GAMMA

UNIVERSITÉ DE MONTRÉAL ☐ MCGILL UNIVERSITY

FINAL REPORT ON

PROJECT DELTA: STAGE I

THE SOCIO-ECONOMIC CONTEXT OF

PUBLIC TELECOMMUNICATIONS IN CANADA,

1976-1991:

TOWARD A PROBLEMATIQUE.

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by

Peter S. Sindell, GAMMA (Study Director)
Kimon Valaskakis, GAMMA

To : J. W. Halina, Director General
Research Policy & Planning
Department of Communications
Ottawa, Ontario K1A 0C8

From: Peter S. Sindell & Kimon Valaskakis
GAMMA
McGill University - Université de Montréal
3535 Queen Mary Road, Suite 210
Montréal, Quebec H3V 1H8
(514) 343-6633

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SUMMARY

The overall goal of Project Delta is to forecast transformations in Canadian society during the medium term of 1976-1991 which could potentially affect public telecommunications and, reciprocally, to assess likely changes in the telecommunications milieu which could affect the other areas of our society.

Stage I was designed to assess the feasibility of undertaking a future oriented research program to realize the overall goals of Project Delta and, if judged feasible, to present a research proposal to accomplish such goals.

In order to reach the desired outcomes for Stage I we have delineated the problematique for this field of research: the background, issues, problems, and subproblems. Based on our study of the literature, structured interviews with members of government (DOC and Canada Post) and others, and a workshop-seminar with the Project Advisory Committee, we have refined and organized hundreds of possible research topics into ten research themes which we believe deserve high priority from researchers and practitioners concerned with the medium term future of communications in Canada. These themes, which are elaborated in the following report, are:

Do S 2. The Causes, Dynamics, and Effects of Rapid Technological Change in the Communications Sub-System.

Pop structure

1. An "Aging Society": Implications for the Communications Sub-System. *Not very interesting*

Restructuring relative price change 3. A Conserver Society for Canada: Effects on the Communications Sub-System.

4. Decentralization Versus Centralization in Decision Making. *The grand theme of history - may be the central pillar of the work.*

Clarify? 6. The Impact on Communications of Continued Urbanization Versus Deurbanization.

5. Diversity, Access, Dialogue, and Participation. *Not very interesting unless it means & and &*

What is the c. End? Product? Price? Do S? 8. Strategies for the Rationalization of the Communications Industry: Scenarios for Institutional Collaboration, Competition, and Integration.

7. The Implications of Foreign Control in the Communication Industry. *Relevant?*

Cause or effect? 9. The Tradeoff Between Economic Centralization and Decentralization.

Is it big enough to be significant? 10. The Transportation - Communications Tradeoff.

If cost of tptn. too high, greater use of telecomm., but will not prevent massive restructuring

Two dimensions which affect almost every area are the international and the demographic.

Forecast of Environmental Change

In developing the broad social, cultural, political, and economic context with which events in the communications subsystem will interact we forecast a "Movement Away from Mass Consumption" in the western industrial world. Economically the stimulus for this important structural transformation will be "The Need to Conserve". *The only economic stimulus is price. There might be an attempted political stimulus which, however, will succeed only to the extent it conforms to economic facts.*

Probably not correct

The economy <u>will be based on much lower levels of energy and resource use</u>, much more recycling, and much higher levels of activity in the service sector, particularly services involving the creation, transmission, processing, and reception of information. This society will be characterized far more than at present by smaller scale, no further growth in urbanization and, possibly, a significant degree of deurbanization. The positive side of the movement away from mass production, marketing, and consumption of industrially based consumer goods is what we would call "The Thirst for Individual and Group Expression". Socio-cultural values focused on individual growth, communal rejuvenation and expression of group identity as well as decentralization in the economy and decision making are characteristic of the socio-cultural and political aspect of this transformation. Thinking about the themes in this light those on the left relate more to "The Need to Conserve" while those on the right relate more to "The Thirst for Individual and Group Expression".

How new is this, or is it a figment of the intellectuals' imagination?

In our view the transformation will be fairly rapid, involve significant changes rather than superficial ones, and will be characterized by conflict in values, attitudes, and perceptions.

Having presented the broad context and the specific aspects of the <u>problem-atique</u> we conclude that a program of research into Canadian communications <u>futures, 1976-1991</u>, could and should be done but that this process should be accompanied or preceded by a process oriented endeavor involving all parties in the communications milieu in Canada. The principal goal of which would be to assist the various groups (governments, communications industry, labor, academic specialists, and the general public) in expressing and placing in hierarchical order their concerns and priorities for research while clarifying their <u>values</u>, <u>attitudes</u>, and <u>perceptions</u> vis-a-vis the future of communications in Canada. Part 2 of this document is a proposal by GAMMA outlining specific-ally how this endeavor could be managed.

Do we agree with this major precondition?

Do we need it?

By continuing Project Delta in this way we could contribute to the development of a communications system in Canada which conserves scarce resources and facilitates our search for national unity while allowing the high degree of dialogue and diversity we need for a healthy, pluralistic, democratic, bilingual, and multicultural society.

Personal opinions — are they of any interest? are they relevant? are they at all useful in examining the future of communications? NO.

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ACKNOWLEDGEMENTS

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1. THE SOCIO-ECONOMIC CONTEXT OF PUBLIC TELECOMMUNICATIONS IN CANADA,

    1976-1991:   TOWARD A PROBLEMATIQUE

1.1 Introduction: Terms of Reference, Methods, Context, and Assumptions

Terms of Reference and Methods

The overall goal of Project Delta is to forecast transformations in Canadian Society during the medium term of fifteen years, 1976-1991, which could potentially affect public telecommunications. Reciprocally, likely changes in the telecommunications milieu which could affect other areas of society will be assessed.

This report presents the results of Stage I of Project Delta which had two specific goals:

(1) To assess the feasibility of undertaking a future oriented research program to satisfy the overall goals of Project Delta.

and, if judged feasible,

(2) To design a research program to accomplish such goals.

In order to accomplish (1) above we thought it necessary to delineate the problems, subproblems, and research themes which constitute the problematique for this field of research. With one qualification we have done so and present our findings in the next section of this report. In the conclusion to Part 1 we give our opinion as to the feasibility of the research program under discussion. Part 2 of this report represents our research proposal for the first year of Stage II of Project Delta.

