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ABSTRACT

As technological change affects current lifestyles and will continue to affect access to information, children should remain a primary consideration, with new technology serving to provide information to them. The growing importance of information is fundamental to recent technological change based on the development of computers and the silicon chip. Because of the current availability of powerful computers in the home, school, and office, many children already have access to sophisticated computers. Television is also an important source of information, providing a view of life which some children and adults may consider reality. Several studies have reported on the effects of television on children, including a study by the Australian Senate Standing Committee on Education and the Arts in 1976. Television in Australia is about to undergo a transformation in which the technology of signal-to-screen delivery will change drastically, causing enormous changes to the message received. One definite change will be the establishment of a National Communications Satellite System. Major changes to the Australian Broadcasting Commission have also been announced, and the Australian government is investigating various aspects of telecommunications including cable and subscription television, postal service communications, and videotex. A bibliography is included. (LMM)

CHILDREN, INFORMATION AND NEW TECHNOLOGIES

by

John Cook

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(A paper presented to the Library Association of Australia Conference 22-26 August 1982.)

That we live in a time of rapid technological change is not in question. New technologies touch on our lives at almost every point: one only has to go to the bank to withdraw some money previously deposited there electronically, to buy food at the supermarket, to watch the World Cup live from Spain, or to visit the local primary school to see children in a maths class clustered around a computer, to realise that rapid and pervasive technological change is the mark of our times.

Technological change is affecting all our lives. If we are to have any understanding of what is happening we must learn about new technologies and how they are changing our lives. We must critically examine what is happening and work to maximise the benefits of the changes and ameliorate the undoubted disadvantages. Only through knowledge can we understand and plan for our futures and the futures of our children. We are all learning together, in that people of all ages are now faced by completely new technologies and will have to come to terms with them. It is often said that children are better placed to deal with rapid change than their elders because they do not have the same fear of change, and there may be some truth in that. I would hope, however, that the wisdom and maturity of judgement of parents and teachers will be of value to the children in their care in equipping them to face the challenges of a new era.

New technologies are changing our society. They are having a vast effect upon our attitudes to work and leisure, on the organisation of our social and political institutions, and on our hopes and fears for our own futures and for those of our children. What I intend to do in this paper is to examine some of the changes in technology which are now affecting us, and discuss the possible changes which they will bring about in access to information. In particular I want to focus on the effect of these new technologies upon children. This topic - "Children, information and new technologies" - has the right order of priorities. New technologies should be regarded as servants in providing information to the children who must remain our first consideration.

Fundamental to recent technological change is the growing importance of information. An indication of this is the growth of employment based on "Information" - that is, the processing and dissemination of data broadly defined. This does not just include computer operators, but teachers, librarians, public servants, journalists, politicians, social workers, policemen, and so on. This sort of employment involves finding out about things and telling people about them, and includes anybody working with symbols - words, sounds, images, numbers - and whose tools of trade are pens, telephones, cameras, microphones, typewriters and computers. This type of employment already involves more people in Australia than manufacturing and agriculture combined - 30.8% in 1979. (Barry Jones, Speech to the National Press Club, Canberra, 22 April 1982.)

COMPUTERS

The development of computers is the basis of recent technological change, particularly as it relates to the provision of and access to information. I am sure you have all seen striking descriptions of the way in which computers now have vastly greater capacity while at the same time becoming much cheaper and physically smaller. The first electronic computer, ENIAC, cost $US5 million to build (about $20 million in 1980 currency), occupied a space of 90 cubic metres, weighed 30 tonnes, used 18,000 vacuum tubes - of which some hundreds had to be replaced each day - consumed as much power as a locomotive (about 140 kilowatts), and generated considerable heat. A modern micro-computer costs $2000 or less, is 1500 times smaller, 10,000 times cheaper, 17,000 times lighter, with a "mean time between failures" measured in years, uses 2800 times less power, and generates very little heat. The micro-computer is 40 times faster than ENIAC, and its memory capacity is 400 times greater. (Barry Jones, SLEEPERS, WAKE! - TECHNOLOGY AND THE FUTURE OF WORK, Melbourne, OUP, 1982, p 107.) Put rather more graphically, had the same technological changes occurred in the automotive industry as have occurred in the computer field in the past twenty years, the $10,000 Cadillac of 1945 would today cost $5. It would also achieve 300 miles per gallon and would travel 1,200 miles per hour. (There are many versions of this comparison - this one comes from a public submission by Canadian Cablesystems to the Australian Broadcasting Tribunal Inquiry into Cable and Subscription Television Television Services and Related Matters, 12 December 1980.) It has been said that if God were to create the world using modern technology, he would create the silicon chip on the first day, and then rest for the next six days. The story I like best about the recent development of computing describes the micro-electronics firm which expanded so rapidly that it had to move into smaller premises.

