"THE NETWORK NATION - THE RELEVANCE OF THIS FOR POSSIBLE EDUCATIONAL AND GENERAL PUBLIC ADMINISTRATIVE STRUCTURES AND STRATEGIES IN THE 1980s AND 90s."

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iii. Abstract.

In this thesis consideration is given to the inter-relationships between a number of key concepts and reports in educational and general public administration which have been produced over the last decade. Networking is the inter-connecting concept. In the first half of the thesis the emphasis is on the current relationships between the key themes and educational and general public administrative structures and strategies. In the second half a variation of the "brainstorming" technique (involving purely the author rather than a group of individuals) has been used to produce a scenario of possible educational and general public administrative structures and strategies in the 1980s and 90s (with an emphasis on the possible inter-relationships between these structures and strategies, the key themes, and communications networks).

A case study then follows which links the key themes and the scenario by including discussion of one senior educational administrator's perceptions of probable futures for a particular education system.

It is concluded that there is great potential for new technologies to assist with the restructuring of educational and general public administration. Recommendations on how this could be achieved are given.
iv. Overview.

In this thesis consideration is given to developments in telecommunications and computing technologies in relation to possible educational and general public administrative structures and strategies which could be implemented in the 1980s and 90s. Consideration is given in particular to structures and strategies considered in such reports as the Victorian Government White Paper on "Strategies and Structures for Education in Victorian Government Schools" (the White Paper), Commonwealth Reviews of Public Administration in the Australian Public Service (APS) (specifically the "Royal Commission into Australian Government Administration" [RCAGA], the "Review of Commonwealth Administration" [RCA], and the "Joint Management Review of ADP Management Issues in the Australian Public Service" [JMR]).

A number of themes appear in both the RCAGA report (Dr. H. C. Coombs was the Chairman of the RCAGA) and the White Paper (and less explicitly in the RCA Report). The JMR also includes specific consideration of how a number of these themes could be implemented using information technologies. In this thesis I consider six of these themes in detail - from the point of view of both educational administrative, and more general public administrative, structures and strategies.

These themes are:

* devolution;
* decentralisation;
* participation;
* consultation;
* co-ordination; and
* networking.

I note that these themes are increasingly inter-connected and will become more so in the future. Specifically, consideration is given to how networks (with an emphasis on networks which incorporate computer and telecommunications technologies) could assist with the implementation of the key themes.

Particular consideration is given to the different ways in which these themes are interpreted in each of the reports analysed.

Consideration is also given to the need for matrix approaches to management in turbulent environments, and to how a number of telecommunications and computing technologies could assist with the implementation of innovative organisational structures.

The "findings" section of this thesis involves the presentation of a scenario of how educational and general public administrative systems might be operating up to 1995, with a particular emphasis on the key themes considered in the first part of the thesis. The terms "educational" and "general public administrative" are interpreted broadly in this scenario. The scenario is designed to highlight a number of possible futures.

A case study follows which includes a key component dealing with one educational administrator's views on the practicality of implementing a number of the educational thrusts included in the scenario (that is, with a focus on probable futures).

The key conclusion of this thesis is that computer conferencing, data processing, and other new technologies (including new approaches to organisational design) have great potential to assist with the restructuring of educational and general public
administrative systems in the 1980s and 90s.

Recommendations on changes which need to be made now if the full potential of these new technologies is to be realised are included.
CHAPTER 1. REVIEW OF RELATED LITERATURE

Six themes have been selected for a detailed literature review. This review is limited to the extent that I have concentrated on more theoretical literature. In the body of the thesis I have included much of the literature of direct relevance to educational and general public administration.

The selected themes are conceptually related in that they directly relate, both individually and collectively, to problems related to networking and to potential structures and strategies for education and general public administration in the future.

In the second part of the review of related literature I outline the key reports I have selected, and give a brief introduction to how they relate to the key themes.

REVIEW OF RELATED LITERATURE ON KEY THEMES

I have attempted to include much of the literature reviewed within the main body of this thesis. In this section I will, however, give a brief outline of some of the material which has been written broadly around the key themes.

1.1. CO-ORDINATION

Co-ordination is a key part of managing. A report of the Parliamentary Joint Committee of Public Accounts (JCPA) has defined managing as involving "...initiating, guiding, and evaluating. Thus management is decision-making and getting things done by other people. In order to manage successfully there is a need to be able to motivate people, to communicate to them what they should be doing, what results should be achieved, and how to
achieve them." (JCPA, 1982, p. 7).

Co-ordination relates to monitoring systems, and ensuring that goals and objectives are achieved (it is thus related more to the guiding and evaluating components of the above definition than to the initiating component). In order for evaluation to occur, it is necessary that objectives be specified in measurable terms.

It is interesting to note, in relation to this that "At one stage the Committee [of Inquiry into the S.A. Public Service in the mid-1970s] requested existing departments to 'state their objectives, the purposes for which they exist'. The report noted that 'only a small minority could point to authoritative statements of their objectives, readily available and recently reviewed'. As a result it proposed that the objectives and functions of departments should be 'clearly set out' and be 'available to serve as terms of reference' to staff and public...'." (Jaensch, 1978, p. 78).

Dror has indicated that "Clarification of aims is vital in order to provide standards for the appraisal of various alternatives." (Dror, 1971, p. 248). One key aspect of co-ordination involves choosing between alternative strategies. Over time this involves evaluating current strategies and choosing to continue with those which are found to be more effective and efficient. Without clear aims it is not possible to evaluate which strategies are the most effective.

It is essential, where evaluations take place, and it is found that resources are not being used efficiently or effectively, that it be possible to re-allocate these resources. For example,
it has been said that "The major weakness in Victoria's autonomous agencies has been the absence of machinery for disbanding them when they no longer articulate and implement significant social values." (Holmes, 1978, p. 109). Such a re-allocation of resources is much easier for Ministers when dealing with components of their Departments than when dealing with statutory authorities for which they are responsible but over which they do not have complete power of direction. However, the ability to re-allocate resources is not sufficient to ensure effective co-ordination. As Chapman has pointed out "No amount of tinkering with organizational structures can reduce the need for properly qualified, competent officers." (1978, p. 294). It is also necessary that administrators be allocated sufficient resources.

Co-ordination in government is not just a problem in Australia. In Tanzania it has been observed that "...at present, each functional officer is responsible only to his own Ministry in Dar es Salaam, so that it is extremely difficult to work out a Regional or District development or problem-solving scheme which calls for co-ordinated action." (Nyerere, 1972, p. 1). This problem has also been recognised in Australia. The RCAGA initiated the development (on a pilot basis) of a co-ordinated approach to regional service delivery. "The NOW centre (North west One stop Welfare centre) was opened in Coburg in July 1975. It aimed to provide a single location for various commonwealth, state, and local government departments and voluntary organizations to deliver services of various kinds to the community." (Painter, 1978, p. 245). It was also found that this approach facilitated a more participatory response from citizens.
in that "...the centre has succeeded generally in providing a more pleasant environment for "fronting up" to officialdom." (Painter, 1978, p. 245).

Participation by citizens can facilitate the identification of alternative goals and objectives, together with the "value constructs" upon which these are based. As Henderson has pointed out "A persistent condition underlying social conflict is the differing set of subjective assumptions and levels of awareness by which groups perceive the same objective set of circumstances. Often the only time that such underlying perceptions can be made explicit, then explored and mediated, is when they clash in an open confrontation." (1978, p. 239).

Power is a key theme in considering such open confrontations, or in analysing such concepts as devolution. "Weber defines 'power' (Macht) as the probability that an actor will be able to realise his own objectives even against opposition from others with whom he is in a social relationship." (Giddens, 1971, p. 156).

1-2 DEVOlUTION

Devolution refers to the transfer of power and responsibility from one group within a government or administrative system to another group further from the centre of power within that system (Victoria, 1980, p. 11). The emphasis is generally on devolving power so that people can have more influence on policies which directly affect them.

Devolution is increasingly being seen as a solution to system breakdowns resulting from these systems being too large to allow for a co-ordinated approach to societal problem-solving. However,
it is important to realise that some issues will still require a national input if they are to be handled effectively. For example, "...in the United States...it is now conceded that the problems created by population growth and urban concentration are too big to be handled by the States or cities alone." (Brennan, 1972, p. 44). The emphasis should be on devolving powers which can be more effectively co-ordinated at the local level, rather than simply on breaking-up large systems which are not operating effectively. Where systems are not operating effectively in an area which requires a substantial national input, the emphasis should instead be on re-designing the system to allow for effective management (often this will involve the use of distributed computer networks).

Devolution can create difficulties in situations where power is devolved to local units, but where the central authority (and Minister ultimately) still retains accountability for that area. For example, "The [W.A.] Department [of Education] implemented a decentralisation policy to devolve decision making by creating regional offices. The fundamental principles guiding this devolution of authority were stated as:

(a) decisions are more effectively made in the light of local circumstances;
(b) persons affected by a decision should participate in making the decision;
(c) the Minister for Education remains responsible for the education system, irrespective of who makes the decision; and
(d) the public are entitled to demand accountability for funds expended and outcomes achieved." (Neesham, 1978, p. 25).

In the case of W.A. it is clear that what is talked about is
decentralisation rather than devolution, in that responsibility is not transferred, and in extreme situations the Minister maintains the power of direction.

More generally, insufficient thought seems to have been given to the question of how a Minister can remain responsible for an area over which he has no ability to give direction. In management there is a general principle that it is inappropriate to make a position responsible for an activity if the person holding the position does not have complete control over the area.

1-3. PARTICIPATION

Elliot and Elliot have argued that "...the word 'participation' has a number of meanings. In general it suggests that individuals or groups are in some way able to directly influence and be involved with decision-making." (1976, p. 138).

As well as having a number of interpretations, participation as a concept has a long history. "It would...be misleading to suggest that the question of participation within democratic systems is a new one for it has preoccupied political thinkers for centuries." (Higgins and Richardson, 1976, p. 5). In the UK "Over the last decade a renewed interest in encouraging more direct public participation in services provided by both local and central government bodies has been reflected in a number of government acts, reports and white papers." (Crouseaz et al., 1978, p. 1). In the USA "The federal government has required citizen participation in various programs since the 1930s, when farmers were brought into decision-making about crop allotments." (Dommel and Associates, 1982, p. 15).
Historically, there are examples of participation as an integral part of citizenship. "In the Greek polis every man — that is, every free citizen — was a zoon politikon; the social and political were inextricably fused, and there was no separate sphere of the 'political'." (Giddens, 1971, p. 5).

In various programs in the USA and Australia there has been an attempt to recreate to some degree such an idealised situation. In the USA, "Federal legislation in the health field requires the creation of community committees for funding, particularly in those areas related to minority-group services." (Fantini and Gittell, 1973, p. 18). The need for local (and, in particular, disadvantaged community) participation in federally-funded programs in Australia has been recognised since the early 1970s in fields as diverse as education and health. One author has gone as far as to suggest that "There were some aspects of Federal Labor Government policies [in the 1970s] in the field of social welfare (especially the Australian Assistance Plan (AAP)), which indicated that one major purpose was to increase the involvement of the community in defining its own needs." (Chapman, 1982, p. 17).

It has been argued that "...human beings do have power to control technology, but...this power is not at present evenly distributed between individuals and groups in society." (Elliot and Elliot, 1976, p. 101). Participation in governmental processes (at all levels) relates to questions of power — "...the powerless see community control as a way not only to make institutions more responsive to their needs but also to exercise their share of power within society." (Fantini and Gittell, 1973, p. 8).
However, "What democrats fear is that participatory processes of decision-making will favour articulate minorities just as much as more old fashioned processes." (Higgins and Richardson, 1976, p. 10). This fear is heightened by the fact that "...there is a great deal of evidence suggesting that a decisive factor in influencing the extent to which people participate in politics and get involved in voluntary group activity is the length of formal education they have been exposed to." (Sharpe, 1979, p. 28). It is also of concern that "Numerous studies have noted a relationship between social class or status and community participation." (Parkum and Parkum, 1980, p. 156).

However, participatory theorists would argue that one of the main reasons that people with lower status so rarely participate in societal decision-making processes is that they are given little opportunity to do so. "One of the main tenants of 'participatory theory' is that the experience of participation will lead to an enlarged ability to participate and that experience of lower levels of control may lead to an interest in higher levels and hence towards the ultimate goal of 'participatory democracy'." (Elliot and Elliot, 1976, p. 194).