As called for by the present contract for Stage I, we have prepared
and administered structured interviews with staff members of the Depart-
ment of Communications and Canada Post. These interviews were based on
an extensive search of the literature on Canadian society and communica-
tions and focused on heavy trends, _omens_ and _faits porteurs_ d'avenir. In
order to broaden our knowledge of the private sector, educational media,
and western Canadian perspectives on the future of communications (both
provincial and community), we also interviewed a communications industry
analyst with an investment brokerage firm, the Executive Director of the
SaskMedia Authority, the General Manager and a General Supervisor from
Saskatchewan Telecommunications, the General Manager of the Regina Cable-
vision Co-operative, and a member of the Board of Directors of the Capital
Cable Co-operative (in Victoria, B.C.) who is also an author in the broad-
casting field. In the Acknowledgement page of this document we list all
those interviewed and record our gratitude to them as well as thanking
the DOC-Canada Post project advisory committee members for their stimula-
ting participation in the workshop-seminar on this project held 1 February,
1977 in Ottawa as per the terms of this contract.

The documentary points of reference for Stage I have been _Tentative
Blueprints_ _for_ _a_ _Conserver_ _Society_ _in_ _Canada_ (Montreal: GAMMA, 1975),
The _Selective_ _Conserver_ _Society_ (Montreal: GAMMA, 4 volumes, 1976), and
the Department of Communications' working paper, _Canadian_ _Telecommunica-
tions_ _1985_ (Ottawa, 1975). In addition we have drawn extensively in our
thinking on the excellent research paper prepared by J. W. Halina for
Project Delta entitled "Threats and Opportunities to the Development of
Canadian Public Telecommunications over the Next Five Years" (Ottawa, 1976).

Context

Many observers have remarked the increasing tempo of interindustry com-
petition and interpenetration fed by extraordinarily rapid developments in

digital communications, optical fibre, satellites, and computers characte-
rized by large scale integrated circuits. For example, Irwin and Johnson
in their recent paper on "The Information Economy and Public Policy"(1977)
note that "Today, one can detect five industries, once separate and distinct,
now moving on a collision course. These include the telephone industry, com-
puter industry, semiconductor industry, terminal industry, and aerospace in-
dustry" (1977: 1172). How rapidly technological innovation can affect eco-
nomic institutions is nicely illustrated by Linvill and Hogan's comparison
of the top ten U.S. manufacturers of vacuum tubes in 1955 and the top ten
semiconductor producers in 1976: "Only two names appear on both lists".
(1977: 1110).

Technological innovation has allowed the development of Canadian satelli-
tes, two highly sophisticated ground level data transmission networks, broad-
band cables in almost all major Canadian urban cores, an operational commu-
nications facility based on fibre optics (in Ottawa at the Department of
National Defence), burgeoning provincially operated educational media ser-
vices (OECA, Radio Québec, ACCESS, SaskMedia), proliferation of terminal
and receiving equipment - data terminals of various kinds, video tape re-
corders and playback machines, Citizens' Band radios, and computers which
can convert a television receiver into a game or a sophisticated communi-
cations terminal. Coupled with these developments one observes in Canada
a population where more than sixty percent of our households have cables
available to them with a capacity for ten to thirty-five channels, presently,
and telephones utilized by more than ninety-five percent of our households.

Because of these technological developments we can already see infiltra-
tion by carriers, content creators, and terminal providers into each others'
domains with the consequent threats and opportunities. For example, broad-
casters (even though protected in some ways by C.R.T.C. regulations) appear
to be losing their revenue base as audiences are fragmented by use of the
multiple channels carried by cable television operations. Cable companies

meanwhile wish to become content creators and purveyors through Pay TV in competition with existing broadcasters and develop various kinds of information services which could compete with those which the telephone companies may be interested in developing. Newspapers are wary of these new services (which potentially could include news services and advertising which are currently provided by them in print form) and the Post Office could well lose thirty-five to forty percent of its first class mail as the automated payments system becomes a reality - stimulated by some government departments, mass merchandisers converting to the use of point of sale terminals and teleshopping, and banks committed to on line electronic banking.

The technological turbulence and potential described above is, as Halina (1976) states, a Pandora's Box of threats and opportunities. Looking at Canada's present economic, social, cultural, and political situation, we see pressing needs to communicate with each other, create dialogue, and interact across regional, linguistic, cultural, and rural-urban boundaries. Particularly given our diversity and our economic position vis-a-vis the United States, we need a communications system which facilitates our search for national unity, for cooperation instead of confrontation, for economic independence and cultural expression instead of cultural colonialism, economic subservience, and imported technology.

The technological explosion in our ability to communicate with each other threatens many established institutions and ways of doing things but it also, potentially, allows us to create a communications system which responds magnificently to our particular cultural, social, political, and economic needs.

These developments in the Canadian communications industry reflect, partake in, and interact with a much broader set of events in the history of the western industrial world which we would label "The Move Away from Mass Consumption". As documented extensively in the Conserver Society Project reports economic growth based largely upon the mass production, marketing, and consumption of industrial goods has brought a cornucopia of affluence and technological progress to western industrial societies unparalleled in world history. These processes have been fueled by the availability of cheap energy resources and fairly accessible and plentiful stocks of raw materials. Further, economic growth based on industrial production and mass consumption is characterized by capital intensity and high throughput of energy and materials. This throughput, both at the production and consumption stages, produces unintended waste products which have been released in ever increasing quantities into the air, water, and earth of our planet. Consequently environmental deterioration, pollution induced health problems, increasingly costly pollution control measures, and negative effects on our quality of life have accompanied the material affluence provided by this way of life. (For elaboration of this analysis please see The Selective Conserver Society, chapters 1, 2, and 3, with the detailed technical data presented in Volumes 2 and 3 of the Conserver Society Project Report).

One can also observe more and more indications of future shock, alienation, feelings that our problems are too complex and tangled to be controlled,

and an impression that our heritage is being destroyed; our "places" are
being turned into "spaces". Accompanying these feelings and perceptions
there appears to be a sense of drift, of identity loss in our civilization.
(Please see chapter 4 in The Selective Conserver Society for elaboration of
this argument, with the technical papers presented in Volume 4 of the Con-
server Society Project Report).

