection of information by copyright or patent, and charging for its use, may encourage the appropriation of ideas but at the same time it limits their use.

Quality

The accuracy or the quality of information should be able to be checked and guaranteed. Today much written information gives its source as a check on its authenticity. It is not customary to do that with information stored in computers so the accuracy of such information may be in question. In the future the integrity of those storing information in data banks and of information accuracy must be assured in some way

Legal and Illegal Practices

The piracy of information, or its use for illegal purposes, is a growing problem. Access to various data banks without payment or authorisation is possible by breaking encryptions or by re-writing programmes. Electronic funds transfer means we deal in <u>information</u> on debits and credits rather than in cash transactions. Illegal practices involving electronic funds transfer is already a problem in many banks and their detection is often by chance rather than by deliberate investigation. Indeed, predictions are that white collar fraud using computers to misappropriate credit and other "secure" information is one of the growing areas of crime.

This whole area of legal and illegal practices requires the law to anticipate contingencies which at present it is unable to define or even conceptualise. This may not be possible nor even practicable so it brings the role of some law into question.

ISSUES

* How best can accuracy of stored information be ensured?

* What laws or regulations apply to the pricing of and access to information? Is it sufficient merely to make "restricted" information secure?

INFORMATION MANAGEMENT

The organising of information storage, transmission and use poses management difficulties of its own.

The New Frontiers

Communication networks are no longer bounded by national borders. Information technology has already given rise to complex international networks. The large computer companies such as IBM have their own networks and thus their own "territories". These are connected by compatible technologies and have access to their own common data bank.

Such international communication territories can only grow in the future. The new frontiers for the communication of information will be electronic not physical.

The monitoring of "travel" between these territories is an important issue. Allowing all information to pass freely from one area to another has many advantages but there may be difficulties with the definition of responsibilities between government and businesses for the information flows and, to some extent, the content of the information.

Another area of concern is that there can be evasion of national laws by operations carried our at a distance and across borders by using information technologies.

Just now, laws regulate the movement of people and the transmission of money from one sovereign territory to another. If communication replaces much travle and if information becomes the "currency" of the future, its movement may have to be similarly treated. However, there are tremendous problems in monitoring the transfer of information. It ha. already been accepted that the implementation of international subscriber toll dialling means that international information flows are unable to be checked.

The OECD has suggested that governments should aim to control the means of communication rather than attempt to make laws about the content of information. This arises from a convention which assumes that a state may not exercise influence on the content of private transmissions. This apparent disregard for the content of information has been due in part to the fact that no independent economic value has been placed on information. It is not commonly regarded as a commercial good, nor as an item subject to separate tariffs.

Moves to introduce new laws about international data transmission are therefore greeted with caution.

While we may need regulations which govern the import and export of electronically transmitted data there are some reservations as new laws of this kind imply a new form of protectionism which could disrupt international economic ties.

Data Banks

Information must be stored in a particular place. These places are called data banks. Their organisation and content is another issue for study. Businesses now have their own data bases which are their own property. They are able to charge for access to this information.

At present governments and local bodies take the responsibility of building up certain basic data banks such as those in libraries and museums for free use, or at a nominal cost, by the public. It is important that free access to this type of data base continue in the future.

Those responsible for the public data banks should develop them to meet the needs of their particular society rather than relying on the purchase of foreign data bases which will often contain less appropriate information. The exception to this

may be the building up of data banks containing highly
technical information. Some sharing of this expensive
and specialised information may be possible between
nations.

Tariffs

As far as tariffs are concerned, OECD notes that, in the
future, there will be inter-working between public and
private networks within countries and some comparable tariff
structures will have to be decided as will some kind of
standardisation of coding in the communication network.

Information and Dependence

National policies on data use will vary in the future and
may relate to a country's level of development.

While the costs of research and development remain high it is
convenient for small or less developed countries to be able
to purchase both hardware and software from other nations.
This is both economic and convenient. The same applies to the
purchase of data-processing services.

In the future information-based society, a state could become
economically dependent on data processing. If this processing
is done in another country then the buyer nation will be
vulnerable to disruptions of its data supply in much the same
way as we are now vulnerable to fluctuations in energy supply.
Use of foreign-made hardware could produce the same effects.

ISSUES

The electronic frontier means that laws, customs and
practices governing information exchange over geographical
boundaries are out of date.

* To what extent can and should information exchanges be
  regulated?

* What are the respective roles of government and business
  in regulating information exchange?

* Who has the right to gain access to information in
  electronic territories? Under what conditions?

* To what extent should New Zealand be dependent on other
  countries for data-bases, hard-ware, soft-ware and
  communications services?