It may be because of the fundamental relationship between participation and power that "The larger expectations [resulting from the RCAGA report] about responsiveness and participation, dispersal of bureaucratic power and the diffusion of government structures have not been realised." (Chapman, 1982, p. 27). Certainly it would be naive to expect participation to result in a reduction in conflict between the bureaucracy and citizens. The argument that "...what seems to be needed is policy-making machinery to resolve the political conflict planning programmers
provoke among experts and specialists, as well as among the general public." (Holmes, 1978, p. 104) would appear to be a false hope when seen in this light - the best one could hope for would be conflict based on a true perception of the facts, rather than a reduction in conflict as such between competing interest groups.

One of the key barriers to greater community participation in overseeing government programs is that of professional autonomy. Yates has pointed out that "...in contrast to the doctrine of pluralist democracy, "neutral competence" gives substantial political power and authority to administrators rather than to citizens and elected officials." (1982, p. 24). It also needs to be recognised that "...administrators in a public bureaucracy can only strive for professional autonomy at the expense of external accountability." (Scott, 1978, p. 198).

"A major reservation expressed by many professionals about 'participation', is that it tends to prolong the dialogue beyond the point of being useful, especially if there is a failure to agree on the plan being debated." (Elliot and Elliot, 1976, p. 179).

Social trends will doubtless continue to place pressure on bureaucracies to permit increased participation. For example, "The trend to egalitarianism in our society may be expected to increase participation." (Bennett, 1980, p. 4). However, participation should not be seen as a "panacea" in all circumstances because "...a truly decentralized participatory system will tend to be highly responsive to the needs of the members in each participatory locality, but will tend to neglect
inter-local, inter-regional and national needs, both of the allocative (e.g., social justice) type and those which are best served collectively (e.g., a priming of the economy)." (Etzioni, 1971, p. 64). Taking this into account "One of the most interesting features of recent decentralist reform has been the effort of central authorities to promote participation at the local level." (Magnusson, 1979, p. 131). This may be explained if one considers that the emphasis has been on having the participation focus on issues of local rather than national concern.

The relationship between decentralisation and participation is illustrated by the fact that "Distributed decision making seems to be a prerequisite [sic] to meaningful participation. But the decentralisation which makes this possible is not necessarily good, as unlimited local variations can lead to organisational chaos." (Bennett, 1980, p. 6).

Also, "In its most developed form participation...means that the citizen is directly concerned with every level of the decision-making process. This implies a considerable devolution of power, and consequently the decentralization of the decision-making process, in an attempt to enlarge the democratic and self-determining powers of the individual or group." (Elliot and Elliot, 1976, p. 139).

There are, however, difficulties in implementing such a concept. These are reflected in the fact that "[An]...argument commonly used against greater participation is that it is inefficient." (Higgins and Richardson, 1976, p. 9). It has been argued that "...involving the community directly in the planning process will
make the planning period a more difficult and a longer one." (Fantini and Gittell, 1973, p. 100). Higgins and Richardson have also indicated that "Once open discussion becomes the basis of decisions, then they tend to take an inordinate length of time." (1976, p. 11). There is clearly a trade-off between traditional interpretations of short-term efficiency and the need for participation. However, in the longer term there is no question that allowing for participation will often tend to result in more "stable" decisions and a more efficient allocation of resources, particularly in areas where community groups can bring about policy change through the electoral process or civil disobedience.

Research has found that:

* "Participation in an organized group effort is more likely to be successful than random individual attempts to affect community change." (Parkum and Parkum, 1980, p. 166). This highlights the benefits for individuals who hope to influence systems in a particular direction (either within an organisation or in society at large) to attempt to develop or join networks of individuals or groups with similar objectives.

* "A cultural environment in which constructive activism is stressed and receives publicity is important both for encouraging people to participate in community shaping and planning and for creating or opening up the actual structures for such participation." (Parkum and Parkum, 1980, p. 166). This partly explains the difficulty governments sometimes face in gaining input from a community which may be unused to, and possibly unaware of, the benefits which can potentially result from
participation in governmental decision-making processes.

* Those with access to greater amounts of "retained information" (Smith, 1980, p. 469) tend to participate more. "Retained information" results from educational activities (of a formal or informal nature), and from using skills developed in educational activities.

* "There are limits to the extent to which participation is possible. These limits are set by the time available to a citizen, by his interest, and by the extent of his fatigue after his other obligations to society have been discharged." (Bennett, 1980, p. 1).

* "Citizens are most likely to participate in government at the local level given the higher transaction costs of dealing with more distant governments." (Yates, 1982, p. 199).

* "...individuals active in one type of discretionary activity of a socioculturally encouraged sort are also likely to be active in other types of encouraged discretionary activity." (Smith, 1980, p. 462).

From the above evidence it is reasonable to conclude that "The best location to prepare the citizen for increased policymaking role is in schools, when the necessary knowledge and capabilities should be developed as a basic part of the equipment needed by every citizen in a modern urban democratic society." (Dror, 1971, p. 301), and that "An educated populace is a precondition for improved participation." (Bennett, 1980, p. 3).
1-4. DECENTRALISATION

Decentralisation in an organisational context refers to the transfer of power away from the centre of an organisation to other parts of the organisation (Victoria, 1980, 11). Generally, (but not necessarily) these other parts of the organisation will be geographically dispersed.

However, the term "...decentralization is an ambiguous word; it has come to mean different things to different people." (Fantini and Gittell, 1973, p. 12). Some interpret it in a purely physical planning sense. This is understandable in the Australian context because "Australia is the most urbanised society in the world with 88.5 per cent of its population living in cities." (Brennan, 1972, p. 1).

Decentralisation should not be interpreted as always being desirable. "Centralization, written law, and fixed rules were originally regarded as liberating...If you are a black in Mississippi you are a lot better off dealing with a federal court operating under formal and universalized rules than with a local sheriff operating on the basis of personalized local criteria." (Ferkiss, 1972, p. 29).

One interpretation of decentralisation emphasises its relationship with power. For example, Fantini and Gittell have written that "Decentralization [in an educational context] deals with the governance of urban school systems. Since politics deals with power, it is not surprising that this pattern of participation produces controversy." (1973, p. 45). Conflict is not necessarily a bad thing - without it systems would tend to stagnate. "Many social scientists agree that change is a product
of conflict, and that such conflict should be anticipated if any significant shift in power is embodied in the plans for urban decentralization." (Fantini and Gittell, 1973, pp. 19 - 20). The relationship between conflict and changes in power relationships is also reflected in the fact that "The ghetto riots which broke out in the mid-1960s intensified the pressure for decentralization in American cities." (Magnusson, 1979, p. 134).

It is consistent with a philosophy which links decentralisation with power structures to argue that "The key to any decentralized system lies in the level at which decisions are made." (Fantini and Gittell, 1973, p. 104). This is emphasised in the comment that "...greater decentralization of services does not necessarily mean that there will be increased citizen involvement relative to the delivery of such services." (Stenberg, 1972, pp. 12 - 13). Certainly if decisions are always made at a level remote from the clients of the system such a "decentralised" system could not be defined as facilitating client participation.

In this context it is relevant to consider that one critic of centralisation has indicated that "Centralization in administration tends to promote absentee control, and thereby increasingly denies to the individual the opportunity to make decisions and to carry those responsibilities by which human personality is nourished and developed." (Lilienthal, 1971, p. 411). Ferkiss has pointed out that "Might not new forms of technology...make possible a greater degree of decentralization, local autonomy, and individual freedom." (1972, p. 30).

Research has shown that:
* "The higher the skill level of the manager, the greater the tendency to decentralize." (Morris, 1968, p. 20). This is relevant to both educational and public administrative systems where skill levels are continually increasing; for example, the entry level qualifications of administrators now as compared with those of ten years ago.

* "A side effect of decentralization is the training of a large number of experienced decision-makers." (Morris, 1968, p. 21). This is interesting to note in the context of the massive need for higher-level executives which is predicted to occur in the APS over the next ten years as a result of retirements from the Second Division of the APS (JCPA, 1982, p. 1);

* "Decentralized decision-makers tend to view their roles as being characterised by a degree of self-determination and independence." (Morris, 1968, p. 21). It is important to realise that improved morale of workers does not necessarily mean that productivity is increased, or that decentralised structures are appropriate in all circumstances. However, if other things were equal, this factor could well be a deciding one favouring a decentralised structure over a centralised one.

* "The fewer the number of operational linkages between the components of an organization, the greater the tendency to decentralize." (Morris, 1968, p. 19). This would tend to imply that it would be easier to decentralise those aspects of systems which do not interact with other components, rather than those which do. A real danger here is that there may be superficial analysis resulting in decisions to decentralise areas which in the immediate context do not interact with other components in
the State (for example, school curriculum) but which do so in the longer term.

* "The greater the urgency of a decision and the shorter the time in which to make it the greater the tendency to centralize." (Morris, 1968, p. 19). This would explain why decision-making tends to be more centralised in emergency situations than in situations where systems are not under threat. This is reflected in the interest governments take in school councils which are not operating effectively to the extent that they create adverse publicity for the government of the day.

* "The greater the potential consequences of a decision, the more likely it is to be centralised." (Morris, 1968, p. 19). Taking this into account, it is unlikely that all decision-making authority will ever be devolved to schools or area offices. The devolution will tend to be in areas where mistakes will have only a localised effect.

* "Top management attempt to reduce the 'dangers' of necessarily decentralised control by establishing the bases of the delegated decision-making, and the final outcomes of subordinates' decisions, through established procedures and rules." (Salaman, 1979, p. 136).

* "Given the limited human and organizational capacities for data-handling, computation, and decision, decentralization will be more effective than centralization." (Morris, 1968, p. 19). However, as computers become more sophisticated, centralisation of large systems, if desired, could be more viable.

It is interesting to note, in the context of the above research
findings, the comment of one analyst that "The centralist trend is a world wide phenomena." (Brennan, 1972, p. 5). In the light of the research findings outlined above it is probable that this is true in areas which have a large number of operational linkages, where there is urgency in the decision-making process, where the consequences of mistakes would have a significant impact, and where there is significant data-handling capability. The education system at the school level is not perceived by many to be characterised by the first three features, and the central offices of most education systems (in Australia) are not characterised by the last. This can be compared with the APS, where some Departments have the above characteristics and others do not.

"Strong feelings of anxiety have been raised in the State government sphere as a consequence of moves to regionalisation." (Chapman, 1982, p. 8). This comment is interesting when it is taken together with the statement that "Because the movement for decentralization hinges on the question of the distribution of powers between central unit and its number of component parts, it can appropriately be compared to the theory and experience of federalism." (Fantini and Gittell, 1973, p. 20).

1-5. CONSULTATION

Consultation has a number of key features. It involves a sharing of, and receiving feedback on, information. (Victoria, 1980, p. 16). It could be argued that real consultation requires action to be taken based on the feedback - otherwise the consultative process will come to be seen as tokenistic.

A society cannot be democratic, in the most complete sense of the
word, if "consultation" with the electorate extends purely to regular elections. "A society is more or less democratic, according to Durkheim's terminology, to the degree that there is a two-way process of communication between the state and other levels of society." (Giddens, 1971, p. 102).

Consultative processes, if they are to be credible, generally require the participation of a wide range of citizens. They need to be linked closely to the policy-production system of government if citizens are to be motivated to contribute.

Government structures themselves can implicitly discourage citizen input - for example, "...administrative rationalisations and new managerial techniques have frequently increased the gap between the provider and user and diminished community involvement." (Hadley and Hatch, 1981, p. 30).

Structural inhibitors to consultation can be partly overcome through the holding of governmental inquiries which allow for public input. It has been said that "The contribution of inquiries to the making of policy is chiefly to the intelligence gathering section of the decision making cycle as conventionally designated." (Smith and Weller, 1978, p. 10). Government inquiries have a role both in receiving and in distributing information. However, in many cases they do not allow for feedback based on their reports. It is generally appropriate for governments to set aside a period for public input after inquiries have reported publicly (even when those inquiries have had a public input component) before making decisions, in order to allow for participation by persons who may not have contributed to the initial inquiry, but who may be affected by
the recommendations.