"The Move Away from Mass Consumption" has two fundamental sources in our
opinion. One is the necessity to conserve scarce energy, capital, and mate-
rial resources and achieve greater harmony with our biological environment.
The other is a positive search for new institutions, values, and ways of
life which do not produce the psychological sense of alienation and iden-
tity fragmentation which seem so prevalent today in western industrial so-
cieties.

Turning back to the communications system in Canada and its relationship
to these macro-societal historical trends, waste, redundancy, and conflict
characterize what Halina (1976) has called the "techno-economic thrust"
of the system. Vis-a-vis duplication he notes that "No city and no nation
could sustain for long the burden of providing ten to twenty channel ser-
vices by building television transmitters. A fortiori, no economy can
withstand for long the luxury of doing it both ways [over the air and by
cable] and at the same time". (Ibid., p.9) Along the same lines he argues
that neither telephony nor cable can afford to extend a wide range of ser-
vices to remote rural areas and, hence, we cannot afford to do it twice

over. A similar situation of fragmentation and less than an efficient scale
of production in Canada occurs in the terminal sector (televisions, radios,
etc.) with the exception of the present telephone set. Logically then
Halina states that "In the container or delivery sector, the economic impe-
rative is for integration and rationalization". (1976:17). Considering
this argument in the broader historical context we have delineated previously
it gains even greater force. If securing adequate energy and materials for
the world's population will be more and more expensive in capital and ener-
gy terms even with conservation, then competition between industrial uses,
social needs (medical care, social services, transportation, etc.), and the
communications sector (which is highly capital intensive at present) is a
fait porteur d'avenir of great significance. These remarks relate to the
first aspect of "The Move Away from Mass Consumption", the realm of necessity.

Thinking now of the relationship of our communications system to the
mass consumption society and the search for alternatives to it, it is fair
to state that our present communications system reflects the powerful posi-
tion which institutions engaged in producing, marketing, and financing our
present patterns of material consumption enjoy in the economy. This is
evident both in their heavy use of communications internally, the depen-
dence which broadcasters have on commercials, and even the large propor-
tion of mail carried by the Post Office which involves promotion or payments for
goods purchased and/or financed. Even the Canadian Broadcasting Company, whose
mandate is one of national unity and Canadian cultural development, depends

for much of its revenue on commercial messages, while it also has been known to outbid the private broadcasting networks for an American production oriented to the mass market. The mass media have in very large measure been the handmaidens of the mass merchandisers in their one way communication of content geared largely to the presumed "average person". For the ordinary citizen there is nothing between the interpersonal means of communication via telephone and telegraph and the mass communications aimed at him or her by radio, television, and cable. Although even today cable could provide two way communication and interaction it does not for a variety of institutional, regulatory, and commercial reasons.

Do we find the search for alternatives to the mass consumption society and its institutions adumbrated in the communications milieu? Our answer would be a clear yes! We would explain the current Citizen's Band radio movement as part of this rejection of one way commercially dominated communication. We would also see as significant omens for the future the (unsuccessful) request made by the non profit, community owned Capital Cable Co-operative (Victoria, B.C.) to the CRTC to replace the private, profit making Premier Cablevision operation (1976 a, b), as well as the licensing of two community based cooperatives in Saskatchewan to undertake cable television enterprises. Although the Capital request was denied by not allowing them to apply for the license, the arguments brought forward echo those of many community oriented broadcasting groups and some provincial positions on communications in the current Federal-provincial jurisdictional disagreement. Groups and individuals with shared interests, be they

regional, communal, occupational, avocational, linguistic, or cultural seem to be seeking ways to guard, transmit, develop, and interact around their shared identities. In our opinion these assertions of uniqueness, of identity, of a desire to communicate in a participatory fashion represent a strong force in the search for alternatives to our present structures and will increasingly appear in the communications arena. The move to guard our cultural identity as Canadians against the American way of life could be interpreted along similar lines, especially if one accepts Herschel Hardin's arguments in A Nation Unaware. The Economic Culture of Canada (1974) about the differences between American and Canadian culture.

The thirst for diversity, the demand for participation and access, and the desire for dialogue in the communications field in our view reflect broader societal trends which can be expected to multiply and strengthen as a reaction to the present socio-cultural, economic, and political situation.

Contemplating the two aspects of the shift away from our present society toward a society with much lower industrial throughput, extensive recycling, an emphasis on ecological harmony, and a renewed emphasis (in historical terms) on individual growth and identity, group needs, local communities, and the expression of diverse cultural, social, political, linguistic, occupational, and avocational interests, it is clear that information in the broadest sense and communication of it will be of ever increasing importance. Vis-a-vis resource and energy conservation a few examples would

include process control by computers to minimize waste, substitution of telecommunications for transportation, and decentralization of the population and economy allowed by powerful but relatively low cost computer and communications facilities. Thinking about the thirst for small scale, diversity of expression, and individual growth one again sees how the multiplication of channels, mini and micro computers and other innovations could provide the technological base for services and facilities allowing education, business, the arts, libraries, museums, individuals, and groups to flourish in ways which consume relatively small amounts of energy and materials while enhancing our quality of life.

The paradox we face is how to marry this technological potential to our evolving needs in the face of the complex and conflicting economic, political, and socio-cultural forces which currently exist in Canada and, at present, prevent or inhibit many of these developments over the medium term, 1976-1991.

Assumptions

The technological, historical, and socio-cultural context we have just presented forms the broad problematique for the more specific analysis of problems and subproblems we present in the next section of this paper.

Based on the analysis we have presented the assumptions guiding the following discussion are three:

I find these assumptions difficult to swallow.

(1) Canada and the rest of the western industrialized world is, and will be during the next fifteen years, in the throes of a major transformation away from a mass consumption society toward an economy and society based much less on lower energy and resource use and much more upon services, particularly those involving the creation, transmission, processing, and reception of information. This society will be characterized far more than at present by smaller scale, no further growth in urbanization and, possibly, deurbanization, decentralization in the economic and political structures, and socio-cultural values focused on individual growth, communal rejuvenation, and expression of group identity.