The silicon chip is the invention which has made possible this

development of computers. Anyone who feels uneasy when silicon chips are mentioned, and begins to have visions of space invaders and industrial robots taking over the world, should read a recent book called MICRO INVADERS - HOW THE NEW WORLD OF TECHNOLOGY WORKS by Ian Reinecke (Melbourne, Penguin, 1982.) You will be reassured to learn that you are not the only one to have misgivings. You will perhaps be even more profoundly disturbed, however, to read Reinecke's pessimistic view of the social and economic effects which will flow from new technologies and particularly the widespread use of silicon chips and computers. Reinecke's thesis is that to use new technology to best advantage we must understand what it is, and explains in non-technical language the functions and uses of silicon chips and micro-processors, and how they are the basis of modern computers.

The growth in the capacity (or "memory") of modern micro-computers, and their relative cheapness, have had two effects. First they now are used not only for the manipulation of figures but also for handling words. Second, it is now possible for quite powerful computers to be used in the home, in schools, in newspaper offices and many other workplaces.

Thus many children already have access to sophisticated computers. They may have been provided by parents to help calculate business accounts or write reports. Very often the parent who buys such a computer for home use has several uses in mind - word-processing and other "business" use, computer games and entertainment "for the kids", and, lastly, I suspect an increasingly important belief that children should be able to learn to use computers as familiarity with them will be as important as literacy is today.

Children are of course no strangers to the manipulation of symbols on video display terminals through Space Invaders and other similar games. It is an easy step from computer games on home computers to "real" computing. In many cases children learn to use computers more quickly than the parents or teachers who provide them. Children of 14 or 15 program desktop computers to show a detailed image of the human heart or to simulate the workings of a nuclear reactor. These are not necessarily advanced maths or computer students - they are reasonably normal youngsters who are growing up with computers (TIME magazine, 3 May 1982, pp 56-7.) For this reason, it is a somewhat artificial distinction to speak of "children" and new technologies. We are all in this together, and it may be that the children are coping with it better than those of us brought up in a pre-computer era.

Computers are increasingly finding a place in school libraries. Small stand-alone computers are ideal for dealing with the

detailed record-keeping entailed in running efficient loan systems, bibliograpy updates, and special collections listings (films, videotapes, etc). Brisbane CAE has recently produced a software package called COMPUTER AWARENESS FOR TEACHER LIBRARIANS designed to run on Apple II computers and which enables teacher librarians to computerise some of their operations. Two other recent publications to note in this specialised area of the use of computers to provide information to children through school libraries are the Computer Supplement to the Victorian Education Department's SCHOOL LIBRARY BULLETIN of September 1981, and SCHOOL LIBRARIES AND TECHNOLOGY by Marianne Broadbent and Dagmar Schmidmaier.

THE TV SCREEN AS INFORMATION SERVICE.

Television is hardly a new technology. Many Australians have never known a lounge room without a television set. Anyone who can remember the Melbourne Olympics and the introduction of television into Australia is now staggering into middle age. PRISONER and THE SULLIVANS are part of our culture. Roger Climpson and Clive Hale are our personal friends, perhaps even brothers. Every evening the truth is beamed to us as interpreted by our own trusted newsreaders. Clearly 25 years of television in Australia must have had a huge effect upon our society and how we regard ourselves and the world.

What is clear is that many children, and adults, regard the view of life shown on the TV screen as reality, and the necessities of eating, sleeping and going to school as tiresome distractions. I believe that the people who worry about the specific effects of violence or pornography on TV are missing the point. The values of the mass media - to conform and to consume - are all-pervading, and everything else is incidental...

