New Entry into Telecommunications Service Markets in Canada

A report prepared for the Department of Communications

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The views expressed in this report are those of the authors and do not necessarily reflect the position of the Department of Communications.

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INTRODUCTION

The purpose of this study is to consider the current environment for new entry into telecommunications service markets in Canada and to propose possible guidelines for the orderly development and regulation of this evolving sector of Canadian industry.

In Canada, the competitive provision of telecommunications services is a recent development. At the time of the "Telecommission" Report, published by the Department of Communications in 1971[1], few inroads had been made into the local monopolies enjoyed by the various operating telephone companies in this country. Public telephone service - both local and long distance - was provided by telephone companies on an "end-to-end" basis. In the case of local service, individual telephone companies enjoyed a monopoly over both the transmission facilities and terminal equipment needed to operate the local network. In the case of long distance service, the various telephone companies had entered into arrangements for the interconnection of their networks or local exchanges to carry communications traffic to points outside of their individual operating areas. By 1958 the Trans Canada Telephone System, composed of the nine major telephone companies, had cooperated in the construction of a national microwave system capable of more efficiently linking their respective networks across the country.

Public telegraph service in Canada was provided by CN-CP Telecommunications (CNCP) on its own separate microwave network.

At the time of the 1971 Telecommission Report, CNCP provided the only competition for the existing telephone companies by virtue of its telex, data and private voice services. However, at that point in time, CNCP's telecommunications network was not interconnected with the telephone network operated by the TCTS member companies and traffic could not therefore be routed from one system to another as was possible for TCTS members to do.

While the Telesat Canada Act had been passed by Parliament in 1969 to provide domestic satellite communications, Telesat had not yet launched its first satellite.

Within local areas, community antenna television (CATV) systems were being established, using coaxial cable to distribute television broadcasting signals. While these systems originated some local programming, they did not compete with the telephone companies in the provision of local telecommunications services.

On the other hand, the radio common carriers had been competing with the telephone companies for some time in the provision of radio paging and mobile radio services. However, these services were not interconnected with the local telephone exchanges other than through a human operator.

The major telecommunication carriers, including Bell Canada, the British Columbia Telephone Company (B.C. Tel) and CNCP, were

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regulated by the Canadian Transport Commission under the Railway Act. With the exception of the small CN telephone companies now known as Northwest Tel. Inc. and Terra Nova Telecommunications Inc., the other telephone companies in Canada were regulated by the various provincial utility boards and commissions. The employment of radio communication in the provision of mobile radio, radio paging and microwave services was subject to the licensing authority of the Minister of Communications under the Radio Act. Jurisdiction over CATV systems was split between the Canadian Radio and Television Commission (as it then was), under the Broadcasting Act, and the Department of Communication's jurisdiction over the use of radio apparatus under the Radio Act.

The picture painted by the Telecommission was in many ways that of the end of an era. In 1971, both the operating structure and the regulatory environment of the Canadian telecommunications system were relatively stable with few evident pressures being exerted for change. This situation has not remained static in the last decade. While many elements described above remain in place a decade later, there have been a number of significant inroads made by new entrants into the telecommunications sector. This development has been spurred on by changes in technology which have placed new pressures on the telephone companies to innovate and have opened up market opportunities for new entrants. While these inroads have largely resulted from ad hoc responses by regulatory agencies to particular pressures for change, events have

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advanced in certain sectors of the industry and in certain jurisdictions of the country to a point where regulators are relaxing existing barriers to entry, deregulating former monopoly services and formulating general guidelines to govern the entry of competitive service providers.

The evolution that has taken place in the last decade should properly be examined in light of the assumptions underlying the former monopoly position enjoyed by the telephone companies. Until recently it was generally accepted throughout the continent that the monopoly of the telephone companies should be safeguarded in all its aspects. Two fundamental assumptions underlay this belief: one was that the telephone company should have "end to end" responsibility for a communication from telephone set to telephone set; the second was that telephone service should be made universally accessible by subsidizing local exchange service with more lucrative services offered by the telephone company.

The concept of end to end service was based partly on the view that the telephone set itself formed an essential component in providing telephone service, and because divided responsibility over different aspects of telephone service was seen to pose difficulties for the provision of maintenance and to threaten network integrity.