(2) That this transformation involves significant, and fairly rapid, change-economic, political, socio, and cultural.

(3) That this period of transformation will be characterized by conflict in values, attitudes, and perceptions because the changes are structural rather than superficial.

1.2   Toward the Problematique

Introduction

In order to clarify our thinking about the interaction between events in Canadian society at large and in one of the subsystems which comprise it, the communications subsystem, we have constructed a simple matrix, displayed as Table 1.   In this matrix the vertical axis represents Canadian society at large and we have labeled it therefore the "S AXIS".   For heuristic purposes we have divided this axis into segments representing the technological, economic, political, and communal subsystems.   The latter subsystem, the communal, refers to all of the socio-cultural phenomena which create bonds, which bring us together, and form springs for action.   These would include values, belief systems, and world view, on one hand, and, on the other, identities and groups based on religion, ethnicity, community at various levels, language, class, occupation, etc.   In effect the communal subsystem represents the organization of our socio-cultural world other than the world of tools and machines (technological subsystem), the allocation of resources (the economic subsystem), and the institutional allocation and distribution of power (the political subsystem).   These definitions are admittedly simplified for heuristic purposes, while it is clear that the communal subsystem could have been divided into several subsystems.   Nevertheless we would argue that for our present purposes "lumping" rather than "splitting" is conceptually advantageous.

TABLE 1

PROJECT DELTA   PHASE II

"C AXIS"

CANADIAN COMMUNICATIONS SUBSYSTEM

	TRANSMITTER	MESSAGE	CHANNEL	RECEIVER
TECHNO-LOGICAL SUBSYSTEM	A	B	C	D
ECONOMIC SUBSYSTEM	E	F	G	H
POLITICAL SUBSYSTEM	I	J	K	L
COMMUNAL SUBSYSTEM	M	N	O	P

"S AXIS"
CANADIAN
SOCIETY

The horizontal axis in the matrix we have called the "C AXIS". It re-
presents the communications subsystem within Canadian society and is divi-
ded by use of the categories Transmitter, Message, Channel, and Receiver,
defined in the standard manner. We have chosen these terms because they
are somewhat broader than the content/carrier/terminal division, although
this categorization is also very useful in many contexts. For this paper
we prefer the broader set because, for example, receiver can refer either
to a terminal in the electronic sense, or to human being, or to both.

After devising this matrix we utilized it during the structured inter-
views, in the analysis of the interview transcripts, and in our study of
the scientific literature on Canadian society and communications to gene-
rate issues, questions, problems, and subproblems worthy of future research.
We then took these hundreds of research questions and attempted to refine
them, clarify them, eliminate redundancies, and place them in clusters or
families which we believe deserve high priority for research.

The Research Themes

Before turning to the distinct clusters of logically related research
questions which constitute the details of the problematique, we must note
two dimensions which affect almost all of the clusters: the demographic
dimension and the international dimension. Included within the demogra-
phic dimension would be our age and sex distribution, our total number of

people, and the spatial organization of our population size: of centers, num-
bers of centers by size, degree of geographic concentration or dispersion,
regional differences, degree of isolation for any particular unit, etc.
Particular aspects of this demographic dimension are specified as research
questions of high priority but it is clear that the demographic elements
are of great significance in almost every cluster. For example, vis-a-vis
adoption of a conserver society for Canada if Canadians begin to reduce
their use of materials and energy on a per capita basis but the population
rises the conservationist effect will be diminished, or nullified completely
depending on the magnitude of the increase.

Considering the international dimension three central aspects of this fac-
tor are our proximity to the United States, our economic status as a branch
plant economy, and our significant dependence on exports of primary raw mate-
rials to the United States and elsewhere. Vis-a-vis communications specifi-
cally we import most of our terminals-T.V.'s, radios, and data terminals,
a majority of our computers, much of our software, and an enormous percen-
tage of our books, magazines, T.V. programs, movies, and so forth. We have
control over the other sectors of the communications industry but neverthe-
less terminals, computers, and content are largely imported despite efforts
to change this. Halina (1976:21) notes that "There is in Canada an over
three billion investment in terminal equipment and we are neither making
it, nor governing it to the economic advantage of Canadians". He also sta-
tes that "In the 1980's it could account for a very significant part of

our overall trade deficit" (Ibid., p. 20). If our assumptions about the direction of our economy over the next fifteen years are correct then this will indeed be a very serious problem with regard to unemployment, balance of payments, and research and development.

Let us turn now to those ten families of problems which we feel deserve high priority attention for research because of their overall importance. We have chosen ten for discussion. They are presented, in alphabetical order, in Table 2. Recalling the broad context which we described previously in terms of "The Move Away from Mass Consumption" each of the ten problems areas we have chosen seems to fit more with what we can call "the need to conserve" or with "the thirst for individual and group expression" (Table 3). All of the issues overlap to a certain degree but we believe it useful to present the issues divided in this manner as we before discussing the individual clusters. We should also note that many specific problems could be classified in several clusters. We have chosen to put each in the cluster with which it seems to fit most closely in our opinion. It is clear from the distribution of themes in the matrix of interactions between the communications subsystem and other subsystems in Canadian society that each theme is one which appears in a wide range of intersections. These data are summarized in Table 4.

The Causes, Dynamics, and effects of Rapid Technological Change in the Communications Sub-System.

Included within this theme are problems such as: Is it the market which demands new products or is new demand stimulated by (a) government subsidi-

TABLE 2

PROJECT DELTA   PHASE II
HORIZON: 1992
HIGH PRIORITY RESEARCH THEMES
(in alphabetical order)

1. AN "AGING SOCIETY": IMPLICATIONS FOR THE COMMUNICATIONS SUB-SYSTEM.

2. THE CAUSES, DYNAMICS, AND EFFECTS OF RAPID TECHNOLOGICAL CHANGE IN THE COMMUNICATIONS SUB-SYSTEM.

3. A CONSERVER SOCIETY FOR CANADA: EFFECTS ON THE COMMUNICATIONS SUB-SYSTEM.

4. DECENTRALIZATION VERSUS CENTRALIZATION IN DECISION MAKING.

5. DIVERSITY, ACCESS, DIALOGUE, AND PARTICIPATION.

6. THE IMPACT ON COMMUNICATIONS OF CONTINUED URBANIZATION VERSUS DEURBANIZATION.

7. THE IMPLICATIONS OF FOREIGN CONTROL IN THE COMMUNICATIONS INDUSTRY.

8. STRATEGIES FOR THE RATIONALIZATION OF THE COMMUNICATIONS INDUSTRY: SCENARIOS FOR INSTITUTIONAL COLLABORATION, COMPETITION, AND INTEGRATION.