Television is an important source of "information", narrowly defined as news or current affairs. More people believe what they see on television than what they hear on radio or read in the newspaper (Mungo MacCallum, "Mass Media in Australia", in BEING RESOURCEFUL. Proceedings of the Sixth Biennial Conference of the Australian School Library Association, Adelaide, 1978. p 124.), a statement which is difficult for many of us print-oriented people to believe.

There have been some useful studies of the effects of television upon children. In 1976 the (Australian) Senate Standing Committee on Education and the Arts decided that as part of its reference to inquire into "All aspects of television and broadcasting, including Australian content of television programs" it would further inquire into "the impact of television on the development and learning behaviour of children" (Senate Standing Committee on

Education and the Arts. INQUIRY INTO THE IMPACT OF TELEVISION ON THE DEVELOPMENT AND LEARNING BEHAVIOUR OF CHILDREN. Canberra. AGPS, 1978. p 1). This inquiry showed that there is widespread unease in the community about the effects of television upon children, an unease which is the more deeply felt because of a belief in the immense power of television to influence and persuade (p 12). Figures quoted by the Committee's Report establish a persuasive case for the central importance of television in the lives of many children: an average child in 1975-1976 watched television for 3 hours each day, while 20% of a sample of children in the Sydney area watched more than 4 hours each day. Such long hours of viewing mean that children are not only watching the programming intended for them, but are watching out of children's or family viewing times and into the AO time after 8.30pm (p 18-20). Research quoted by the Inquiry shows that children from poorer backgrounds, less intelligent children and children of low self-esteem tend to watch more television, and, significantly, in homes where parents do not discuss or explain television to their children, the children tend to be more influenced by the television messages they receive (p 21-23). Indeed, research here and overseas indicates that parents have very little control over their children's television viewing. One small study in Sydney showed that in 43% of the homes surveyed, children dominated the control of the dial (p 24-25). The Inquiry drew the conclusion from the available research that "television has emerged as the dominant experience in the life of the average Australian child, monopolising more of his or her time than any other single activity apart from sleep." (p 26). The Committee expressed particular concern for the children who watched television more than the average and of whom it said:

> "Apart from their long hours before the television screen, these children also tend to exhibit certain social characteristics that leave them more vulnerable to the medium's influence than their average or light viewing counterparts. They are usually withdrawn. They do not relate very well with their parents or siblings, do not do very well at school, have few close friends and very little peer group interaction. They tend to come from lower socio-economic groups and their viewing habits are largely unsupervised by their parents. These children tend to read few books or newspapers. Television becomes virtually their sole companion and their main input of information and entertainment. These children are therefore particularly vulnerable to the influence of television and the ones at greatest risk of being harmed by any negative influence of the medium." (p 27).

Undoubtedly there is widespread concern about the portrayal of violence on television, and a belief that it will give children a distorted view of reality. While there is no conclusive evidence

about the effects of televised violence on children, the Report leans to the view that television violence may increase levels of aggression in viewers (p 34). As I mentioned earlier, however, violence on television is just one aspect of the broader influences of television on the behaviour and attitudes of children, and perhaps not the most important. Other influences noted by the Senate Standing Committee are stereotyping and unrealistic lifestyles where, for instance, family situation comedies project outmoded American middle-class lifestyles; explicit and suggestive portrayal of sex in programs and advertisements; and the assertion that prolonged exposure to television cause learning difficulties generally and in particular shortened attention spans, lack of concentration, difficulties in speech and language development and the inability to develop concepts and logical thought (p 38-45). The Committee also noted the hypothesis advanced by two psychologists F.E. and M. Emery that the television signal itself produces a numbing of the left hemisphere of the brain which is the perceptive or thought processing function. Thus television viewing induces a passivity or mental torpor in the viewer which leads to impaired capacity to process and remember information. If this is true, of course, it destroys much of the basis of educational television. Observation of the techniques of television advertising which concentrates on familiarising the viewer with a brand-name rather than informing him or her about its attributes, gives some credence to this view of the limitations of the information role of television (pp 46-49).