The second assumption was that telephone service should be made universally accessible by keeping rates for local exchange service

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low through internal and inexplicit cross subsidies. Regulators have generally supported the proposition that telephone rates should be based not on cost of service, but on "value of service". In this way, the price of rural service has been cross subsidized by the proceeds from urban service, local rates have been cross subsidized by long distance rates and residential customers have been cross subsidized by business. In order for the subsidies to be realized, it was thought necessary that a single provider provide all aspects of telephone service.

In this universe, competition had no place. Indeed, as the telephone system matured, a third set of assumptions, based on economies of scope or scale, were advanced to justify the monopoly model. It was thought that the size of a given telephone network permitted it to take advantage of important economies and to provide virtually the entire range of network dependent services at a lower cost than any other supplier.

During the past decade, these assumptions have been subjected to serious challenge as a result of a combination of factors including new developments in communications and computer technology, entrepreneurial ambitions, growing user awareness of the cost-savings and benefits of choice, and a growing sympathy among government, regulators and the public to the notion that competition among the providers

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of goods and services, including telecommunications equipment and services, is in the public interest.

This process has involved a redefinition of the role of the telephone system from that of an "end to end" service to one divisible into quite distinct terminal and network components. Even the network has been subjected to pressures for further division into local exchange and long distance or inter-city components.

These pressures for limiting the extent of the monopolies enjoyed by telephone companies, and for permitting new entrants to compete, have arisen on a number of fronts. Equipment suppliers and manufacturers have fought for the right to sell network addressing terminal equipment directly to telephone subscribers for attachment to the network; transmission companies have sought to establish alternative inter-city networks - both public and private - and in certain cases to interconnect such systems with the existing telephone networks; more recently, CATV companies are attempting to establish broadband communications systems on an intra-city basis. Inroads against restrictions on the use of telecommunications services provided by telephone companies have also been made raising issues of sharing and resale of telecommunications and of the provision of enhanced services.

Both the proponents and the opponents of liberalized entry have based their cases primarily on economic, legal and regulatory grounds, although concerns over technical and maintenance issues have also been expressed.

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The economic arguments for liberalization have been based on the benefits of competition, made possible by new technology, including product and service innovation and diversity, lower prices to major telecommunications users, and stimulative multiplier effects on business efficiency and the equipment manufacturing sectors.

Opponents have argued that competition gives rise to wasteful duplication of effort, ignores economies of scale, and benefits certain large users at the expense of ordinary telephone subscribers whose rates would have to be raised as existing subsidies are removed with the unbundling of rates.

In law, proponents of new entry have argued that to bar new entrants is to discriminate unjustly and hence illegally against them. Opponents have justified the restrictions again on the basis of the benefits of cross-subsidization that accrue to the ordinary telephone user.

In most sectors of the Canadian telecommunications industry the burden has rested on those seeking to enter the market, and on the proponents of competition, to justify any erosion of the monopoly provision of telecommunications services by existing telephone companies. This situation is in sharp contrast with the current American situation where, at the federal level, new entry has been greatly facilitated by the regulator.

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The first part of this study reviews the policy issues raised by new entry into the telecommunications sector in Canada with specific reference to six issue areas: the construction of private inter-city microwave networks; systems interconnection; the provision of competitive intra-city telecommunications services; the attachment of customer-premises equipment to the telephone network; the resale of telephone company transmission facilities; and the provision of value-added or "enhanced" services. These six issue areas have been selected in order to cover broadly the range of new entry issues relating both to services and facilities. Since competition in most of these areas has not been permitted without regulatory approval, the major U.S. and Canadian decisions are reviewed. In the second part of the study, possible criteria for assessing new entry are developed, and in the third part an attempt is made to apply them to the different issue areas.

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I. The Issue-Areas Reviewed

1. Private inter-city microwave networks

The current pressures for private inter-city microwave networks arise from the desire of cable television operators to establish integrated microwave facilities for the point to point carriage of their approved signals at a lower cost than is offered by the common carriers.

Under current procedures of the Department of Communications (DOC), which is responsible for licencing microwave systems, an applicant must demonstrate some public interest and need to be served by the creation of the new facility; and that existing facilities cannot properly satisfy this interest and need. As part of the application process, a quotation from a common carrier must be submitted with the application.

Thus far, private microwave networks have generally been authorized for cable operators to carry and deliver distant television signals, particularly to remote areas. However an application by a number of cable operators for a private network in southern Ontario has led to a review of the microwave licencing policy.