9. THE TRADEOFF BETWEEN ECONOMIC CENTRALIZATION AND DECENTRALIZATION.

10. THE TRANSPORTATION - COMMUNICATIONS TRADEOFF.

TABLE 3

PROJECT DELTA   PHASE II
HORIZON: 1992
HIGH PRIORITY RESEARCH THEMES

Issues More Related to "The Need to Conserve"	Issues More Related to "The Thirst for Individual and Group Expression"
2. The Causes, Dynamics, and Effects of Rapid Technological Change in the Communications Sub-System.	1. An "Aging Society": Implications for the Communications Sub-System.
3. A Conserver Society for Canada: Effects on the Communications Sub-System.	4. Decentralization Versus Centralization in Decision Making.
6. The Impact on Communications of Continued Urbanization Versus Deurbanization.	5. Diversity, Access, Dialogue, and Participation.
8. Strategies for the Rationalization of the Communications Industry: Scenarios for Institutional Collaboration, Competition, and Integration.	7. The Implications of Foreign Control in the Communication Industry.
9. The Tradeoff Between Economic Centralization and Decentralization.	
10. The Transportation - Communications Tradeoff.	

TABLE 4

PROJECT DELTA   PHASE II

"C AXIS"

CANADIAN COMMUNICATIONS SUBSYSTEM

"S AXIS"

CANADIAN

SOCIETY

	TRANSMITTER	MESSAGE	CHANNEL	RECEIVER
TECHNO-LOGICAL SUBSYSTEM	A 2, 6, 8, 9, 10	B 1, 9	C 1, 2, 6, 7, 8	D 1, 2, 4, 7, 9, 10
ECONOMIC SUBSYSTEM	E 1, 2, 6, 7, 8, 9, 10	F 1, 3, 7, 9	G 1, 2, 6, 7, 8	H 1, 2, 7, 8
POLITICAL SUBSYSTEM	I 1, 4, 6, 9	J 4, 7, 9	K 2, 4	L 1, 4
COMMUNAL SUBSYSTEM	M 5, 6, 9	N 1, 2, 3, 4, 5, 6, 7, 8, 9	O 5, 7	P 1, 5, 7

zation of research and development and (b) by advanced marketing techniques? What is the role of planned obsolescence in this field (wide color screens replacing ordinary color screens replacing black and white screens, etc.)? How will miniaturization and large scale integrated circuits in computers transform the face of communications as we know it? How will the introduction of computer based video games affect the willingness and ability of people to adopt new patterns of communications utilizing computer technology-teleshopping, electronic funds transfer, electronic mail transmission, data retrieval, remote participation in political and educational activities (polling, meetings, classes, examinations, etc.)? How will the increasing digitalization in the communication of information affect terminal and transmission technology? In general what are the implications of the increasing convergence of computer and communications technology?

What effect will the need to amortise the present enormous capital investments in the communications industry have on the acceptance and pace of change in new technology? What are the implications of the multiplication of channel capacity achieved through optical fibre developments? How will the competition for capital between communications and other sectors-government, energy, mineral resources development affect the ability to put in place new technology in both the transmission and terminal areas? How will developments in digital transmission and satellites which destroy the traditional logic of a distance-time tariff structure affect the regulatory process? How should the proliferation of terminal equipment be handled? How will artists', authors', and performers' rights to their creations be affected by the new technologies of facile, inexpensive capture and reproduction?

A Conserver Society for Canada: Effects on the Communications System.

This theme would focus our attention on the interdependent issues within the communications sybsystem which bear on the movement toward one of the various kinds of Conserver Society possible and examine the relationships between the communications subsystem and the rest of society from this particular perspective. Such a research theme would involve examination of the various economic options for Canada's economy from now until 1992 including maintenance of the status quo (CS_0), the three Conserver Society scenarios: CS_1 - "Doing more with less", CS_2 - "Doing the same with less", and CS_3 - "Doing less with less", and the Squander Society (CS_{-1}). Data would be integrated from research on the transportation - communications tradeoff, the tradeoff between economic decentralization and centralization, the role of communications in the design and implementation of conserver cities and the decentralization of population into smaller, more conservationist centers, ways in which resources could be conserved by rationalizing the communications industry in terms of waste, redundancy and duplication, and the ways in which computer cum communications technology can effect waste minimization.

The Impact on Communications of Continued Urbanization Versus Deurbanization.

Within this theme cost questions and equity questions are of primordial importance. As implied previously the marginal costs of extending communi-

cations services equal to those enjoyed by residents of the major urban centers are enormous and not economically viable, by and large, with present technology without some form of subsidization, whether via direct governmental support or via interfinancing from profitable sectors. These problems will be exacerbated whether urbanization continues (as Statistics Canada assumes) or whether a trend toward deurbanization emerges (as predicted by the first author of this paper). In the first case there will be fewer and fewer people to support the cost of the services installed. In the second case there will be more people to support the costs but these former urban dwellers also will have higher expectations as to the quality and range of services they receive (as we already have seen in the recent experience of the telephone industry).

In these circumstances what standard of service is a reasonable expectation in a democratic society committed to equalization of regional disparities? How does one finance installation and maintenance of the standard chosen? What are the respective roles of the private sector and the various levels of government? What are the consequences for regional economic growth and employment of the various options?

Strategies for the Rationalization of the Communications Industry: Scenarios for Institutional Collaboration, Competition, and Integration.

With this family of problems we face squarely the jurisdictional problems and institutional barriers to rationalization which result from the

historical development of the communications industry and the rapid evolu-
tion and conflict prevalent in the technological field. As alluded to in
our analysis of the broad context of communications in Canada, the central
difficulty is how to diversify and "irrationalize" the content sector while
allowing the economic imperative for integration and rationalization in the
container or delivery sector to manifest itself (Halina 1976:17).