CHILDREN AND TELEVISION REVISITED, a Review of the Report on the Impact of Television on the Development and Learning Behaviour of Children by the Senate Standing Committee on Education and the Arts published in 1981 (Canberra, AGPS), reaffirms public concern about the effects of televised violence, even though the evidence for and against it may be contradictory (p 4). The Committee also noted that the need for research into the effects of television on children as postulated in its previous report had not been extensively followed up, and the Committee was particularly critical of the Government's decision as part of the Review of Commonwealth Functions not to establish the Broadcasting Information Office (p 4-7).

Television advertising is a potent source of information for children. The Australian Consumers Association is concerned that children who do not have an adult capacity for critical appraisal of what they see, believe the unrealistic view of life provided by television advertisements ("The Truth about TV Ads", CHOICE, May 1982). ACA contrasts the imagery of alcohol advertisements - blond, bronzed, handsome, male and young lifesavers - with the reality of alcoholism beginning as young as 11 or 12 years of age. ACA maintains that advertising codes which prohibit alcohol advertising in children's and family viewing times are

ineffective in that peak viewing time for 5 to 12-year-olds is from 6pm to 9pm on weekdays, rather than the supposed children's time-slot of 4pm to 6pm. ACA decries the identification of cigarettes with major sports which have a strong appeal for children, and their very effective advertising on television through the careful placement of placards on sporting arenas. Children are also shown many advertisements for sweets, snacks, ices, fast foods and breakfast foods, and the conclusion is drawn that poor child nutrition is caused partly by television advertising.

A recent study by the Australian Broadcasting Tribunal (CHILDREN, TELEVISION AND FOOD, ABT Research Branch, Melbourne, 1982) is more cautious in its conclusions but does state that there is a correlation between children with poor nutrition, heavy viewers of television, those from poorer families and those who speak another language, and that many children share all these characteristics. The report states:

> "This relationship is not necessarily a causal one, that is, one cannot say that viewing large amounts of television causes children to have incorrect knowledge of diet or to eat less nutritious foods. What the findings suggest is that children who watch large amounts of television are also the sub-group of children who have poorer dietary behaviour and knowledge." (p 15).

The Children's Program Committee of the Australian Broadcasting Tribunal has recently published draft standards for children's programs and advertising, and is at present considering responses from the public before putting a final version to the Tribunal for adoption. (Australian Broadcasting Tribunal, Children's Program Committee, THIRD PROGRESS REPORT, May 1982.)

DEVELOPMENTS IN COMMUNICATIONS

Television in Australia is about to undergo a transformation. Indeed, that transformation has already begun. For the first 25 years of its existence here television has been almost entirely an entertainment medium. The technology of delivery of the signal to the screen will change drastically, and this will cause enormous changes to the message received.

Satellites.

The change about which we can be most definite is the establishment of a National Communications Satellite System. Communications satellite systems have several important characteristics which mean that they complement existing terrestrial communications services. These features include:

- a broadcast capability - the ability of a satellite to receive a signal from a single source and to rebroadcast

that signal, reamplified, to all points within its area of coverage;
- a multi-access capability - the ability of the satellite to make possible communications between more than two points;
- distance independence - this is illustrated by the fact that there is no tangible physical or cost difference between an Australia-New Zealand satellite link and an Australia-Canada satellite link;
- reduced liability to interruption or signal degradation due to natural or man-made causes. (NATIONAL COMMUNICATIONS SATELLITE SYSTEM, Report of the Commonwealth Government Task Force, H. White Chairman, Canberra, AGPS, July 1978, p 25.)

The Minister for Communications has announced that Australia is to have a domestic satellite system by 1985, which will provide several services:
- television and radio services for remote and underserved areas;
- remote area telephone services;
- aeronautical, marine and land-based communication services;
- a range of services for the National (ABC) broadcasting system and for potential commercial and other public sector users including television and radio relay and program exchange, data, facsimile, videotex facilities;
- telecommunications and broadcasting services within Papua New Guinea;
- distance education and telemedicine facilities.