If current technologies (such as public inquiries) are used to facilitate broad-based consultation, the processes can be both expensive and time-consuming. One writer has asked: "Does our familiar western representative democratic system depend ultimately on a relatively acquiescent population?" (Higgins and Richardson, 1976, p. 11). Perhaps this may be the case if conventional approaches are used to facilitate participation; however, with new technologies consultation can be much less expensive and time-consuming. For example, "The family television set could provide the citizen with information inputs on policy options and choices, with the telephone serving as the output device whereby the votes on issues could be instantly recorded at the appropriate legislative matrix." (Henderson, 1978, p. 291).

If new technology-assisted approaches to consultation were to be used more extensively in society, eventually "...the formality of Royal Assent could be replaced by the more meaningful notion of 'popular assent', ascertained by an electronic referendum." (Elliot and Elliot, 1976, p. 188).

However, even though it could be argued that new technologies could facilitate more effective consultation, "No reform is easy to accomplish, least of all reforms which disturb privilege or vested interests held in common by all shades of political opinion." (Brennan, 1972, p. 14). If more participatory consultative processes were developed (as compared with conventional representative approaches) it could be argued that this would not be supported by many politicians, since fewer politicians would be required in the actual governing process.
In relation to consultation in the workplace (as compared with government), it could be argued that consultation beyond a token level is difficult to achieve because "The prevailing goal of many industrial designers is...to minimize human discretion and to use technology to bind the individual to the exigencies of the machine." (Elliot and Elliot, 1976, p. 32).

However, even though in the past "...technology has been used within industry as an instrument of control, manipulation and subordination by those in positions of power and authority." (Elliot and Elliot, 1976, p. 32) there is currently real potential as computer technologies become less expensive and more "user-friendly" for unions to use them to improve consultation between their members, the governing bodies of unions, and employers. Such technologies can economically assist unions in processing data (for example, related to members' views on topics) to produce focused information reports. For consultation to be effective participants need to have both access to information and the ability to generate information. "Information is...the basic currency of all economic and political decision making." (Henderson, 1978, p. 287).

"Without electronic aids, the human ability to handle only limited amounts of information tends to limit democratic decision-making to small group situations." (Elliot and Elliot, 1976, p. 207). Therefore, new computer technologies are fundamental to the analysis and production of information and to the facilitation of wide-ranging consultative processes with large numbers of persons.
In contrast to this optimistic view, it is interesting to note that, over time, control by technology and experts can become self-imposed. It has been argued that "...induced dependence on experts may lead to the ironic situation where people protest against involvement in decision-making processes..." (Elliot and Elliot, 1976, p. 103). If consultative processes are to be effective it is essential that participants have access to expertise, without being dominated by it. Only experience in participation can increase people's appreciation of their potential to make a positive contribution. Also, there is a need for citizens to have access to technologies such as systems models if consultation is to be non-tokenistic. It has been argued that "...'if systems analysis and interactive computer models could help policy makers in business and government the same techniques should be able to assist citizens and citizen groups'..." (Elliot and Elliot, 1976, p. 198).

Facilitating community access to new technologies is essential because "...if the quality of citizen inputs into public policymaking remains as it is now, meritocracy may well become the only chance for survival. Therefore, building up the policy-contribution capacity of citizens is essential for continuous viability of democracy." (Dror, 1971, p. 21).

1-6. NETWORKS

Networks are linkages of persons or institutions. The study of these linkages can be used to assist with the interpretation of social behaviour (Craven and Wellman, 1973, p. 4).

"What distinguishes human life from that of animals, according to Marx is that human facilities, capabilities and tastes are
shaped by society." (Giddens, 1971, p. 13).

Schools are a part of this shaping process, and prepare students for participation in networks— including social, political, and employment networks. "It is in the schools that acceptance and even reverence for "the system" is established and nourished." (Fantini and Gittell, 1973, p. 115).

Network analysis is a complex area, and is continually being developed. "The continuing efforts exerted to interconnect systems and to generalize network design have spawned concepts such as: network interface, layered structure of network, open systems interconnection, message delivery, message processing, and network technical administration and control." (Buchinski and Islam, 1980, p. 9). However, the emphasis in this thesis is on social networks and the use of computer systems to facilitate these, rather than on the technical analysis of networks.

"One advantage in being a social animal is that one need not discover practices for oneself." (Skinner, 1972, p. 122). Computer networks can assist both with the communication and development of information on appropriate practices.

Partly as a result of this, computer networks have the potential to cause a "paradigm shift" in educational and general public administration. It is no longer true to say (at least in areas which computer networks have affected or have the potential to affect) that "Administrative history shows that broadly similar problems have been faced in the past, and that solutions not so different from modern solutions have been proposed." (Wettenhall, 1978, p. 14).
In order to understand computer networks one should appreciate their two key components—processing and communications—or, "In terms of global network functions, any computerized network that is geographically distributed can...be viewed logically as consisting of two subsystems, namely, a message processing and a message delivery system." (Buchinski and Islam, 1980, p. 13).

In many ways this can be compared to much of the information-processing work in which individuals are engaged—both in employment and leisure. They process and communicate information. However, their ability to do this is limited by such things as the speed at which they can read, write, speak and simultaneously consider information.

On the above point, it has been said that "An organization is primarily a device for overcoming the limited capacities of individual persons to process information and make decisions." (Morris, 1968, p. 25).

Salaman has indicated that "No understanding of organisations—and especially processes of control within organisations—is possible without some consideration of the ways in which organisations "construct and use knowledge." (1979, p. 174).

In considering the relationship between networks and co-ordination it has been said that "The network processes involved in migration involve the flow of information and other resources among members of the net. But this use of networks is not restricted to new migrants; it is one of the most pervasive characteristics of networks, and an important part of processes of integration and co-ordination." (Craven and Wellman, 1973, p.
Co-ordination and integration can be achieved either formally or informally. "Every complex organization has formal information flows and informal flows." (Grolier, 1979, p. 28). Informal information networks can have great significance. For example, it has been suggested that "To counter an inflexible and over-formal hierarchy, informal channels can be encouraged which get around the hierarchical barriers." (Grolier, 1979, p. 47).

The real potential for computer networks to be used to break down "over-rigid" information structures, within society at large as well as within organisations, is reflected in "Resource One, a radical computer group in California, [which] developed a random-access computer network to link citizen-action groups which share its data base on resources available for fighting consumer, environmental or social equity battles." (Henderson, 1978, p. 291).

Computer networks could also assist with devolution. One possibility would involve "...new administrative networks, with the erosion of many middle management positions as increased information transfer becomes possible without intermediary functionaries." (Dede and Bowman, 1981, p. 114).

In relation to information processing in society at large (as compared with purely institutional/hierarchical settings), "The expansion of communication and information processing capacities may have consequences of enormous social benefit or detriment to different groups in society depending on the particular direction of application of the technology, the institutional structure of controls over the technology, and the particular environment in
which it is introduced." (Melody, 1973, p. 165). For example, it has been argued that "If people can access and manipulate any piece of information without leaving their homes and simultaneously interact with other people and machines as easily as if they were sitting in the same room with them, then there would seem to be little reason for concentrating workers in large office buildings." (Kimbel, 1973, p. 149).

If the potential benefits of computer networks are to be fully realised, they will need to be applied, more than has been done in the past, to the area of information distribution systems. "Decision-makers the world over complain that useful information does not circulate, or circulates badly." (Grolier, 1979, p. 46). Also, "Very few if any nations have found an entirely satisfactory solution to the problem of circulating what the French have come to call 'grey literature', that is, the enormous mass of documents accessible in varying degrees and comprising reports by experts, preparatory studies for administrative decisions, parliamentary committee discussions, studies commissioned by the government, etc." (Grolier, 1979, p. 72). Sophisticated computer networks might be able to assist with overcoming the difficulties recognised above, for they have the ability to transmit information quickly, and, using sophisticated automated indexing techniques, to recognise who might be interested in documents.

For the information accessing and distribution potential of computer networks to be realised it is essential that they be "user friendly". Martin has indicated that "At best, a man-computer dialogue must be so seductive that the man is drawn into
it to explore, fascinated, what the machine has to offer." (1973, p. 8).

If planning for the introduction of new "user friendly" information technologies is to be effective, "...in place of thinking of a nation or society as a collection of communities we need to think of it as a complex set of overlapping networks of actual or potential communication and exchange." (Hiltz and Turoff, 1978, p. xxviii). In relation to the study of parts of networks it has been said that "The more autonomous a certain area is, the more it can be studied in isolation from the other institutions of its society and the easier it is to compare it with parallel areas in other societies." (Dror, 1971, p. 177).

One word which could not be used to describe educational or public administrative systems is autonomous. This highlights the need to use a network perspective in studying them. In relation to this in the area of education Dror has said "Education constitutes a closely knit system in the fullest sense of the word. This means that the various components of the educational system are interwoven and intertwined and that it would be difficult, dangerous, and misleading to deal with any of them in isolation." (1971, p. 246).

Research has shown that:

* "The faster, cheaper, and more noise-free the communication system, the less the tendency to decentralize." (Morris, 1968, p. 20). This reflects on possible linkages between technical network quality and the likelihood of a decentralised system being developed.
"In the last fifteen years or so, new management methods have been introduced into public administration [including PPBS and futurology]." (Groller, 1979, p. 11). To use these techniques effectively a broad appreciation of networks as a whole is necessary, rather than purely a detailed understanding of a number of isolated components.

"The traditional boundaries between disciplines, and especially between the various behavioural sciences and decision disciplines, must be broken down." (Dror, 1971, p. 15). This breakdown of barriers is particularly important if networks are to be comprehended as a whole.
REVIEW OF KEY REPORTS

In this section I outline the key reports which will be considered in the body of this thesis. I do not give a detailed analysis of the reports and how they relate to the key themes. Rather, I illustrate how each of these reports has components which relate to some of the key themes. A detailed comparative analysis is incorporated in the chapter dealing with discussion of the inter-relationships between the key concepts and reports.

1-7. WHITE PAPER ON STRATEGIES AND STRUCTURES FOR EDUCATION IN VICTORIAN GOVERNMENT SCHOOLS

The Victorian Government's "White Paper on Strategies and Structures for Education in Victorian Government Schools" is a very broad-based document. It was commissioned by a Liberal Government and was produced in 1980. The White Paper deals with aspects of education as diverse as directions for development in the area of building operations, and curriculum services. I will be considering five key themes from the White Paper which have also been considered in Federal Government reviews of public administration, these being:

* devolution and decentralisation (these are considered jointly in the White Paper);
* participation;
* consultation; and
* co-ordination.

Computer networking and related technologies could assist with the implementation of all of these thrusts both in educational and general public administration.
Even though the White Paper was produced in 1980 and there has since been a change of Government, it is still relevant. In particular, the broad themes which it articulated are still being followed by the new Government - for example, the emphasis on an expanded regional network to facilitate devolution and decentralisation is being proceeded with.

1-8. ROYAL COMMISSION ON AUSTRALIAN GOVERNMENT ADMINISTRATION (RCAGA)

The RCAGA was commissioned by a Labor government in 1974 and produced its report in 1976. The Commission received over 750 submissions (Coombs, 1976, p. 4) and is the most extensive review of Federal government administration ever undertaken in Australia. Its Letters of Patent indicate very broad terms of reference; it was charged with inquiring into:

"...(1) the purposes, functions, organization and management of Australian Government Departments, statutory corporations and other authorities and the principal instruments of co-ordination of Australian Government administration and policy; and

(2) the structure and management of the Australian Public Service." (Coombs, 1976, Letters Patent).

Without restricting the scope of their inquiries, the Commissioners were directed to consider such things as appropriate roles for Departments, mechanisms for evaluating efficiency in the APS, co-ordination in the APS, parliamentary scrutiny, accountability of public servants, internal control in the APS, centralisation, decentralisation, personnel policies, the rights of public servants as citizens, and other matters drawn to the attention of the Commission by the Prime Minister.
Clearly a number of these thrusts are similar to (but broader than) those included in the White Paper.

"The commission gathered its information and formulated its tasks and answers through a variety of methods, and largely as it went along: most important were formal and informal hearings, the operation of more or less expert task forces for particular problems and a wide-ranging research programme." (Schaffer and Hawker, 1978, p. 36). This approach can be compared to that undertaken to produce the White Paper, where there were broad based consultations with the community but no (publicly identified) expert task forces or a research programme.