On a theoretical level an initial priority within this research theme
would be to hierarchize our objectives. In order to define waste and, there-
fore, rationalize in the techno-economic area we must define and place in
order the objectives or values by which waste can be evaluated. This is
necessary because the definition of waste depends on our hierarchy of objec-
tives. Alternative and conflicting objectives could, for example, include (1)
maximizing communications for everyone at a low cost (which could
even mean importing technology to keep consumer prices low), (2) optimi-
zing communications - providing the "right" amount of communications to
satisfy "real" needs according to some explicit criteria of judgement, (3)
maximizing the economic role of the communications industry in the GNP
(i.e. stimulating the "information economy"), (4) maximizing employment
in the communications industries, and so forth.

The whole issue of cost effectiveness would be raised in this context.
Do we need a real time, on line, responsive, interactive system with a drop
into every household if most householders' demands for self programming can
be satisfied by weekly deliveries of video-discs to their residences? An

example of an actual decision in this area has been SaskMedia's decision to develop a twenty-four hour physical delivery service for its educational materials rather than embarking on the kind of broadcasting endeavor which ACCESS and O.E.C.A. have chosen.

Once these tasks have been accomplished questions such as the following would demand study: what is the ideal terminal in terms of compatibility with all of the new services? Should there be two non-connecting national data routes and, if so, what relationships should they have with each other? How should the new myriad of channels and services which could arise be financed, allocated, regulated, and provided to the consumer? What relationships should exist between cable companies and broadcasters, telephone and telegraph and cable, cable and the Post Office, the Post Office and telephone and telegraph, other third parties and the existing institutions? Such third parties could include, among others, educators, writers, performers, producers, and private entrepreneurs.

Finally, but perhaps most important, we must explicitly consider how much of our nation's capital and manpower should be devoted to communications, we must also explicitly reexamine the balance between content, delivery, and distribution in our allocation of resources. Many have argued that we have devoted too much to the "hardware" sector while importing our content from the U.S. and elsewhere.

The Tradeoff Between Economic Centralization and Decentralization

The argument in this area concerns the economies accruing from large scale, centralized, hierarchical organization and its subordination of local demands. At present most broadcasting is centralized "in order to achieve the scale necessary for excellence" and for cost saving reasons. Recently many have argued that the savings and supposed high quality are less important than local control and, hence, expression of local concerns. Radio Quebec, to take one example, has committed itself to developing a true network of centers with relatively equal importance in contrast to the present model, which has Montreal as the hub of a wheel with outlying stations fed by it. Again in this area value decisions would have to be made explicit, while choices would be evaluated in cost-benefit terms which include very prominently social and cultural costs and benefits. The relevance of new minicomputer technology would have to be evaluated as part of such research. Another key question for investigation in this area would be the problem solving and adaptive capacities of the two kinds of organizations and the associated economic costs. The "optimum" degree of decentralization would be defined in such studies.

Considering the issue in terms of international trade, employment, and the balance of payments one issue which deserves research is the size and degree of centralization which a Canadian enterprise needs to compete successfully in the international market place. The most obvious examples here are the present problems of the television receiver industry, as mentioned previously, and, by extension, how Canada could develop an enterprise with an

internationally marketable terminal responsive to the new communications possi-
bilities. Research in this area would concern the economic, technological,
and organizational feasibility of such a venture.

A question which is closely related both to the urbanization-deurbanization
issue, the decision making question, and to the theme under discussion here
is to what extent the availability of highly advanced communications capaci-
ties in the urban areas of Canada have reinforced demographic, economic, and
political tendencies favoring centralization? Conversely we must investigate
to what extent new kinds of communication networks are an essential precondi-
tion for decentralization of any kind - economic, political, or demographic.

The Transportation - Communications Tradeoff

The new communications technology described previously will facilitate
working at home or at neighborhood work terminals, teleshopping, telebanking,
remote participation in political activities (meetings, polls, etc.), and
home based educational activities (access to data banks and libraries, inter-
action with instructor, etc.). The actual savings effected in transportation
costs would be a principal area of investigation here, but equally important
for study would be the social and cultural impacts of such developments. We
lack data on the social and cultural values attached to the automobile, pri-
vacy, the right to mobility, the right to communicate, attitudes toward
personal interaction while shopping, banking, working, studying, and the
enjoyment of mobility for the new experiences and sensations it brings.

Just because we can teleshop, bank, study, etc. does not mean that we will want to stop "going down to the bank", "over to the store", "up to the college", or "to work". In this context we should also study the possible tradeoffs and their effects within the communications sector, for example the migration away from physical delivery systems (mail, newspapers, courrier services, etc.) toward electronic means (electronic funds transfer, news channels on cable, etc.).

Anticipating our next research theme somewhat the higher percentage of people over 55 we foresee, combined with earlier retirement ages, has implications for transportation/communications needs and usage problems as well. What kinds of shifts should be anticipated because of this development? The transportation/communications tradeoff issue must include age as a variable because while physical mobility decreases as age increases, increased leisure could generate more travel and residential migration to less populated areas.

An "Aging Society": Implications for the Communications Sub-System

All recent major demographic studies show that the people born during "the baby boom" years will alter significantly in an upward direction the percentage of our population which is aged. Some of the general implications of this phenomena are a predicted rise in the demand for medical services with the attendant rise in capital and operating costs, an increase in the political clout of this sector of the population, and the emergence of particular kinds of transportation and other services tailored to their needs.

In the communications sector the aging of the population raises research questions concerning their demand for equipment suited to their physical characteristics, the implications of a significant shift in audience interests, and the impact of this group's consumption preferences and interests on the economy.

Decentralization Versus Centralization in Decision Making

This area currently is in the spotlight because of the recent conflicts between the Federal government and Quebec, Manitoba, and Saskatchewan (Manitoba now settled), concerning jurisdiction over cable television. This particular conflict is not isolated, however, as can be seen by the many other areas of provincial-federal controversy, the demands of municipalities for more autonomy vis-a-vis the provinces, the demands for cultural, geographical and political autonomy made by Inuit, Dené, and other native groups (notably B.C.), and, finally, the election of a separatist government in Quebec.