* Who should have the power to buy and own information?
  How can we ensure access to public data banks at a
  minimal cost?

INFORMATION AND RELATIONSHIPS

In any society those holding information about others have power. The network nation and the wired city give certain opportunities to those in power to register and categorise people quickly and efficiently. While this has some advantages, there are potential dangers which concern many.

Privacy

Information technology gives public bodies the power to integrate and maintain personal dossiers for every resident. This is already possible to a degree, but with gradual spread of practices such as electronic funds transfer, the computerisation of personal records such as births, marriages and deaths, the movement of people about the country, and the recording of all offences, it will be possible to build up detailed profiles of people very quickly.

This makes people more "transparent" to any local body or to any government and its employees than in the past. While the same has always applied in small communities, there the information is moderated by the close human relationships. The protection normally afforded by the separation of the various levels of government departments will be broken down once data banks are shared.

If for instance, the model of the Wanganui computer is adopted, large amounts of personal information will be stored in a way which limits access to a few who become very powerful in terms of their potential knowledge of the many. Laws allowing individuals limited access to their personal files are not enough to counter this power.

Similarly the proliferation of personal computers offers any person owning one the capacity to build up their own files of information and this could include personal information about others. There is no way at present of monitoring such activity. It has been suggested that the difficulty in monitoring personal information in the future may lead to our giving up much of the value we place on privacy and further suggests that we become a particularly transparent society.

The right to privacy which is threatened by computerised data bases can conflict with the right of access to information.

Access to Information

Free access to information, particularly information held by local bodies and government agencies is critical to a democracy where people expect to have their views considered over many issues.

In New Zealand there has been concern over the past few years about the Official Secrets Act, which the Danks Committee has suggested should be replaced by an Official Information Act. There is some dispute about the extent to which the drafted Official Information Bill which meets the criteria for freedom of information.

In countries such as Sweden there has been formulated a public access principle which assures any citizen access to official documents, the exceptions being information that affects national or individual security.

This public access principle is critical in an information society. It is one way of providing information for people who wish to debate government decisions. It is also a means of increasing confidence in governments as it gives the public opportunities to examine their actions and decisions and to ensure that incorrect information can quickly be detected and corrected.

Such information access also enables objective judgements to be made about a government's actions and criticism of them if necessary. It means that a more informed population can make its views known more confidently over certain issues.

One problem highlighted by the ownership of personal computers is that of the potential to derive information from a mass of apparently unrelated material. This indeed can already be done by using written sources. The use of information from various sources to derive other information has been highlighted lately by the court ruling in Sweden, despite the public access principle, that information on military installations gathered from public sources and put together in one document does constitute a threat to national security.

This free access to information thus creates a new problem. How should people interpret information they obtain? What does it mean? How reliable is it? These questions raise an education need; how to handle information.

The future may see a decline in the information-based power of governments with large business concerns, particularly transnationals, taking over many of the current functions of governments. These firms are adapting more quickly to, and indeed, initiating the opportunities offered by information technologies to make irrelevant national and geographic boundaries. Their influence may be increased exponentially through the use of technology because our present legal and political systems are not designed to cope effectively with the information explosion we can expect over the next 30 years.

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|                            ISSUES                               |
|                                                                 |
|   *  How much public access should there be to official         |
|      information?                                               |
|                                                                 |
|   *  Privacy.  What control is there on the accuracy of         |
|      personal information held on computer files?  What         |
|      control do individual people have over this information -  |
|      why it is collected and how it is used?                    |
|                                                                 |
|   *  What is an ideal balance between the rights of individual  |
|      people, the state and the business sector to collect,      |
|      store and disseminate information?                         |
|                                                                 |
|   *  What rights do individual people have to use or publish    |
|      derived information (information put together from          |
|      various sources of information legally accessible to       |
|      them)?                                                      |
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While information technologies may help us to achieve a conservation-minded, participatory society with more access to resources such as information, this will not come about by leaving the developments to market forces. We must ourselves as interested citizens plan active roles in determining our own future.

Many of the options made available by technology are attractive but we must avoid the perspective which sees technology as an end in itself. The choices we make should be guided by considering what suits people best. Instead of changing people to fit the needs of the technologies we should use the potential of information technology to adapt to people's needs.

The issues raised in this paper scratch the surface of some very complex matters. They, and any others, need wide discussion so that New Zealanders can reach a consensus about:

> to what extent we wish to become a network nation and information society;
>
> what policies we need to move in these directions;
>
> what appropriate information technologies and services can help us achieve our goals in social, cultural, political and economic areas.

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