1-9. REVIEW OF COMMONWEALTH ADMINISTRATION (RCA)

The RCA was Commissioned by a Liberal Prime Minister in September 1982 and presented its' report in January 1983.

The emphasis of the RCA was on quickly producing results related to a number of areas of concern which had gained widespread publicity and were clearly damaging the Government's reputation.

It was commissioned to look into:
* the impact of technological change on the APS;
* the increasing challenges the APS faces as a result of broadened responsibilities; and
* whether the APS as organised at that time could cope with unethical or illegal behaviour on the part of its' clients (in particular, in the areas of primary industry and taxation). (Reid, 1983, pp. 131 - 5).
The focuses on technological change, the need for new strategies to cope with increased responsibilities of the APS, and organisational structure aspects are related to the key themes and the other key reports discussed in this thesis.

1-10. JOINT MANAGEMENT REVIEW OF ADP MANAGEMENT ISSUES IN THE AUSTRALIAN PUBLIC SERVICE (JMR)

The JMR was "...initiated by the Public Service Board [in late 1982] as a high level assessment of ADP across the Australian Public Service. The specific objectives were to:

* Identify service-wide ADP administrative and management issues.
* Consider the implications of developments in technology for the eighties.
* Analyse and assess the significance of the issues and developments.

Arthur Andersen and Co. were the project leaders for the review team, which also included officers from the Department of Industry and Commerce, the Commonwealth Schools Commission, and the Public Service Board.

The JMR liaised with the RCA in regard to the technological component of the RCA’s terms of reference.

The JMR was "...the first management review of ADP to be undertaken on a Service wide basis." (Arthur Andersen, 1982, p. 2).

Some of the key issues considered in the review included:
* the effects of ADP on managers;
* the importance of ADP for the management of government programs and services;
* the need to focus on systems not hardware;
* the rate of adoption of new technology;
* the need to consider the user perspective;
* the quantity of resources available for ADP;
* the sharing of ADP resources between departments;
* the quality of ADP resources (in particular human resources);
* the planning process for developing ADP systems;
* the special needs of small organisations within the APS;
* the role of central agencies; and
* the role of government. (Arthur Andersen, 1982, pp. 2 - 9).

Many of these issues are closely related to the key themes — in particular the inter-connecting theme of networking.
CHAPTER 2. CONCEPTUAL FRAMEWORK

The approach I have used in this thesis involves the following:
* an overview;
* a review of the related literature on the key themes and an outline of the key reports to be considered;
* an outline of the conceptual framework;
* an outline of the methodology;
* consideration of the relationships between the key concepts and reports;
* a scenario based on possible futures relating to trends and inter-relationships considered in the previous sections;
* a case study;
* an outline of conclusions; and
* recommendations.

In the review of related literature, consideration is given initially to literature related to the key themes (with no special emphasis on education or public administration). There is a special attempt in this section to develop linkages between the key themes.

The key themes are:
* co-ordination;
* devolution;
* participation;
* decentralisation;
* consultation; and
* networks.

The operational definitions used in this thesis for the above concepts have been included at the beginning of the relevant
review of related literature sections.

In the review of related literature section such specific questions as the following are considered:

* difficulties which might be faced in attempting to achieve a co-ordinated approach in a devolved environment;
* whether devolution necessarily assists with facilitating participation;
* the impact of educational and value systems on the potential for increased community participation;
* the relationship between decentralisation and skill development in managers;
* the relationship between data-handling capabilities, the quality of communications linkages in networks, and the propensity to centralise; and
* how the "network" concept can help in analysing inter-relationships between the key concepts considered in this thesis and between components in systems.

The emphasis in this thesis is on considering how various social alternatives could be introduced using new technologies, rather than on purely outlining these new technologies. Melmon has pointed out that "For some time there has been more confused discussion about technology than serious discussion about social alternatives." (Melmon, 1972, p. 52).

The emphasis in the methodology section is on explaining how the "brainstorming" technique has been used to generate a diverse scenario dealing with possible futures in educational and general public administration.
This is followed by a discussion on the key themes and reports in relation to educational and general public administrative structures and strategies. The emphasis here is on linking the key themes and the thrusts of the reports — with a special emphasis on how various types of networking could assist with the implementation of the themes. Networking as such is not considered as a separate component of this section; it is used as a conceptual linkage between the other key themes considered. In this section, where appropriate, I have linked the consideration of key concepts — for example, devolution and decentralization are considered in the same sub-section (as it has been in the White Paper [Victoria, 1980, p. 11]).

Skinner has pointed out "There is nothing to be done about completely unpredictable difficulties, but we may foresee some trouble by extrapolating current trends." (1972, p. 152). His approach does not take into account the potential use of futures techniques to generate possible futures which are not based purely on extrapolation.

In relation to this, in my "findings" section I have used the brainstorming technique to focus on the future. My results are presented in the form of a scenario relating to the potential development of educational and general public administrative systems in Australia over the next 12 years. The emphasis is on possible futures (rather than preferable or necessarily probable). The aim of this section is to stimulate thought on possible options. A central assumption in relation to the usefulness of such an approach is that the future is not predetermined — it is, to a degree, "created" — and it is thus useful to consider longer-term options in this way so that
policies can be developed which will assist with creating preferable aspects, and with avoiding negative aspects.

However, it is important to also consider restraints which might impede the implementation of such possible futures.

To assist with this, a case study is included which reviews an interview by the author with Dr Mick March, Principal, Narrabundah College in the Australian Capital Territory (A.C.T.). The purpose of this interview was to gain a senior educational administrator's views on the relationship between the key themes and the structure of the A.C.T. education system, and the practicality of implementing the scenario in a particular school. This case study creates a linkage between the possible futures considered in the scenario and the probable futures of an educational system (and more specifically a school within that system) as perceived by a Principal working in that system.

The problem statement for this thesis could be summarised as: "What effect could computer networking (and related technologies) have on educational and general public administrative structures and strategies in the 1980s and 90s?"
CHAPTER 3. METHODOLOGY

The first portion of this thesis is basically descriptive in nature. It aims to present information on the current situation in education (with a focus on aspects of education in Victoria) and in public administration (with a focus on the APS), with an emphasis on the key themes.

The data I have used has come from a review of related literature and through studying a number of "blueprint-type" documents relating to both of these systems.

The ERIC data base was searched using the key themes as descriptors. I also searched the subject catalogue at the National Library using the themes as search terms.

"Data" for the scenario has also come from numerous conferences I have attended dealing with technological change, futures research, and education. However, this data is purely of a background nature and sections of the scenario cannot be specifically attributed to any particular conference I have attended.

In the scenario I have attempted to focus on the key themes, to inter-relate these, and to suggest possible trends for the future.

I do not contend that the "data" I have selected for the production of the scenario could be described as completely comprehensive or has been scientifically selected to give a representative sample of the population of "data". This lack of comprehensiveness would create potential problems for construct validity if I was attempting to produce a predictive scenario.
based on a complete overview of current trends. Instead, the emphasis is on developing a scenario which highlights a sample of potential futures rather than on developing a comprehensive scenario. In this context the use of non-comprehensive (or even representative) "data" is not inappropriate. Instead, the emphasis has been on selecting data which would contribute to a greater understanding of possible (as compared to probable) futures.

I have not attempted to study the Victorian Education Department or the APS in detail. Rather, I have reviewed related literature on the key themes, considered a number of "blueprint-type" documents relating to both of these systems, attempted some integration, and developed a scenario of possible futures. More specifically, I have limited the study to a consideration of those aspects of the key reports which relate to the key themes considered in this thesis.

This study is limited to the extent that it does not consider the systems as wholes, and that it does not consider historical and present aspects in great detail (apart from the six key themes). However, this limitation is deliberate and necessary in a minor thesis if it is to have any degree of depth. The aim has been to consider future options based on a number of thrusts which have been recognised as central to both systems' futures.

The "findings" section of this thesis (the Scenario) was produced by myself using the brainstorming technique on the information included in the first half of the thesis (no group of persons was involved - the ideas were generated by myself). This technique allows for maximum diversity - the emphasis is on generating
ideas and possibilities. The ideas in the scenario are not ordered in any rigorously structured fashion. The emphasis has been on presenting them in such a way as to encourage an "inventive" response from the reader. This compares with the first half of the thesis which is more tightly structured around the key themes in a traditionally "rational" fashion. I see the two halves as complementary. Dror has indicated that "Invention of new futures is an essential element of policy-oriented futures studies, as are more "scientific" forecasts and predictions." (Dror, 1971, p. 48).

A case study is then included based on a senior educational administrator's (Dr Mick March, Principal, Narrabundah College) comments on the implementation of the key themes in the A.C.T. schools system, and the practicality of implementing the scenario in a particular school.

There is a need for additional research on probable futures in these areas (using such techniques as case studies [as has been done in this thesis], trend extrapolation and modelling) and preferable futures (using such techniques as Delphi to rank preferences). This thesis could be of assistance in providing a listing of possible futures which could be ranked in order of preference using a ranking technique such as Delphi.

Once differences between preferable and probable futures had been identified, it would be appropriate for research to be undertaken on what strategies and structures could be used to "shift" the probable future towards the preferable one.
CHAPTER 4. DISCUSSION ON THE INTER-RELATIONSHIPS BETWEEN THE KEY REPORTS AND CONCEPTS

In this chapter the emphasis is on integrating consideration of the key themes and reports which have been considered separately up to this point.

4-1. INTRODUCTION

This chapter is divided into sections dealing with the impact of technological change on society and the need for a response from education systems to the specific telecommunications and computer technologies which will have a significant impact, and interpretations of a number of the key themes in the various governmental reports. Networking is an overall theme linking these sections together conceptually.

4-1-1. Analysis of the impact on society of a rapid rate of change.

Educational and general public administrative systems throughout the world are experiencing a rapid rate of change. This has been recognised by administrators; in fact, a key theme running through the report of the RCAGA was "...the need for adaptability, for those in the administration to be aware of and responsive to the facts of social change." (Coombs, 1976, p. 407). The rate of technological change is increasing. Computing and telecommunications technologies are becoming more powerful and less expensive. These technologies use minute amounts of non-renewable resources and they assist with the expansion of knowledge. "Knowledge is a rather special type of resource because it has the capacity of effectively infinite expansion,
and it is enhanced by being consumed." (Webber, 1973, p. 293).

The recognition of the important impact technological change is having, and will have, on public administrative structures is reflected by the comment in the RCA report that "In commissioning us with our task the Government identified technological change as one of the critical challenges facing public administration at this time." (Reid, 1983, p. 86). The need for the Australian Public Service (APS) to keep up with technological change is highlighted in the fact that "Whether the [ADP support] systems are available or not, managers are expected to react to huge quantities of data and to use a quantitative approach to problems of administration, to the analysis of policy options and the operation of programs." (Arthur Andersen, 1982, p. 3).

The finding of the RCAGA that "...management systems of government have failed to develop adequately the information resources at their disposal, to integrate them fully into the decision making processes and to ensure them proper dissemination." (Coombs, 1976, p. 346), if still true, will become an increasingly glaring deficiency in a future in which computer technologies are increasingly becoming available to laymen (in the form of microcomputers and powerful computer software [such as electronic work sheet and data base packages]), to sections and individuals within government Departments (without the need under current practice to refer to a central authority because the cost of the systems is often less than that required for external tendering) and educational systems. The claim of the JMR that "In situations where management information is being provided by ADP systems [in the APS], managers often
complain that the presentation is not satisfactory for their use because the information is too detailed, with the level of summarisation and exception reporting inadequate." (Arthur Andersen, 1982, p. 31) would indicate that deficiencies identified by the RCAGA in regard to ADP management in the APS have not been overcome.

Public administrative and educational systems are increasingly becoming more open to disadvantaged groups - this includes ethnic minorities, the poor, Aborigines, the handicapped, and women. There is also an increasing emphasis on the need for young people to be able to participate in the societal decision-making process, and to be able to anticipate possible, probable, and preferable futures. Political systems are also experiencing a rapid rate of flux. This is a result of the emphasis on the need for direct participation in democracy, the need for more immediate responsiveness from politicians, and an increasing emphasis on the need for public servants to be more directly responsive to the community. As a result "Increasingly sophisticated analysis is required of possible policy options and their effects, and almost all departments now have policy groups of varying size to keep abreast of thinking in the community." (Coombs, 1976, p. 78). Such policy units are not enough if the administration is to respond effectively to community demands - "It should be realised that without a more rapid conversion to the use of computers the Service will be even less able adequately to cope with the scale and urgency of community demands." (Reid, 1983, p. 89). In this context it is interesting to note that "One recent survey estimated that 80 per cent of the manager's time is spent in 150 to 300 'information transactions'

4-1-2. Need for a new educational paradigm.