There will be two satellites in geostationary orbit 36,000 km above the Earth, with one on the ground as a spare. Contingency launch bookings have been made on the Ariane launch vehicle (Europe), the US Space Shuttle and the conventional US Delta rocket. In the uplink direction each satellite will have a national beam capable of receiving signals from anywhere within Australia. Downlink transmissions will be by national beams covering all of Australia and four spot beams covering Western Australia; Queensland; South Australia/Northern Territory; and New South Wales/Victoria/Tasmania. There will also be provision for servicing Lord Howe and Norfolk Islands, as well as a spot beam for Papua New Guinea, this beam being used for both up and down links.

The advent of a national satellite system will have several major effects on our communications system and on the information available to us.

The Australian Broadcasting Commission will be a major user of the satellite, distributing radio and television programs to the hundreds of terrestrial transmitters serving its networks. The

Homestead and Community Broadcasting Satellite Service (HACBSS) will broadcast ABC radio and television programs direct to all those beyond the reach of the terrestrial networks or located in underserved areas. A basic objective of the Satellite System is to allow reception in most of the coverage areas via small and relatively inexpensive earth stations. The typical dish will be 1.2m in diameter and will cost approximately $1000.

Telecom will use the satellite to complement its existing facilities to provide its normal range of services but also to users out of reach of its present network. It will also be able to provide enhanced services to business users, which will include data transmission services, private or leased line services, video and/sound conferencing facilities, and others.

The other major use relating to public access to information is in the provision of distance education. This is most likely to begin with the development of educational broadcasting via the satellite of sound ("radio") and some use of selected television programs. Development of interactive services for distance education is presently taking place. Extension of the switched telephone network, either by the Satellite System or other means, will allow a number of interactive services to be developed specifically for isolated students. These could include the use of various telephone attachments, such as facsimile machines and electronic blackboards, together with specialised learning materials, and a new-look School of the Air. Small stand-alone, single-voice-channel earth stations (with television and radio receiving facilities, if required) will be part of these developments when the satellite is launched. (NATIONAL COMMUNICATIONS SATELLITE SYSTEM, Ministerial Statement and Information Paper by the Minister for Communications, the Rt Hon Ian Sinclair MP, 6 May 1982.)

The South Australian Education Department is experimenting with the use of satellites for educational purposes by using the ageing ATS1 satellite to set up communications between students in SA and the Pacific Islands; special lines for educational programs to Pt Pirie, Pt Augusta, Whyalla and Tarcoola; and there are plans to link with remote homesteads. (Adelaide ADVERTISER, 30 July 1982.)

The Australian Broadcasting Commission.

The Government has recently announced major changes to the ABC following the recommendations of the Committee of Review of the ABC (the Dix Committee). (THE ABC IN REVIEW, National Broadcasting in the 1980s, Report by the Committee of Review of the ABC, Chairman A. Dix, Canberra, AGPS, 1981.) The Dix Report covered the whole scope of the ABC's operations, but identified its primary role as the provision of news, information and

comment (Dix Report vol 2 p 184). The ABC's extensive educational broadcasting was also reviewed -- education on television accounted for 28% of all transmission in 1979-80 (Dix Report vol 2 p 376). The Dix Report noted that the ABC's educational programs were designed almost exclusively to serve the school system, and recommended that more emphasis be given to making information available to adults and children interested in learning in a less-structured way (Dix Report vol 2 p 400).

The Government's response to the Dix Report was announced in July 1982, and provided for a restructured and strengthened national broadcasting service to be called the Australian Broadcasting Corporation. This new ABC is to have a Charter which will set out the purposes of the national broadcasting service, which are, among other things:

- to provide comprehensive and innovative broadcasting and television services of a high standard; and
- to provide programs which contribute to a sense of national identity, which inform, educate and entertain and which reflect the cultural diversity of the Australian community.

The Government has decided to free the ABC of various Public Service controls which will enable it to be more able to fulfil these aims, and particularly in the news and information area it will be able to use a wider range of news sources. The Government has recognised the important contribution made to education by the ABC, and intends to formalise this activity in legislation. Other Dix recommendations will be referred to the new Board of the ABC for consideration. (GOVERNMENT DECISIONS IN RESPONSE TO THE RECOMMENDATIONS OF THE COMMITTEE OF REVIEW OF THE AUSTRALIAN BROADCASTING COMMISSION, Statement by the Minister for Communications the Hon N.A. Brown, M.P., Canberra 4 July 1982.)