In issuing its Notice of November 29, 1980, calling for comments on its review, the Department of Communications identified the following issue among the four policy issues listed by it for comment:

> "private commercial intercity microwave networks may have a significant impact on the capability of common carriers to maintain and extend communications services to the public."[2]

In commenting on this DOC Notice, cable operators maintained that private systems would have little or no adverse impact on the carrier because of the insignificant size of the market as compared with overall carrier revenues. The common carriers argued that the establishment of private systems would cause a severe revenue drain, and would inhibit the extension of basic telecommunications services to Canadians in remote areas. They also considered that private microwave networks would permit the cable industry to compete with the common carriers in offering non-programming services. Indeed a number of cable operators submitted that they would wish to be licenced as restricted specialized common carriers (SCC's) in competition with the telephone company.

The Department has called for a second round of comments on a number of detailed questions arising out of this proceeding, and no decision has as yet been reached.

In contrast with the situation in Canada, the first important decision in the United States on inter-city transmission networks was the FCC's Above 890 decision in 1959.[3] This decision permitted the establishment of private microwave systems subject only to proper technical standards being met. This decision overruled telephone company objections that such systems would needlessly duplicate facilities and promote inefficiencies in microwave communications.

A decade later, in 1969, the FCC authorized Microwave Communications Inc. (MCI) to provide private line microwave service between Chicago and St. Louis as an SCC.[4] Two years later, in its Specialized Common Carriers decision, the FCC established a general policy permit-

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ting new entry into specialized communications markets, which the FCC believed would generally be confined to limited geographic areas.[5]

2. Systems interconnection

Systems interconnection permits intercity carriers and other suppliers of telecommunications services competing with the telephone company to offer their customers dial-up access to their networks through local facilities or equipment provided by the telephone company.

In the United States the FCC ordered the telephone companies to permit the SCC's to inter connect with their interstate telephone facilities in 1974 on reasonable and non-discriminatory terms. This was seen as a logical consequence of having authorized the SCC's to compete in the first place.[6]

In Canada, by contrast, no SCC's have yet been authorized and systems interconnection between competing networks has thus far only been considered in the case of CNCP Telecommunications and the radio common carriers.

The General Regulations of Bell Canada and other telephone companies have prohibited systems interconnection, preventing CNCP customers, inter alia, from having dial-up access to the telephone system.

In June 1976, CNCP applied to the CRTC for access to the Bell Canada network for certain of its voice and data services. The basis fore- the application, brought under s. 265 of the Railway Act, was that without interconnection, not only would certain markets continue to be for- closed to CNCP, but existing markets would dwindle if access to the

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local switched telephone network, essential for a variety of data and private line voice services, were denied. CNCP did not apply for interconnection for the purpose of providing public local or long distance voice telephone service.

The Commission approved the application and issued an order permitting CNCP access to Bell Canada's system for a broad range of business purposes, for both data and voice traffic.[7] The effect of the decision was to reaffirm the right to interconnect with the telephone system, provided on balance it is in the public interest, and to require the party who would deny access to justify its denial. Bell raised a variety of technical and economic arguments in support of its position, the most important of which was the alleged revenue loss from the introduction of competition which would interfere with its ability to maintain universal telephone service at reasonable rates. The Commission agreed that public switched long distance message toll service (MTS) and wide area telephone service (WATS) should be protected from competition, so that the revenue levels from these services could be maintained and could continue to contribute to meeting the costs of local exchange facilities. CNCP was ordered to pay Bell an "access charge" on a per-line basis, so as to make its own contribution to such costs.

The Commission's decision in the Bell-CNCP Interconnection case was the subject of a petition to the federal cabinet which refused to vary the decision. CNCP has since been granted interconnection with

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B.C. Tel, another federally regulated carrier, on the same terms and conditions, mutatis mutandis, as were ordered with respect to Bell Canada.[8] With the exception of Northwestel and Terra Nova Tel, CNCP does not have interconnection with the other major telephone companies in Canada. Since the other TCTS member telephone systems are regulated provincially, any further systems interconnection by CNCP will require specific applications (and probably extensive hearings) on a jurisdiction by jurisdiction basis.

In a related development involving systems interconnection, a group of companies offering radio paging services in Ontario and Quebec brought on application for relief from Bell Canada's policy toward them in April 1979. Since 1968 Bell Canada had offered radio paging services in competition with radio common carriers. In 1978, Bell began to offer and advertise a wide-area dial access radio paging service while denying its competitors the facilities necessary to offer similar services. Briefly, Bell's service allowed a subscriber to dial directly anywhere within the telephone company's paging zones by the use of special eight digit codes. The facilities for reaching the subscriber are referred to as "outpulsing". Competitors' systems were only able to achieve this result by "overdialing", which involved the use of extra digits, and was not always available to the caller depending on his location and the type of terminal equipment available.