Parents are increasingly demanding the right to participate in educational decision-making which will influence their children. This is partly the result of a broader societal emphasis on participation, but also relates to a failing which many parents perceive in the educational system: namely, that success in it does not necessarily result in young people gaining employment. It has been argued that "By setting up mass education systems, governments...helped to machine youngsters for their future roles in the industrial work force..." (Toffler, 1981, p. 79). This approach may have been questionable in a period of full employment; in a period of massive youth unemployment it is clear to all that there is a need for a re-direction in the education system. One possible approach to redirecting education would involve young people participating in "real world" decision-making. This approach is reflected in the involvement of young people in the decision-making processes of the Youth Affairs Council of Australia - in comparison with the more traditional approach where youth professionals tended to dominate. It is also reflected in an increasing emphasis by investigators on youth participation. For example, the Club of Rome's book "No Limits to Learning" argues that there is a need for young people not only to be trained in "anticipatory" skills (which involve them in considering possible, probable, and preferable futures) but also to be able to use these skills in real-life "participatory" experiences. One problem with Australian youth affairs approaches is that they have increasingly enabled young people to be able to participate without supporting this with training in anticipatory
skills.

The emphasis on participation in decision-making processes is not confined to education. "Demands for participation in management, for shared decision-making, for worker, consumer, and citizen control, and for anticipatory democracy are welling up in nation after nation." (Toffler, 1981, p. 81).

There is also an increasing emphasis on both educational and more generally public administrators being more accountable for the money which they are responsible for spending. However, it could be argued that no matter how efficiently money was spent, criticism would still occur, in that much criticism "...is based on outright hostility to the size and cost of the public bureaucracy." (Coombs, 1976, p. 18).

Many of the themes which have occurred in educational administrative blueprints for the future (such as the Victorian White Paper) have also occurred in more general public administrative blueprints (such as the RCAGA Report and the RCA Report). Thus, one of the purposes of this thesis is to consider how these themes can be interconnected, and to consider areas in which common approaches can be used by educational and more general public administrators. More specifically, I am attempting to consider how computer-networking technologies could be used to assist with the introduction of new structures and strategies in educational and public administration. The emphasis will be on the future - how these techniques could more effectively and efficiently be implemented with the use of computer networking technologies. I will also be considering how related techniques could assist. This analysis is particularly relevant when one
considers the results of a survey undertaken by the RCAGA which indicated that "Possibly the most universal complaint from users of the services [provided by government departments] surveyed was about the time involved: time taken to receive attention; time taken to get matters sorted out when something had gone wrong; and time elapsing before the service applied for was delivered." (Coombs, 1976, p. 128) The relevance of this study to this complaint becomes obvious when one takes into account the speed at which computer systems operate and their potential for providing services to people in their homes. However, technology alone can not be seen as a "quick fix" for these difficulties—particularly when one considers that "...recent years have seen massive, almost indiscriminate, public resistance to new technology." (Toffler, 1981, p. 161).

4-2. DEFINITION OF KEY TECHNOLOGIES

4-2-1. Telecommunications and related technologies.

This section of the thesis relates mainly to physical technologies. However, it is important to realise that "...technology is increasingly related to the development of techniques and processes for bringing about desired actions and for controlling and managing systems..." (Elliot and Elliot, 1976, p. 2-3).

The potential usage of telecommunications and computing systems to facilitate improved approaches to public administration has been appreciated for some time. For example, the RCAGA stated that in one of its task force reports (the Task Force on a Regional Basis for Administration) "...reference is made to a
preliminary analysis of the feasibility of developing an electronic information system designed to support delegated decision-making and, at the same time, to provide necessary data for central supervision and management." (Coombs, 1976, p. 53).

A number of technologies exist which could assist with the development of such information systems. I will discuss these in the following paragraphs.

Educational and general public administrators are familiar with the telephone system. They use this system for co-ordination. The telephone is convenient – it reduces the need for travel. It is so much part of administration that its role tends to be ignored. This acceptance can be compared to the attitude of many administrators to the use of computer systems – reflected in the fact that "...there is still a lingering tendency to see computers as some kind of unnecessary luxury instead of not merely desirable, but essential, tools of management." (Reid, 1983, p. 89).

There are a number of applications of telephone systems which could be used to enhance educational and general public administration. Telephone link-ups could be used for matters as diverse as meetings of subject consultants and for Inter-Departmental Committee meetings (particularly where some of the officers involved are located long distances from each other). Telecom can "link-up" up to nine telephones at a time for these meetings.

Groups can be involved at each location with the use of loudspeaker telephones (telephones with a loud-speaker and microphone attachment). This is very inexpensive when no long-distance calls
are involved and is relatively inexpensive even when they are (particularly when one takes into account the time saved in not needing to travel). Loud-speaker telephones can also be used to bring expertise into meetings when this might not otherwise be possible. For example, schools which are a long distance from the centre of a town could use loud-speaker telephones to "bring" experts from the town to speak to groups of students. They could also be used by public administrators (for example, when researching topics needing a quick response) where there is not the time available to travel to meet all the resource people with whom discussion is needed.

4-2-2. Data processing technology.

Dede and Bowman have pointed out that "The costs of computer and telecommunications hardware have fallen precipitously and will continue to plummet for at least another ten years." (1981, p. 111). In this context it is of concern that educational administrators at the school level tend not to be familiar with data-processing technologies.

As the cost of these technologies continues to decrease, there will be increasing potential for them to be used routinely for timetable development, report writing (using word processing software), and other administrative functions (in particular, those which are amenable to the use of computer packages such as data base and financial planning packages). Naturally, they will also increasingly be used in teaching — however, not just in the mathematics area (where they have tended to be concentrated in the past). Teachers in areas as diverse as English and foreign languages will be able to use computers to assist with teaching.
General public administrators often have had some experience with computers. However, this experience has usually been with large main-frame systems. In this context it is interesting to note that "From 1965 to 1977...we were in the 'era of the large central computer...It represents the epitome, the ultimate manifestation of machine age [sic] thinking. It is the crowning achievement...manned by a bunch of super-technocrats'" (Toffler, 1981, p. 179). The impact of these systems is reflected in the fact that "A number of senior managers [in the APS] have gained experience with systems which are predominately batch mode. They have had little exposure to such current technology as data base and distributed systems." (Arthur Andersen, 1982, p. 99). Systems which operate in a batch mode have often not been responsive to administrators' wishes partly because of the backlog of program development which most Government Departments face. The JMR "...found a substantial backlog of systems development work has been identified in departments and that delays of up to four years before development on some new systems can start are being forecast." (Arthur Andersen, 1982, p. 32).

This will all change." Increasingly officers in Departments will purchase personal computers (often as office machines - thus avoiding the need to go through a formal tender process). Also, with the development of fourth generation languages (which involve the use of sophisticated report generators) computer users will increasingly be developing their own systems without the need for programming support and without the need for long time delays. Toffler (1981, p. 180) has predicted that "Small, cheap machines, no longer requiring a specially trained computer
priesthood, will soon be as omnipresent as the typewriter." Also, it is probable that "...many middle-class employees may be given a terminal to use at home." (Hiltz and Turoff, 1978, p. 191). In this context it is interesting to note the comment of the Reid Report that "Particular care needs to be taken with the increased use of data processing and information systems, to ensure that concomitant audit, review, and probity verifying programs are devised and operated effectively." (Reid, 1983, p. 52). Audit requirements are often not considered when users develop their own systems using computer packages.

It is clear that both educational and public administrators will increasingly be using computers in both more applications and in new ways which require less professional support. This will facilitate the development of a more "participatory" approach to information analysis, but also could result in the development of un-coordinated approaches to information linkages.


The really exciting potential comes from the linking of computer and telecommunications technologies. This potential has been recognised by UNESCO which has indicated that it perceives two major thrusts for "informatics" development - "...the proliferation of highly reliable, powerful and low-cost information processing equipment on the one hand, and on the other, the appearance of new digital transmission systems and specialized satellites which enable data to be transferred at great speed and low cost, irrespective of the distances involved." (UNESCO, 1979, p. 13).

Already central office staff in the Victorian Education
Department have access via computer terminals to massive data bases on such matters as buildings and personnel. It is probable that such data bases will be increasingly expanded and interlinked. Also, it is apparent that there will be increasing emphasis on using computer terminals as communication tools as well as information disseminators between officers. The JMR recognised the potential power of the linking of computing and telecommunications technologies and indicated that "The potential of electronic mail is likely to be fully realised only if there are common standards between organisations as well as within them. There are thus grounds for assigning responsibility for developing Service-wide standards to one agency and asking it to begin development immediately." (Arthur Andersen, 1982, p. 64)

Communication is a two-way process, and allows for more participation than purely the dissemination of information. Computer conferencing facilitates communication, whereas many traditional distributed systems are designed purely for the dissemination of information.

As costs continue to decrease it is likely that schools will also have access to data bases dealing with such areas as community services and educational developments. The devolution of computer power in Commonwealth Departments is also noticeable - that is, the use of computers is increasingly being moved outwards to the interaction point with the public. This philosophy is reflected in the massive computer network being developed by the Commonwealth Department of Social Security.

"Computer-mediated communication systems are not meant to totally replace all other communication forms." (Hiltz and Turoff, 1978,
p. 139). For example, in public service environments there will continue to be a place for face-to-face communication regarding client difficulties which are not of a "standard" nature.

A computer terminal looks like a typewriter with a television screen attachment. It connects to a central computer via telecommunications lines. If a central computer has appropriate software it can link terminals. In this way it is possible for schools and government offices which have a high client-contact component to be linked both with each other and with central data bases. Messages from participants in such networks can be indexed according to such keys as:

* subject discussed;
* author;
* institutional affiliation;
* topic, author, or hoped-for responder to questions asked;

and

* topic, name of questioner, or name of responder to questions answered.

Computer conferencing systems facilitate very rapid communication, because "Spoken word systems cannot move [information] any faster than the average talking speed of an individual in the group, whereas written word systems can move [information] at the average reading speed of the individuals in the group." (Hiltz and Turoff, 1978, p. 38).

Computer conferencing can be particularly useful in facilitating the exchange of information on good management techniques. The RCA indicated that "It seems to us that at present good practices or solutions to problems being employed in one department do not
always come adequately to the notice of others." (Reid, 1983, p. 54).

Dror has commented that "...the resources in qualified personnel, political support, span of attention, information, and the like, needed for improving policymaking are extremely scarce in most modern countries, often making even a small critical mass impossible to achieve without very effective new types of aid, which, at present, are unavailable." (Dror, 1971, p. 209). Given the features of computer conferencing, this technology could be the "type of aid" which Dror envisaged.

4-2-4. Computer conferencing applications and implications.

Computer conferencing is already being used in the United States. For example, if people own computer terminals with audio couplers (which allow access to a computer system via a telephone handset) they can access commercial computer conference networks. One such network is called "The Source." "The Source...makes it possible for anyone with a cheap computer terminal to communicate with anyone else in the system. The Source will...facilitate the creation of what might be called 'electronic communities' - groups of people with shared interests." (Toffler, 1981, p. 180-1). This network was used by the World Future Society to assist with the organizing of the First Global Conference on the Future (held in Toronto in July 1980 - the headquarters of the World Future Society are in Washington D.C.).

With the rapid development of such technologies it is increasingly more reasonable to assert that "For many years our technological knowledge has been rapidly outpacing our decision
making institutions." (Dror, 1968, p. 3). This is particularly so in the area of education where sophisticated computer technologies are just beginning to make their appearance (particularly at the school level), and in general public administration where only recently has it been possible for individuals to purchase personal computers with extremely powerful processing and communications features. In such a context of rapid change it is reasonable to assert that optimal education and general public administrative policy will only be developed if government Departments establish "...units explicitly in charge of thinking, long-range policy making, surveying knowledge, and research and development about policy." (Dror, 1968, p. 53).