Current Inquiries

During 1982 the Government has made major decisions regarding the National Communications Satellite System and the Australian Broadcasting Commission. Before the end of the year three important inquiries into various aspects of Australia's communications are due to report. The three inquiries are into Cable and Subscription Television, Telecommunications Services, and Australia Post. It is clear that there is a great deal of overlap between the matters for the consideration of these three inquiries, which will, together with the previously mentioned decisions on the satellite and the ABC, constitute in effect, a review of a large part of Australia's communications system. The boundaries between types of communications services are becoming increasingly blurred - the so-called "convergence" of communications technologies - and so we will see in the near future major decisions affecting most aspects of our communications services.

Cable and Subscription Television

First cab off the rank is the report of the Australian Broadcasting Tribunal's Inquiry into Cable and Subscription Television Services, a summary of which was tabled in the Commonwealth Parliament on 17 August 1982. The Tribunal was directed to inquire into, among other things,

> - whether cable and subscription television services should be introduced into Australia;
> - the social, economic, technical, and related matters involved in cable television (CTV) and radiated subscription television (RSTV) into Australia;
> - the range and diversity of services which could be provided by CTV/RSTV; and
> - the means by which potential operators propose to establish and operate CTV and RSTV systems. (INFORMATION PAPER for Public Hearings, Inquiry into Cable and Subscription Television Services and Related Matters, Australian Broadcasting Tribunal, Sydney, 25 September 1981.)

Cable television consists of a signal delivered to a television screen via co-axial or optical fibre cable. Apart from the higher quality signal possible because it is not broadcast in the same way as the television we currently receive, the main characteristic of CTV is that it can provide access to many more channels than can be provided in the broadcast spectrum - cable systems now being built in the USA have up to 50 or 100 channels. This immediately changes the nature of television. It is no longer a "mass" medium, attempting to cater for all tastes. Through its many channels a cable system can provide a range of programs for mass and minority audiences. CTV also can go beyond a distributive function analogous to broadcast TV, and can provide interactive services such as videotex, data transfer and electronic mail, security and monitoring services, and so on. And lest one think that 50 or 100 channels could not be filled, here is a suggested "non-exhaustive" list of channels for a Melbourne CTV system supplied by the Herald and Weekly Times group:

> ETH0, ABV2, HSV7, GTV9, ATV10, Pay TV, Pay TV, Pay TV, Access TV, Access TV, Access TV, University/RMIT, High School, Primary School, Kindergarten, Sport, News, Finance news, Culture/Art/Music, FM pop/FM classical, State Government, Federal Government, Local Government, Public affairs, Women's interest, Shopping guide, Shopping guide interactive, Shopping guide interactive, Weather/traffic, Business interactive, Education interactive, Education interactive, House security, Medical security, Fire security, TV programs, Job listings, Classified ads, Tourist guide, Handicap service (deaf etc). (Herald and Weekly

Times, public submission no 28 to Australian Broadcasting Tribunal Inquiry into Cable and Subscription TV, 12 December 1980.)

Radiated Subscription Television works on quite a different principle in that a signal is broadcast in much the same way as at present, except that it is encoded or "scrambled", and can only be viewed intelligibly by subscribers who lease a "black box" to decode the signal. RSTV offers much less potential than CTV for diversification of services, in that in most localities only one or at the most two channels would be available. RSTV would provide so-called "premium" television - first-run movies, live sports, and special events.

The Tribunal's major recommendations include:

- Australia should introduce both cable television and radiated subscription television as soon as practicable.
- There should be regulations for the ownership and control of cable television systems.
- Cable television licensees should provide separate channels for community, education, and children's programming.
- Cable television systems should be permitted to carry enhanced services (such as security services or two-way tele-shopping services). (Australian Broadcasting Tribunal, CABLE AND SUBSCRIPTION TELEVISION SERVICES FOR AUSTRALIA, Interim Report, August 1982.)

The Minister for Communications has asked that anyone wishing to comment on the Tribunal's recommendations should contact him promptly, as the Government intends to make decisions on the report as soon as possible.

Telecommunications and Postal Services.