After holding an interim hearing, the Commission decided that a prima facie case had been made that Bell's refusal to supply the necessary facilities gave advantages or preferences in favour of

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itself, contrary to S.321 of the Railway Act. It granted the radio paging services interim relief, by ordering Bell to cease soliciting new customers pending a full hearing and decision on the matter.[9]

Subsequently, Bell and the radio paging companies agreed on terms and conditions for the latter to gain access to the public switched network, which were embodied in a second CRTC decision in the case[9a]. In a third decision the Commission established paging rates, ordered Bell to unbundle its Bellboy service rates into network and pager components and stated that "the contribution of the Bellboy network component should be at least equivalent to the contribution determined to be appropriate for the outpulsing and telephone numbers."[9b]

3. The provision of competitive intra-city telecommunications services

Despite the many pressures for competition with the telephone company on an inter-city basis, the local switched exchange network has generally been regarded as the bedrock of the telephone company's monopoly. It has long been considered entirely wasteful and fruitless to try and duplicate these facilities. Indeed even under the current AT&T divestiture proposal in the United States, the divested operating companies would still retain the local exchange networks.[9c]

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At the same time, there are at least three kinds of telecommunications systems that at least to a limited extent loom as competitors to the local exchange telephone network: CATV or cable television systems, cellular radio, and digital termination systems.

In recent years, cable television systems both in Canada and the U.S. have been providing non-programming telecommunications services such as meter-reading, fire alarm and security surveillance on a competitive basis to the telephone companies. In the U.S. these services - which have included electronic funds transfer - have been authorized by local cable franchising authorities.

In Canada cable television systems are regulated by the CRTC under the Broadcasting Act. On June 6, 1978 the CRTC announced that it was prepared to give consideration to applications by cable television licensees for the use of their systems to provide new communiations services of a non-programming nature.[10] The Commission asserted regulatory authority over the introduction of new services pursuant to section 5 of the Cable Television Regulations which provides as follows:

> "A licensee shall not use, or permit the use of, its undertaking or any channel of its undertaking except as required or authorized by its licence or these Regulations."

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The Commission's authority to approve these services was challenged by the telephone companies on the grounds that the CRTC's jurisdiction was limited to the regulation of broadcasting and that the services applied for were not broadcasting services within the meaning of the Broadcasting Act, in as much as they were to be provided by wire or cable, and were not intended for direct reception by the general public. The Commission responded by indicating that its jurisdiction over broadcasting receiving undertakings is clear:

> "The fact that broadcasting receiving undertakings may distribute non-programming services does not, in the Commission's view, alter its jurisdiction over the undertakings, so long as their reliance on television signals and on their ability to receive and transmit such signals, is clear."[11]

Since that time, there have been a series of decisions authorizing CATV licencees to provide certain non-programming services. Virtually all authorizations have been granted on an experimental basis, subject to identical conditions ensuring priority of carriage for off-air and local programming services; preventing cross-subsidy from subscribers of those services; and banning advertising[12]. As regards the last, the Commission has prohibited the distribution of advertising material, including classified ads, on the grounds that the achievement of the objectives of the Broadcasting Act would thereby be prejudiced.

The types of non-programming services which have been authorized for distribution by cable licensees include security surveillance, energy meter reading, controlling and switching, video games, information services, videotex, viewership rating and opinion polling. In a recent CRTC decision the Commission considered two new services, classified real estate advertising and teleshopping and discussed the concerns raised by these services as well as opinion polling

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in terms of their nature and potential impact on the broadcasting industry.[13]

The Commission refused to authorize the distribution of classified real estate advertising owing to the potential for displacement of advertising revenues from broadcasters.[14] The teleshopping proposal would offer the possibility of electronic catalogue retrieval service enabling subscribers to view, select and order merchandise directly from their homes or businesses. The Commission approved the introduction of this service on the condition that it be provided on a discretionary or user-pay basis and that the costs be borne both by information providers and subscribers. The opinion polling service was similarly given conditional approval, the conditions being that licensees obtain the prior consent of subscribers and warn subscribers that monitoring is being performed. Finally, similar conditions to those previously discussed regarding priority of carriage, cross-subsidization and cost separations were imposed on licensees.