Some may argue that the need for new computer and telecommunications technologies is not great, and that educational and general public administrative systems are coping adequately at present. However, "The single most important standard for evaluating an activity is its optimal quality, that is, how good it could possibly be." (Dror, 1968, p. 67). Adequate performance is not enough - the aim should be for optimal quality output (particularly when one considers that resources are limited and community "wants" are limitless).

Thus, in evaluating education and general public administrative systems we should not be comparing their current state with that of the late 1970s. We should instead be considering the sort of performance which might be possible in the 1990s if technologies (both social and computer-based) are used in an optimum way. Whereas the Victorian White Paper and the various Federal Government reviews which I consider deal mainly with social or
computer technologies, I will attempt to integrate consideration of both of these technologies.

4-3. DEVOLUTION AND DECENTRALISATION

4-3-1. Interpretations in the White Paper and RCAGA.

The RCAGA argued that "...by skilful devolution and decentralisation of administrative procedures and the use of modern technology it is possible even in large and complex societies to come closer than ever before to situations where decisions can be made substantially by consensus among those primarily concerned." (Coombs, 1976, p. 126). In conformity with a number of the key thrusts of this statement, Hiltz and Turoff have argued that "Computerized conferencing can facilitate the decentralization of information exchange and decision making." (1978, p. 144).

Devolution and decentralisation are considered jointly in the White Paper which defines them in the following way: "Devolution refers to the transfer of authority and responsibility to other organisations further from the centre within an administrative or governmental system, while decentralization refers to the transfer of powers and functions away from the centre to other levels within the same organisation." (Victoria, 1980, p. 11).

The White Paper indicates that in the participation exercise before its development, large numbers of groups and individuals encouraged the Government to transfer as much power as possible to the local level (Victoria, 1980, p. 11). Citizens' pressure for devolution is consistent with efficiency - "...efficiency depends upon adequate authority being devolved upon or delegated
to officers at various points of decision — indeed...the aim should be to shift the authority to decide as close to the geographical periphery and as low in the hierarchical structure as possible." (Coombs, 1976, p. 34). It is planned for this to occur in the case of education in Victoria; however, ultimate responsibility will still be maintained at the centre. "Thus devolution and decentralization of authority can proceed only in accordance with broad policies acceptable to government." (Victoria, 1980, p. 12). The RCA supports this concept of devolution and indicates that "Even though Ministers, formally or informally, devolve many of their powers to officials, subject to any statutory limitations Ministers may nevertheless enter into whatever aspects of their portfolios they wish." (Reid, 1983, p. 38). Computer conferencing, through its massive information accessing capacity, could assist in implementing this approach to devolution.

In relation to decentralisation, the RCAGA went so far as to recommend that "Arrangements for all programs which involve direct contact between a member of the community as 'client' and a member of the administration be reviewed with the object of making the point of contact with the member of the public the point of decision also unless there are unusual considerations to be taken into account." (Coombs, 1976, p. 418). Computer conferencing could certainly assist with this process. The information required to make the decisions would be provided to contact officers by computer terminals.

This situation can be compared with that where centralised systems are used in "batch" mode, which results in significant delays in feedback to contact officers.
At a recent UNESCO conference "A number of States referred to the desirability of decentralization, following experience of excessively centralized computerization which led to operational difficulties." (UNESCO, 1979, p. 30).

The concept of decentralisation is also having an impact in private enterprise - "...the term 'decentralization' has...become a buzzword in management, and large companies are racing to break their departments down into smaller, more autonomous 'profit centres'." (Toffler, 1981, p. 269).

Devolution and decentralisation in education as interpreted by the White Paper have a strong component dealing with the involvement of citizens in the educational governance process (in particular in relation to school councils; in Victoria, State schools are governed by school councils which include representatives of staff, students, and the community). Devolution and decentralisation in education have little meaning if school governing bodies do not have access to knowledge. Through computer terminals school councils would easily be able to access data bases. Where the data base did not contain the required information, they could leave a question which could be accessed by experts at the central office, or by other participants in the network. Schools could be encouraged to add their own experiences to the data bases incorporated in the system. They would also be encouraged to participate in dialogues. This would be particularly useful where one of the schools in the network has already faced a particular problem.
Devolution and decentralisation in schools and the APS.

Through computer conferencing, schools would thus be able to access both knowledge and expertise.

The knowledge would be within data bases. The data bases would not just be of a "traditional" nature (for example, established educational indexes such as ERIC and the Australian Education Index). Schools would also be able to access specially developed indexes of "precedents" using familiar key words. They would also be encouraged to include their own experiences in the "precedents" index.

The Coombs report argued for devolution from another perspective: that is, from the central co-ordinating Departments to Departments, and from Departments to regions. However, the thrust of the proposal is the same, and the importance the RCAGA gave to this theme is reflected in the comment that "Perhaps the most significant changes envisaged by the commission flow from our emphasis on the primary responsibility of the individual department or agency for efficient use of resources, and the consequential changes in the role of the co-ordinating authorities, particularly the Treasury and the Public Service Board." (Coombs, 1976, p. 410).

If the Service becomes "devolved" it is interesting to consider the impact this would have on central Departments. The RCA report indicated that in relation to the Public Service Board (PSB) they "...see the PSB as needing to give fresh and added emphasis to its responsibility for promoting efficiency in the Service. To carry out this role we think it is necessary for it to retain the
closely interrelated functions including ceilings and establishment administration, management improvement, recruitment and selection, and training." (Reid, 1983, p. 57).

Decentralisation was supported by both the RCA and the RCAGA—the RCA report indicated that "We think it is obvious that the span of operations of most Departments is so large that it can only be effectively managed if decision-making is decentralised. The same point was made by RCAGA...Seven years on, we stress it again." (Reid, 1983, p. 79). It could be argued that one reason more decentralisation did not occur in that seven year period was because of the limited information and communication capacities to monitor devolved operations in most Departments. Computer conferencing could improve these capacities and thus indirectly facilitate increased decentralisation. The JMR considered how ADP technologies could be used to assist with devolution and indicated that "We see a real need for a deeper consideration by departmental managers of the advantages which might accrue from dispersion of some systems to end users. Those which essentially service the end user and do not impact heavily on operations elsewhere might best be developed and operated by the users themselves." (Arthur Andersen, 1982, p. 59).

In relation to devolution in the APS, there has been some real progress in the ADP area. This is noted in the RCA report which indicated that "The Government approved new procedures for ADP acquisition in April 1981 which require departments and authorities to produce annual ADP strategic plans using guidelines issued by the Department of Administrative Services. The new procedures, by disbanding the Interdepartmental Committee
on ADP and revising the roles of central co-ordinating bodies, devolved greater responsibilities to Permanent Heads and increased Ministers' involvement." (Reid, 1983, p. 172).

4-3-3. Devolution, access to knowledge, and privacy.

Devolution at the operational level requires access to knowledge. It could be argued that one of the reasons practitioners rarely use indexes is because the material included seldom relates directly enough to the problems they face. With an integrated "data base/computer conferencing" model it is possible to overcome this problem. For example, a School Council interested in developing a community farm might first access the precedents data base for schools which have already developed such farms. In Australia there would be a number of these. Members of the School Council would then read the reports on the progress of each of these farms. This may suffice. However, members may still desire more information on a particular problem the farms are facing. If there is no specific information in the progress reports dealing with the aspects they are particularly interested in, they might direct a question to each of the schools concerned. If, however, one of the projects has obviously faced a problem similar to that which they are interested in the question could be directed to that specific school. The question would be stored in the central computer, and directed to the Executive Officer of the project next time he or she came "on line".

A key issue in terms of the use of a computer conferencing system in this way is that of privacy. In this context it is interesting to note that in the late 1960s MacBride indicated that "...hardly any aspect of government computer operations is not a threat to
the privacy of some individuals." (MacBride, 1967, p. 100). However, when considering the question of privacy one must take into account the fact that "Considerations of privacy and freedom of information are in conflict - the greater the scope of privacy safeguards the more restricted will be the range of information publicly available." (Bennett, 1980, p. 3).

To facilitate the protection of data from unauthorised access, a data base can be divided up into schema. To gain access to a schema one needs authorisation. In order for the "precedents" data base to be as frank as possible, limitations might be put on the access that central offices of government Departments have to them. Also, groups of schools or sections of government Departments could develop schema within schema which only members of their group could access.

The central office, and regional offices, might also have confidential schema which only they could access. However, this would need to be limited if the concept of devolution of power to the schools and sections of government Departments is to have real meaning. Power requires knowledge, and schemas are basically designed to restrict access to knowledge.

4-4. PARTICIPATION.

4-4-1. Interpretations of participation.

"One of the most significant trends of our time is the near-universal demand for participation..." (Botkin, Elmandjra, and Malitza, 1979, p. 13).

Henderson has indicated that "We cannot stifle demands for participation: we can only make better provision that it be

Neesham has defined worker participation in management as occurring "...when those below the top of an enterprise hierarchy take part in the managerial functions of the enterprise." (1978, p. 5). The emphasis of the RCAGA was on staff participation specifically the increased participation of staff in the operation of the APS. This compares with the White Paper, where the emphasis was on non-employee participation (in particular, parents and interested community members).

The RCAGA, which was arguably one of the most participative Royal Commissions in Australian history, reported that "...participation is not easy to organise fairly and effectively." (Coombs, 1976, p. 126).

Hawker has argued that "Hearings gave RCAGA a public presence and a certain legitimacy..." (1978, p. 52). This can be compared with the participatory processes which led up to the development of the White Paper. There were numerous complaints that these consultative processes were not genuine, that the key themes had already been determined before the process began, and that a number of key themes identified at numerous community input sessions were not included in the final report. I would not be able to comment on these criticisms; however, it is interesting to note that "...the demands for participation frequently lead officials to devote their ingenuity to devices which are imitations of or substitutes for participation - being designed rather to 'make people feel' that they are being consulted or are participating. The introduction of such pseudo-public-relations techniques can ultimately have the effect of seriously alienating
the community from the bureaucracy." (Coombs, 1976, p. 126).

Power is heavily related to participation. As a result "...effective 'participative' planning needs to adopt a 'bargaining', rather than a 'consensus' approach, concentrated at a 'grass roots' level." (Elliot and Elliot, 1976, p. 184).

Educational systems could potentially assist with facilitating grass-roots participation. Dror has argued that "...some rather drastic changes in education generally may be needed to bring the individual into policy making and to escape some of the defects of mandarinism that a meritocracy (that is, rule by persons selected only by merit) is almost always subject to." (1968, p. 10). Dror has also indicated that "...in order for increasing citizen participation to constitute in fact an improvement, changes in the quality of that participation are needed. At the very least are needed more knowledge of policy problems, better understanding of the inter-relations between different issues and various policies, and fuller realization of the longer-range consequences of different alternatives." (Dror, 1971, p. 20).

4-4-2. Approaches to achieving participation.

"Creative participation...emphasizes problem detecting, problem perceiving, problem formulating, and common understanding, and is not restricted merely to problem solving." (Botkin et al., 1979, p. 30).

Drastic changes in education (both for adults [often in a work place environment] and young people) will be necessary for creative participation" in organisations to occur. This is partly because if staff do not participate to some degree in the
development of the goals, objectives and strategies related to their work, it is difficult for the staff to identify with them. In a broader context Nyerere has indicated that "...it is sometimes difficult for local people to respond with enthusiasm to a call for development work which may be to their benefit, but which has been decided upon and planned by an authority hundreds of miles away." (Nyerere, 1972, p. 1). This should be taken into account when considering that "...efficiency will be promoted to the degree to which staff identify themselves with the objectives to which their efforts are directed, and with the procedures by which those objectives and the related tasks have been formulated and allocated." (Coombs, 1976, p. 35). This is reinforced by the fact that "...cost-reduction methods which derive their effectiveness from greater involvement of staff in their work and a more enthusiastic approach to it rarely require additional capital costs but derive from the application of commonsense to the work environment as it is seen by those engaged in it." (Coombs, 1976, p. 45).