Major inquiries into Australian telecommunications and postal services are also in progress, and are expected to report to the Government by the end of this year. They are: Public Inquiry into Telecommunications Services in Australia - Chairman J.A. Davidson, and Public Inquiry into the Monopoly Position of the Australian Postal Commission - Chairman A.E. Bradley.

The terms of reference for the Telecommunications Inquiry require it to inquire into the monopoly position of Telecom, to report on its present operations, and to examine the likely effects of any changes in charges, methods of financing, Australian participation in design and manufacture of equipment, and regulation. (Media Release of the Minister for Communications, Rt Hon Ian Sinclair, 23 September 1981.) The main issues expected to be addressed by the Inquiry's report are:

- cross-subsidies between users according to their location

(every telephone installed west of the Great Dividing Range incurs a loss for Telecom), and according to uses (the telegram service lost $20m last financial year).
- common carrier competition - should Telecom maintain its monopoly, or should other private concerns be allowed to set up networks?
- regulation - should Telecom be the regulatory body, particularly if the Inquiry recommends that private interests may compete with it?
- financing - Telecom maintains that while it has to be self-financing, it is restrained by government policy from raising capital in what it sees as its own best interests;
- industrial relations - again, while Telecom is urged to conduct its affairs in a business-like way, it is subject to Government policy relating to staff ceilings, etc.
- Australian industry - Telecom is a major customer of Australian electronics firms, which has important consequences for employment and technological development in Australia; however, it may be that more advanced equipment may be purchased more cheaply overseas.
- Ministerial direction - the Minister for Communications has the power to disapprove Telecom contracts over $500,000, which power has been used in recent times to block Telecom's moving into the marketing of small PABXs and videotex.
- competition for attachments - should both Telecom and private interests be allowed to compete freely in the market for attachments to the network?
- AUSSAT and OTC - what will be the effects of any changes in the present arrangements on the National Communications Satellite System and on overseas services provided by the Overseas Telecommunications Commission? ("Understanding Davidson: How the Big Three Line Up", COMMUNICATIONS AUSTRALIA, May 1982, p 14).

The Bradley Inquiry into Australia Post is of relevance in this context because of its consideration of electronic mail. Clearly there are major areas of overlap between the three inquiries, and their recommendations and the Government's actions on them will determine the shape of Australia's communications services for the next twenty years.

VIDEOTEX

Videotex is a new technology which shares characteristics of broadcasting, telecommunications, and through its data transmission ability, postal services or "electronic mail". As mentioned above, Telecom's plans to introduce videotex based on the British Prestel were stymied last year by Government decision. Two private companies, Computer Power and Australian Beginning, are now offering videotex services. The various forms of videotex offer access to information services and data banks,

software banks. use of the network's large computers for operations and storage, electronic shopping and nationwide communications. ("Checkout The Australian Beginning", AUSTRALIAN PERSONAL COMPUTER, March 1982, p 17). Several American companies believe that consumers are willing to pay for information provided to them via their TV screen ("The Videotex Revolution", NEWSWEEK, August 2 1982, p 43), but the British experience with Prestel, British Telecom's videotex system, seems to indicate that the main market may be specialised business information aimed at business users like stockbrokers, travel agents, real estate salesmen, commodities brokers, etc. ("British Telecom presses Prestel in survival bid", THE AUSTRALIAN, 3 May 1983, p 25.) Another study has shown that videotex is unlikely to become a mass medium and a replacement for newspapers before the end of the century. Rather it will emerge slowly in the 1980s as a service for business and a few professionals. Like the early newspaper and telephone, which served the elite, videotex may grow as a medium for the "powerful" who have access to information that is not available to all. (John Carey, "Videotex: The Past as Prologue", JOURNAL OF COMMUNICATION, Spring 1982, p 80.)

CONCLUSION

1983 is World Communications Year. Not only will it celebrate amazing technological advances in communications, it will urge the universal access of all the world's people to communications networks and information. I hope that in all the advances in communications technology the rights of all - children, the "information-poor", citizens of the Third World - are protected, and that technology will truly bring information to all.

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NOTE: The views expressed in this paper are those of the author alone, except where clearly attributed, and are not necessarily the views of any other body or agency.

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