Electronic polling, new technology allowing participation in political gatherings via telecommunications techniques, and the potential increase in channels all raise research issues worthy of consideration in addition to the obvious legal and juridical ones related to Federal-provincial questions.

Diversity, Access, Dialogue, and Participation

This family of issues has been described in the first section of this document as related to a rejection of the large scale, depersonalization, and

alienation common in industrialized western mass consumption societies. Centralization has promoted uniformity and symbolic impoverishment, we would argue. In contrast one could argue that with the technological possibilities available now for interactive communications instead of unidirectional mass media, groups and individuals could satisfy all of their needs for expression and greatly enrich their symbolic life. How can this come about? How can individual people and groups with shared interests gain access to a system which presently is funded and operated by large scale, commercial organizations?

From a technical point of view one must also consider how to construct networks which respond to people who are geographically scattered across our vast country but who share particular interests. One example would be those who share a professional or occupational subculture - engineers, doctors, lawyers, accountants, athletes, civil servants, executives, research and development directors, computer programmers, academic specialists in a particular field, and so forth. Another example would involve people who share a vocational, artistic, and literary interests - poets, chess players, novelists, curling enthusiasts, etc. Yet other kinds of groups would be oriented toward issues or particular segments of the population: citizens' groups concerned with the environment, women's rights, abortion, day care, welfare policy, native groups, senior citizens' needs, etc. on one hand; political parties, neighborhood and block associations, recreational groups, churches, and youth groups, on the other. What new institutional arrangements can emerge which allow and

promote easy group acces and diversity in content while utilizing the most efficient techno-economic arrangement? As mentioned when discussing strategies for rationalization, research into the separation of container from content is crucial to resolution of these problems. But while multiplication of channels provides new opportunities it also provides new problems which need elucidation regarding privacy and information overload. Financing questions in the face of audience fragmentation have been raised previously but deserve repetition here.

The Implications of Foreign Control in the Communication Industry

There are two principal elements in this theme area: content and equipment. In addition to the points raised previously vis-a-vis the terminal area, we would add here the need to examine the long term effects of U.S. domination in the computer terminal area given the increasing convergence between communications and computer technology. U.S. control of many data banks is one aspect too of this general problem. The content areas are too well known for repetition here but they must be mentioned as one of the high priority areas needing further research. Even though the issues are well known in many areas there appears to be little concrete data available on the day to day presence of foreign, mainly U.S., produced content. We must also consciously decide when foreign content and/or hardware are acceptable and when they are not. Few would agree that high priority should be given to developing an industrial base in broadcasting equipment, while, as noted before, many would maintain that Canada should enter the international arena in the terminal equipment field.

1.3 Conclusion

In the previous two sections of this report we have presented a problematique for thinking about the central issues needing research vis-a-vis communications in Canada, 1976-1991. We have provided broad historical, social, and cultural perspectives on Canadian society and the communications sub-system within it, followed by delineation of ten research themes which deserve high priority research attention in our opinion.

We conclude that a program of research into Canadian communications futures, 1976-1991, could and should be done but that this research should be accompanied by a process oriented enterprise involving all parties in the communications milieu in Canada. This exercise would be designed to bring together representatives of various governments, industry, labor, academic specialists, and citizens concerned with communications to clarify their values and hierarchize the issues we have identified in terms of their priorities and concerns. The next part of this paper presents a proposal to accomplish this hierarchization.

2. PROPOSAL FOR STAGE II

2.1 Introduction and Goals

In Part One of this document we have argued that Canadian society and the communications industry in Canada have entered a period of our history characterized by accelerating technological change, dramatic economic, political, and social change, and conflicting values, attitudes, and perceptions. Economically the emphasis will shift away from resource intensive, high throughput production and marketing of mass produced consumer goods toward an economy characterized by lower throughput, extensive recycling, and extraordinary growth in the service sector - including most prominently the information based industries. Socially our focus is on how the communications system can facilitate our search for national unity, while allowing the high degree of dialogue and diversity we need in a democratic, pluralistic, bilingual, and multicultural society. Assuming this scenario as the broad context within which Canadian society and its communications subsystem will interact, we have delineated ten themes which merit high priority vis-a-vis the next fifteen years in Canadian communications research.

Initially we chose one of these broad themes as the focus for GAMMA's continuing research in this area through Project Delta. However, based on further conversations with governments, various sectors in the industry, citizens concerned with communications, and academic specialists in communications, we have chosen not to present a scholarly research project as Stage II of Project Delta. Instead we would like to propose a process oriented enterprise whose principal

goal would be to bring together appropriate people from the federal and provincial governments, the communications industry (including the Post Office, telephone and telegraph, broadcasting, cable, programming, publishing, advertising, education, and data communications), labor and the general public to hierarchize their concerns and priorities for research. Given the complex and conflicting values, perceptions, attitudes, and trends (technological, social, economic, and political), we have outlined in Part 1 of this paper, we believe our most useful contribution at this point in time would be for GAMMA to assist the various groups listed above in clarifying jointly the areas of convergence and divergence which exist. GAMMA could provide a vehicle for continuation of the very productive work of the Communications Research Conference Board and thereby facilitate dialogue, collaboration and cooperation in the communications system in Canada. The concrete outcomes of such a venture could include: 1. increased understanding and communication between the relevant governments, the various sectors of the industry, labor, researchers in the field, and the public, 2. a clear statement of shared goals, values and perceptions and irremediable differences among those participating in Project Delta, 3. a concrete specification of research problems which deserve immediate attention according to the majority of participants, 4. the organization of jointly funded research teams which reflect the interests and needs of all principal actors in the communications milieu in Canada and which draw on their various kinds of expertise, 5. provision of a channel of communications between the government and the various constituencies served by it in the communications field.

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2.2 Organization of the Research

The proposed time frame for the initial phase of Project Delta, Stage II,
would be one year from 1 June, 1977 to 1 June, 1978. After identifying appro-
priate people from the communications field in Canada (governments, industry,
labor, universities, and citizenry - drawing on the participants in the Commu-
nications Conference Research Board, people interviewed during Stage I, and
others), the Study Director will prepare a prospectus on the projected acti-
vities of Project Delta Stage II and request their collaboration and participa-
tion in the Project in terms of their own time and their institutions' affi-
liation and financial support. The budget of $60,000, proposed in this docu-
ment would represent the Department of Communications core funding of the
Project. Presumably about twelve other agencies, groups, or institutions
could contribute $5,000 each and the time of designated representatives.
This would provide overall funding of approximately $120,000 for 1977-1978.
Funding and activities for 1978-1979 would be contingent upon the participants'
evaluation of Project Delta's first year in this new activity.