"Participation...refers to providing opportunity to contribute to policy development and formulation." (Victoria, 1980, p. 14). It must be recognised that providing the opportunity for participation is not enough to ensure broad-based participation. "The level of participation undertaken by any citizen will depend on the opportunities available to him, the political resources he commands, and the attitude held by society in general, for example whether favourable to interest group activity or not." (Higgins and Richardson, 1976, p. 7). It has been found that "Participatory democracy, except at the local and small-scale level, increases the influence and power of activists and can
weaken concern for the interests of the inarticulate and the unorganised." (Coombs, 1976, p. 15). It has also been found that "In many circumstances...direct universal participation is prevented. For example, the poor and uneducated may not take the time, or may be too handicapped to express themselves effectively. Or the population may expand until a town meeting becomes unmanageable, and mass media of communication, such as television, are not yet adapted to the requirements of politics." (Lasswell, 1971, p. 105).

To participate effectively, persons should be assisted to develop anticipatory skills. "Anticipation is the ability to deal with the future, to foresee coming events as well as to evaluate the medium-term and long-range consequences of current decisions and actions." (Botkin et al., 1979, p. 25).

Communications systems can now potentially be used to facilitate participation and the development of anticipatory skills. For example, in Ohio, United States, a cable T.V. system (QUBE) has been developed which "...provides the subscriber with thirty TV channels (as against four regular broadcast stations) and presents specialized shows for everyone from preschoolers to doctors, lawyers, or the 'adult only' audience." (Toffler, 1971, p. 174). The system allows people to vote on issues as they watch them being discussed on their television sets. It has been used for voting on issues as diverse as local government matters and talent quests. It could easily be used to facilitate mass participation in school governance at the local level. Consideration has been given to the development of a cable T.V. system in Australia, but in the public debate little
consideration has been given to its use in facilitating greater community participation in governance.

Computer conferencing systems could supplement the use of cable T.V. systems for such applications. Hiltz and Turoff have indicated that "The most exciting and potentially revolutionary political application of a CC [computer conferencing] system is the facilitation of the direct participation and voting of citizens on important state and national issues." (1978, p. 197).

Technology is not a necessary component for increased participation of staff in large organisations. For example, the RCA indicates that "Intelligent and able staff at junior levels should be capable of contributing useful suggestions about management and operational practices." (Reid, 1983, p. 85). All that is needed for this to occur is for procedures which have been developed by the PSB to be applied in all departments in the APS, and for these to be communicated to staff so that they are aware that their suggestions are welcome.

It might also be appropriate to consider ways of increasing public participation in the operations of the Australian Public Service. "Public directors" of some form could be considered. For example, Chamberlain has argued that "Public directors would seem to be appropriate for all corporations over some specified size." (Chamberlain, 1982, p. 94).
4-4-3. Potential role of computer conferencing in facilitating participation.

Dye has argued that participation in school governance has been restricted because "...as school issues become more complex, the knowledge of citizen school boards seemed insufficient to cope with the many problems confronting the schools - teaching innovations, curricula changes, multi-million-dollar building programs, special education programs, and so forth." (1978, p. 149). This has resulted in professionals playing an increasing role in school governance in the U.S. and Australia. With the use of telecommunications technologies, professionals' actions could be made more open to scrutiny. Computer conferencing would facilitate school councils gaining second opinions on actions proposed by professionals - either from other school councils which have faced similar problems, or from other professionals. Professional educators could well argue that this would lead to a highly turbulent environment. The key issue is "Who owns the schools?" There is no question, for example, that a person is responsible for his or her own body and that it is appropriate for a second opinion to be sought in relation to health matters. If the community "owns" the schools (as against the professionals who administer them) it would be appropriate to argue that the same thing should apply for schools.

The lack of access to all information has also resulted in a centralisation of power within the APS. The RCAGA indicated that "We have received evidence that many officers are unwilling to accept responsibility because of the consequences they fear may follow from making even a relatively small 'error' or from the exercise of a discretion, for example, to grant a pension, in
circumstances with which a superior may not agree." (Coombs, 1976, p. 150). If officers are to be able to take initiative it is critical that they have access to the same information as their superiors (that is, relevant to the decisions they need to take). Without such information they will have difficulty in justifying their decisions, and will tend to continue to send cases "up the line" for decisions. The RCAGA indicated that "Action [should] be taken to ensure that departmental decision makers at all levels have access to the information upon which their decisions should properly be based." (Coombs, 1976, p. 413). Computer conferencing systems could economically provide for the provision of such information, and thus indirectly assist in building up the confidence of officers at the client interface level in their ability to make decisions without the need to regularly consult with senior officers because of uncertainty resulting from a lack of information.

The continuing importance of public servants who work directly with the public having sufficient information to make speedy decisions is highlighted by the comment that "It is doubtful whether the hiatus between the public and the bureaucracy identified by the Coombs report has diminished in the five years since the Report was published." (Chapman, 1982, p. 28).

4-4-4. Barriers which need to be considered when it is desired to increase participation.

Lack of information is not the only barrier to participation; such things as language difficulties, location (for example, if a person is in prison), handicap, poverty, and geographic isolation can all restrict participation.
As indicated by Lasswell (1971, p. 105) the poor may not be able to take the time to participate. For example, they may be working long hours in poorly paid jobs. With telecommunications people would be able to participate at a time convenient to themselves (assuming they are subsidised - Hiltz and Turoff have indicated that "Whenever a useful new technology is developed, one policy question that should be vigorously pursued is how to make it available to those who cannot afford to buy it themselves." (1978, p. 167)). For example, with computer conferencing one can input a comment into a discussion at any time. When others in the network access the discussion, they read the comment and respond. Instead of taking two hours for a meeting, a few weeks may be spent on the discussion, but this approach has the advantages of allowing for:

* greater participation; and
* more time for reflection - one does not need to immediately respond.

Another barrier to participation is that of language. Computers are gaining increasingly more sophisticated interpreter capabilities. Eventually it is likely that a computer conference will be able to take place with people inputting ideas in their own languages and having these translated into as many languages as required. This can be done manually now; but translators need to be used to regularly key-in translated comments.

In education such an approach would allow for students studying an issue in different countries to communicate, and for school councils in different countries to liaise. It would also enable much faster dissemination internationally of educational
innovations. In general public administration it would enable much easier communication than is now possible. International organisations such as the O.E.C.D. would need to place less emphasis on employing multilingual staff (particularly where much of the communication is in a written form).

Prisons presently restrict the ability of inmates to participate in society. Computer conferencing could reduce this restriction. It is as true for Australia as the U.S. that "...our prison system dehumanizes and neither educates nor rehabilitates..." (Hiltz and Turoff, 1978, p. 174).

Telephone link-ups can be used to break down barriers to participation which result from geographic factors. By linking this approach to the use of loud-speaking telephones, school council meetings could include people who would have trouble coming to the school (perhaps because of distance factors or embarrassment about gross deformities or their physical or social difficulties). Other technologies could also be considered - for example, the school council meeting could be broadcast over community radio and community members could then be linked-into the discussion (and broadcast) through a telephone link-up. A wide variety of "resource" people could also be linked-in using this technique (which I term BOR - Brainstorming on Radio). As broadcast technologies continue to decrease in cost this approach should become an increasingly viable option, especially for large school districts.

The BOR technique could also be used to facilitate public participation in discussions on government programs.
4-5. CONSULTATION

4-5-1. The White Paper's interpretation of consultation and the potential use of Videotex to assist with consultation in education and public administration.

Another key theme of the White Paper is consultation. "Consultation with regard to the management of public education refers to the process of sharing information with and securing feedback and comments from participants and from community interests." (Victoria, 1980, p. 16). Many of the submissions in the lead-up to the development of the White Paper referred to "...the need for schools and for administrative agencies to provide more detailed information to parents and communities with regard to objectives and programmes." (Victoria, 1980, p. 16).

Currently the Victorian Education Department publishes annually a booklet outlining the objectives and programs of schools in the State. With the use of a Videotex system such a booklet could be updated on a daily basis. Videotex allows people to access hundreds of thousands of pages of information in a data base through a key pad next to their television set. The information is displayed on the television set. Communication with the data base is carried out through telephone lines. Such a system has been in use in the U.K. for a number of years. It is mainly used for commercial information. As this system gains greater use in Australia there will be a real need for educators and other human service professionals to pressure the government to ensure that a portion of the space is allocated for community information.

As well as being able to access information about the objectives and programs of their local school via such a system, community
members would also be able to access information on such things as:

* short courses being offered over the next month in their area;
* areas in which volunteers are needed;
* proposals which other community members have put forward for the school (and scheduled meeting times to discuss them);
* profiles of new teachers at the local school; and
* information on the school budget and any budget variances.

Videotex systems could also be used as a supplement to annual reports by Commonwealth Departments. "The annual report should be a vehicle by which Departments furnish an account of their activities and performance in terms of ministerially approved goals and objectives." (Coombs, 1976, p. 75). The RCAGA argued for there being "...further development of the practice of departments preparing annual reports. These should include references to developments of significance and issues, together with financial and staffing information." (Coombs, 1976, p. 414). With Videotex a broader version of the departmental "annual report" could be produced on an up-dateable-daily basis. It would include the types of information included in annual reports but also:

* contact points for complaints by the public, and access to information;
* information on proposed new programs;
* new contact points in the department;
* daily updates on current issues affecting the department;
* daily updates on staffing levels;
* information on any new functions;
* statements by new Ministers; and

* regular evaluations (with some outside involvement — one approach might involve the use of parliamentary committees as a supplement to cross-departmental evaluative task forces) of the Departments' performance with information on how the Department plans to improve on weak points identified. Much of this information would be produced automatically via the Departmental computer conferencing network.

The JMR in part recognised the potential for innovative uses of videotex technology when it indicated that "Videotex will permit the storage and reference of important manuals, reports, directories, instructions and policies. These would be available for use both within the Service and for the public." (Arthur Andersen, 1982, p. 15).

4-5-2. The use of television and telecommunications technologies to assist with consultation.

The Victorian Government accepted the notion that there is a need for "...more frequent consultation, involving many more individuals than merely the members of school councils and other official advisory bodies." (Victoria, 1988, p. 16). A Videotex system could assist with this process. However, other technologies considered in this paper could also be of great assistance. It is important to also use currently available technologies as much as possible to facilitate the consultative process. Dror has indicated that "Policy sciences must develop new formats for presenting and analyzing public issues in the mass media of communication in ways conducive for the formation of informed individual opinions." (1971, p. 21).
Already the Victorian Education Department has been given, free of charge, time in the morning to show films on a commercial T.V. station. Television shows could be developed around issues of pressing concern (such as the need for a core curriculum, and sex education). Participants involved in these issues could be filmed in dialogue over a number of days. The danger with attempting to develop a show out of a two or three hour dialogue is that any consensus reached tends to be forced. By integrating a SEARCH format (involving, amongst other things, completely open dialogue over a number of days) with film, it should be possible to capture a number of viewpoints, and possibly expose the public to innovative syntheses of viewpoints which are generally considered to be opposing.

Other resources could also be used. For example, the Council of Adult Education in Victoria has conference telephones in a large number of its country centres. These could be used to allow people in the country to dialogue with key decision-makers within the Victorian Education Department on a regular basis.

These could also be used to assist with involving country people in evaluations of APS activities in country areas.

4-5-3. Consultation could be facilitated by the more imaginative usage of currently available technology.

I would emphasise that I am not just advocating the use of new technologies to facilitate consultation. I am also advocating the more imaginative use of currently available systems. Toffler has indicated that "...techno-rebels contend that technology need not be big, costly, or complex in order to be 'sophisticated'."
Thus, loud-speaker telephones should not be seen as just a medium for delivering instruction to country students. Television should not just be seen as a one-way transmission medium. Paradigms must be exploded if resources are to be used in the most efficient fashion. To assist with this process it is essential that educators and general public administrators consider:

* schools;
* government departments;
* themselves;
* students;
* technology;
* society; and
* buildings

as multi-purpose rather than single purpose units.

Thus a school could be used as a home, a home as a school (as in the case of "School of the Air" in remote areas of Australia), a hospital can be a library (a "resource centre" might be a better term in this context), and a teacher can be a member of a task force carrying out research as well as a learner in an experiential learning project.

This multi-purpose perspective is reflected in a submission to the RCAGA which indicated "... that departments should become more accessible to the community by becoming a 'learning resource'." (Coombs, 1976, p. 144).

Consultation in which new approaches are proposed by the community will only be effective if educators and general public administrators adopt a flexible approach.
4-6. CO-ORDINATION

4-6-1. Co-ordination, communication, and control.