Assuming this level of support, a GAMMA Delphi would be prepared and
circulated to all participants during July and August of 1977. The Delphi
is an iterative questionnaire technique which has been used for forecasting
and concensus building. The GAMMA Delphi, as used in the Conserver Society
Project; focuses on value formulation and hierarchization, presentation
of alternative scenarios and propositions related to them, clarification
of conceptual issues, problem definition, and specification of the parame-
ters of the issues under study. It does not involve forecasting of any

kind as we believe that the Delphi technique has limited value as a fore-casting tool. During September and October 1977 the results of Round I of the GAMMA Delphi will be analysed and presented as a report to a work-shop-seminar of the study members. To facilitate discussion and clarify agreement and disagreement on the issues, the Consensor Machine, an electronic polling device, will be utilized. This machine was used with excellent results to achieve such purposes during GAMMA's Conserver Society Project.

Based on the outcomes of the first workshop-seminar a second round of the GAMMA Delphi will be prepared, circulated, and analysed from November, 1977 to January, 1978. During Feburary, 1978 a report on this round of the Delphi will be presented and the Consensor Machine will again be used to assist in specifying precisely:

1. the goals, values, and perceptions which are shared by a majority of the group and those which are not shared by the majority.

2. the concrete research problems which deserve immediate attention according to a majority of the participants.

3. whether and how the majority of the group want to structure jointly financed research teams which would reflect equitably the interests of all concerned.

During March, April and May of 1978, a report on the results of Project Delta's first year of operation as a process oriented endeavor serving the communications sector in Canada would be prepared in draft and circulated to all participants for comment. Concurrently this draft would serve as the basis for articles, summaries, and interpretations written in lay language and disseminated to the general public.

Finally, in June, 1978 a final report would be presented which would reflect reactions to the draft report by participants and provide data on public feedback to documents presented in lay language.

We should like to state clearly that while the Project may establish facts, explore and synthesize participants' views, and present interpretations unless specifically instructed the reports, findings, and conclusions of the Project will only represent the views of the research team and will not be attributed to DOC or any other institution which subscribes to the study.

Assuming that the process oriented endeavor of 1977-1978 will have been successful in generating concensus on research priorities among the various participants in Project Delta and that jointly funded research teams have been organized, the following years of Project Delta could again be dedicated to forecasting the transformations in Canadian society affecting telecommunications (1976-1991) and developments in communications affecting the society at large.

2.3 Tentative Schedule, 1977-1978

1 June, 1977 - 15 July, 1977 : Identification of appropriate par-
ticipants from the federal and pro-
vincial governments, the communica-
tions industry and labor groups en-
gaged with it, academic specialists,
and associations concerned with
communications.
Circulation of a prospectus descri-
bing the goals and prospective ac-
tivities of Project Delta.

16 July, 1977 - 31 August, 1977 : Preparation of the first round of
the GAMMA Delphi and circulation of
same to the participants.

1 September, 1977 - 30 September, 1977 : Analysis of results from Round I of
the GAMMA Delphi.

1 October, 1977 - 31 October, 1977 : Presentation of Round I Report at a
workshop-seminar. Utilization of
the Consensor Machine to facilitate
discussion and clarify agreement -
disagreement on the issues.

Tentative Schedule, continued

1 November, 1977 - 31 December, 1977 : Preparation and circulation of Round
                                        II of the GAMMA Delphi.

1 January, 1978 - 31 January, 1978 : Analysis of results from Round II
                                      of the GAMMA Delphi.

1 February, 1978 - 28 February, 1978 : Presentation of Report on Round II
                                        at a workshop-seminar. Utilization
                                        of Consensor Machine to assist in
                                        formulating final results of dis-
                                        cussion.

1 March, 1978 - 31 March, 1978 : Preparation of final report on the
                                 first year of Project Delta,
                                 Stage II.

1 April, 1978 - 31 May, 1978 : Dissemination of the final report to
                               the participants. Preparation of
                               articles, summaries, and interpre-
                               tations of the report in lay terms
                               for communication of the findings
                               to the general public.

June, 1978 : Presentation of the final report on
             the project and a report on dissem-
             ination activities and the feedback
             resulting therefrom.

2.4   Tentative Budget, 1 June, 1977 - 1 June, 1978

1.   Salaries

Secretarial (including benefits of 10%)	$ 11,000
Research Assistance (including benefits	$ 4,000
of 10%)	$ 15,000

2.   Researchers' Fees

Project Director, Research Associates and Consultants-125 person days at $250/day including overhead of $75 per day ($9,375 in overhead)	$ 31,250

3.   Travel, office expenses, translation, computer time, rental of Consensor Machine

$ 6,250

4.   Dissemination - printing, preparation of summaries and interpretations in lay language, presentations to interested groups, government, industry, citizenry (travel costs)

$ 2,500

Subtotal	$ 55,000
Overhead on 1	$ 5,000
Total	$ 60,000

2.5   Tentative Study Team for Project Delta, Stage II, 1977-1978

Study Direction and Administration

Peter S. Sindell, Project Director. Senior Research Associate,
          GAMMA, Université de Montréal - McGill Univer-
          sity.

Kimon Valaskakis, Senior Research Associate. Directeur, GAMMA,
          Université de Montréal - McGill University.

Potential Consultants

David Crowley, Professor, Communications Programme, McGill
          University.

J. P. LaFrance, Directeur, Communications, Université du Québec
          à Montréal.

Daniel Latouche, Professor, Political Science and French Cana-
          dian Studies, McGill University.

Richard F. Salisbury, Professor, Anthropology, McGill University.

J. Graham Smith, Professor, Management, McGill University;
          Associate-Director, GAMMA.

Donald Theall, Director, Communications Programme, McGill Univer-
          sity.

Others from the Communications Department, Université de Montréal,
the private sector, and citizens' groups involved in communications.

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