All of the approaches I have considered in this thesis need to be efficiently co-ordinated.

There is great potential for innovative approaches to co-ordination involving the use of communications technologies, since "Communications [technologies]...make it possible for individuals to operate from almost anywhere and for societies to be controlled from almost anywhere." (Ferkiss, 1972, p. 31).

Co-ordination becomes more, not less, important in a period of rapid change and turbulence. Co-ordination involves "...the regulation or adjustment of activity or functions in order to secure greater overall harmony and consistency, to achieve greater efficiency and a more desirable balance, and to avoid unnecessary overlap and wasteful use of scarce resources." (Victoria, 1980, p. 17).

In order to achieve a co-ordinated approach it is important that no more change than is necessary be introduced into administrative structures. The RCAGA report indicated "...that more conscious thought and rigorous examination should be given to proposals for administrative change, because they are almost always costly in both manpower and money and often damaging to departmental and staff morale." (Coombs, 1976, p. 387). In view of the number of Departmental mergers and break ups since 1976 at the Commonwealth level one could well question whether the Government took notice of this advice.
Co-ordination of communications and influences is critical in all administrative contexts. For example, the RCAGA found that "Senior officials...are finding that they must be prepared consciously to work with a pluralist range of influences on ministers and perhaps even to see their role as being primarily to organise those influences, so that, while ministers are exposed to the widest choice of advice and of options, they are helped by their officials to assess and give appropriate weight to them." (Coombs, 1979, p. 15).

These influences must be channelled through organisational structures by officials. "Organisational structure involves limits on members' decision-making. As such it is an essential form of control." (Salaman, 1979, p. 51). However, improved co-ordination does not necessarily involve a need for greater "control". For example, particularly in high-priority areas, there will be a need for experimentation in relation to organisational structures. A number of approaches will need to be tried at once. Duplication could be classified as "necessary" in such cases. This is because "One very interesting feature of an optimal policymaking structure is that it should be rather redundant: the contributions to the various phases should duplicate and overlap each other...The correct criterion should be that the more critical a certain policy is or one of its phases is, the more redundancy should be provided as a way to minimize the risk of mistakes..." (Dror, 1968, p. 211).

Naturally, the various approaches implemented should be evaluated and the results recorded so that the system can "learn from experience". "One of the amazing weaknesses in much contemporary public policymaking is that there is no systematic learning from
experience. Very few evaluations of the real outcomes of complex policies are made, and there are even fewer on which improvements of future policymaking can be based." (Dror, 1968, p. 274).

4-6-2. Evaluation, feedback, and self-correction.

The potentially important role of evaluations in resource allocation decisions is reflected in the comment by Hadley and Hatch that "The evidence from evaluations of professional interventions in education, health and social work hardly serve to explain or justify all the resources which have been devoted to them." (1981, p. 2).

However, if evaluations are to serve their purpose it is critical that action be taken based on the results of the evaluation (if the recommendations are accepted by the responsible Minister). The RCAGA argued that this could be facilitated in the case of government Departments by ensuring that "Where the parliamentary committee primarily concerned with administrative efficiency reports critically or adversely upon the activities of a department or agency, or in relation to matters which are peculiarly its responsibility, the department or agency should be expected to report directly to the committee on action taken or proposed to be taken in response to the committee's comments and recommendations." (Coombs, 1976, p. 417).

The need for action to result from evaluations is highlighted when one considers the large amounts of money which are being invested in such programs as transition from school to work. These are co-ordinated at the State rather than federal level. With computer conferencing it would be possible for people trying
out similar approaches in different States to keep in touch on a "real time" basis. Also, information on evaluations of different approaches could be readily available, together with expert advice from both the evaluators and the implementers of the program.

Co-ordination is also related to efficient communication and feedback - "...policymaking must have highly elaborate and efficient communication and feedback channels and mechanisms in order to operate, especially to operate optimally." (Dror, 1968, p. 194). Increasingly this feedback will be of a "self-correcting" rather than "central authority directive" nature. The more quickly schools and area offices can get information, the more quickly they can co-ordinate their activities for optimum results. Telecommunications technologies (in particular computer conferencing) allow for speedy information transfer, and for iterative feedback (that is feedback over a number of "rounds" as the system assists with self-correction). Such "self-correcting" feedback is important if responsibility is to be effectively devolved within government departments.

In the context of APS administration, "self-correction" refers to the use of feedback to correct procedures as close to the operational level as possible. For example, "exception reports" would be directed both to those responsible for administering programs as well as those in central offices responsible for following up on extreme exception conditions. In this context it is interesting to note a current use of exception reporting in the APS - "...the use of ADP to detect from departmental records atypical occurrences in the servicing of patients by doctors." (Arthur Andersen, 1982, p. 32). Implementation of a "self-
correcting" philosophy in such a context would involve the reports being distributed to both regional offices of the Department of Health and a central policing unit. The policing unit would only become involved if the regional offices failed to take appropriate action.

4-6-3. Co-ordination and broad-based systems linkages.

In relation to co-ordination of data, the JMR indicated that "We see scope for greater co-operation between departments which use common data, for example in unemployment and welfare areas." (Arthur Andersen, 1982, p. 63).

Co-ordination of data in education will not only involve liaison between the school and other traditional educational institutions. It may also involve them in linkages with social units as diverse as the local police and the local employment office. Naturally, this implies a need for such agencies to be linked into the educational computer-conferencing network. Increasingly, such agencies are part of semi-open networks incorporating computer networking. However, these are generally one-way systems. For example, they may involve the police using their computer system to check whether a car is stolen. The idea of linking schools into such networks for co-ordination purposes raises profound social questions. It may result in more co-ordinated education systems, but it might also result in a world in which one is followed from birth to death by electronic tentacles.

The technology itself is not the danger - the danger is that it may be used in inappropriate ways. If the police could access
school records, for example, there would be clear dangers to privacy. The technology could be designed to ensure that this could not happen—however, discussion would need to take place before, rather than after, a "Network Nation" developed as to the limits to which educators would allow their network to integrate
CHAPTER 5. A SCENARIO

5-1. WHAT WILL THE SCENARIO DISCUSS?

Martin has argued that "Data transmission may become as indispensible to city-dwelling man as his electricity supply. He will employ it in his home, in his office, in shops, and in his car. He will use it to pay for goods, to teach his children, and to obtain information, transportation, and items from the shops; he will use it from his home to obtain stock prices and football scores; he will use it to seek protection in crime-infested streets." (1973, p. 9).

This scenario is designed to consider ways in which systems (both educational and general public administrative) could change over the next twelve years with the use of modern computing and telecommunications technologies. There is a focus on the other themes considered in the first part of this thesis where appropriate.

In this scenario I have attempted to integrate consideration of educational and public administrative aspects wherever appropriate.

Wherever I write of periods up to (but not including) 1984 the events described have actually occurred.

Wherever I speak of 1984, or further into the future, the discussion is purely "possible", and should not be considered in any way "probable" or necessarily "preferable" (at least from my point of view). The emphasis is on highlighting possible futures in education and public administration of which policy developers should now be aware and for which they should be planning (or
against which as the case may be).

EDUCATION

5-2. USE OF COMPUTER PACKAGES IN EDUCATION

The year is 1995. Typing has been part of the core curriculum in government schools for five years. Students are beginning to use terminals for simple communications tasks in primary schools. In secondary schools, students have been using computer packages on a wide scale for around ten years. These include database and financial planning packages. Since 1985 there has been little emphasis on teaching programming techniques to students. The emphasis instead has been on teaching them to use computer packages, because it is recognised that it is not economical to actually design and program systems "from the ground up" in most real-life situations. Computer packages have become more economical to purchase as a result of economies of scale factors. The emphasis in both public and private administration is also on using prepared packages and higher-level languages rather than on developing customised systems. Packages are required by law to include self-instructional material.

There is however, much work also done in teaching computer professionals new techniques for programming, program modification and adaptation, and program juxtaposition (this involves the simultaneous running of more than one program and the selective synthesis of components from these).
5-3. NEW ROLE FOR SCHOOLS AND PUBLIC LIBRARIES

Computers and communications networks have had a significant impact in facilitating a change in role for schools and public libraries. Many children who previously went to school now learn at home, using terminals at least 50% of the time. Libraries are seen as information-search training institutes rather than purely as depositories of information. Computer terminals (for use in local communication and international data-base searches) are available in all schools and public libraries. Initially a number of schools could not afford to access international data bases, but the Government developed a special "Disadvantaged Schools (Information Systems)" program in 1990 to assist such schools. This was administered by the Commonwealth Schools Commission.

All major libraries have had international access to world-wide information systems since the mid-1980s. At that time there was a debate over whether data-base access should be provided free to individuals in libraries. This debate became less relevant as all key community information became available on Videotex systems (the community information section of the national Videotex system established in 1985 was funded by the Government), and as the cost of access to data bases (both in Australia and overseas) became less expensive (as a result of new approaches to communication involving the compression of information and digitalisation of information). The additional national satellites have greatly benefited this access.

Access to data bases has come to be seen more and more as a right in a democratic society (that is, if all persons are to have the potential for effective participation in societal decision-
making). Some commercial data bases are still expensive to access; these are generally of a kind which have both a limited potential audience and for which the development costs have been extremely high (access to these data bases is on a "user pays" basis).

Libraries still provide conventional services, but the emphasis is very much on how to use technologies to gain access to information (as is traditional; for example, how to use index systems) and also on using technologies to process information (this was an innovation— for example, free courses in how to use financial planning packages were available in all central State libraries from 1985) and how to lobby for change based on the results of information processed (the role of libraries as facilitators of change became particularly strong in the late 1980s when it was increasingly realised that many of the studies carried out by individuals were not having an impact on societal decision-making processes, because many of the individuals and groups who undertook them lacked lobbying skills). Wherever possible, self-teaching courses are used as a supplement to face-to-face teaching in libraries.

Librarian roles have been expanded to include basic technical skills required for the maintenance of the extensive range of computer and related electronic equipment which is now as common and integral to library operations as are books and audio-visual equipment.

School libraries have increasingly taken on a community orientation. Most school libraries now provide services to the community, particularly where there is no public library in the
area.

5-4. INNOVATIVE APPROACHES TO EDUCATION

An increased community orientation in education is reflected in parents now playing an integral part in the education of their children. Many children stay at home to learn from parents who in the majority of cases now also work from home. The progress of these children is monitored both technically and personally by teachers with whom the children meet face-to-face every few months.

Students also regularly dialogue with their friends (both in Australia and overseas [sometimes using computer translation packages provided with computer conferencing facilities]) through terminals. They do, however, go to school on a regular basis for general socialising activities and to participate in small business activities. A number of schools now lease space to groups of students who are involved in the development of computer software, the sale of art works, and action research activities (often dealing with youth-related topics).

In some locations, there are as many parents as children enrolled in formal educational programs. Partly as a result of this, parents also use terminals for learning activities.

There is a general awareness of the need for learning to be a lifelong process, and for retraining to occur regularly throughout a person's life. Career educators are used to assist both young people in transition from school to work/higher education/unemployment/self-employment, and older persons in transition from work to retraining, to new types of work or into
constructive and rewarding retirement.

5-5. APPROACHES TO CAREER EDUCATION

Career education starts for young people at a very early age. They often watch their parents at work on computer terminals in the home. This compares with previous situations where the parents' work was not visible to the young. In a sense this reflects a return to more traditional work forms. The young and old have access to volunteer "mentors" from any profession or trade in which they have an interest.

Mentors have been used in the APS as a career development tool since the mid-1980s. They supplement other approaches to broadening the vision of up-and-coming executives (such as executive interchanges). There is a special emphasis on providing mentors to disadvantaged groups (for example, new female financial executives might have a female mentor who is the Head of a Financial Planning Branch in another Department). To avoid any possibility of influence being used to assist mentees gain promotions (actual or apparent), mentors may not sit on their charges' interview panels.

Some mentors are either wealthy philanthropists or retired persons - with both professional and trades backgrounds.

Various businesses have opened their data banks in a limited way to schools and other learning institutions (as well as to public administrators who increasingly do "Executive Exchanges" without leaving their work place for long periods: they do them via their computer terminal, [either at home or at their work place]). The opening of data banks has allowed young people and others to
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