The telephone companies continue to argue that while they can accept cable competition, they believe that the regulatory "ground rules" for both industries should be the same. They consider it unfair that the federally-regulated carriers are subject, for example, to extensive rate of return regulation and to anti-discrimination requirements under the Railway Act, whereas the cable companies are subject only to the Broadcasting Act and the few conditions the CRTC has imposed in regard to non-programming services.[15]

While there has been some public discussion of equalizing regulatory treatment in respect of services

where cable and telephone companies compete, earlier drafts of revised telecommunications legislation did not include provisions to this effect.

The CRTC has announced that it will be holding a full hearing on cable non-programming services in late 1983.[16]

As regards cellular radio, or cellular mobile telephone systems, the FCC, in CC Docket No. 79-318, describes these as follows:

> "Cellular mobile systems are generally described as mobile radio systems with a high capacity to serve subscriber units due to the coordinated reuse of a group of radio channels... In such systems, each radio channel can be used many times in separate zones or cells within an area. Mobile units communicate with an array of cell control locations distributed throughout the system; these cell sites are linked to control and switching facilities and thereby interconnected with the telephone network. The frequencies used in the cells are carefully coordinated in such a way as to permit frequency use in geographically separated cells without mutual interference. A fully developed cellular system would have the ability to locate a subscriber unit, establish a connection through an appropriate cell site, and transfer ("hand off") that connection to other cell control locations as the subscriber unit moves through the grid of cell locations. The number of cell sites in a system is dependent on the degree of channel reuse, the amount of spectrum available, and the density of traffic on the system."[64]

On April 9, 1981, the FCC amended its rules to provide for the licencing and operation of cellular systems based on two systems per service area, with 20 MH_z of spectrum allocated to each system. It required any telephone company wishing to offer cellular services to do so through separate subsidies, and required them to furnish interconnection to other cellular systems on a non-discriminatory basis. Previously, in 1974, the FCC had decided that only telephone companies might operate cellular systems, on a one-to-a-market basis. The FCC also decided, however, that separate cellular frequency allocations for telephone companies and competitors should be maintained for five years[16b].

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Following numerous petitions for reconsideration the FCC eliminated the requirement for separate subsidiaries, except for AT&T. While the January 1982 divestiture proposal would render this point moot, the FCC has stated that it did not consider that the divestiture proposal prevented the BOC's from engaging in cellular[16c]. The FCC also reduced the separate allocation period from five to two years, in response to competitive pressures.

The FCC has called for applications for cellular radio systems in the 30 largest markets by June 7, 1982. Applications for all other markets will be receivable starting September 7, 1982.

In Canada, the DOC has called for and received submissions on "Radio Licencing Policy for Cellular Mobile Radio Systems and Preliminary Mobile Satellite Planning in the Band 806-890 MH_z"[16d]. The accompanying discussion paper raises a number of policy issues for consideration including the matter of new entry and competition. It is noted under that item that while traditionally, the mobile telephone service in Canada has been provided by telephone companies, a precedent for change has been established in some regulatory jurisdictions by permitting a radio common carrier to interconnect his base station with the telephone network in order to provide dial access to paging. The paper notes that should a similar regulatory decision concerning interconnection be taken with respect to the mobile telephone service, competition for spectrum could ensue, which could affect the viability of the service. The number of cellular systems that should be authorized for a given service area, and the amount of spectrum required for each system, are thus noted

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as important questions. The question of offering services by resale, and the nature and extent of regulation, if any, over competitive services, are also cited as worthy of attention[16e].

Digital termination systems (DTS) generally involve relatively inexpensive rooftop user terminals capable of sending and receiving digital communications messages bypassing the local telephone system. As broadband systems they can be deployed for data, video or voice communications services including the interconnection of word processors and video teleconferencing. DTS can easily be interconnected with inter-city transmission systems employing microwave, satellite fibre optics or any other technology.

In the United States some 21 applications for DTS have been filed with the FCC mostly by common carriers, although Cox Cable Communications Inc., has also applied to extend its cable system to areas not wired for cable and to connect existing cable locations. The FCC has allocated spectrums for digital electronic message services but has not yet established regulations, preferring to encourage a degree of experimentation.

One important policy issue that has already arisen in the U.S. relates to the conditions under which telephone companies should be permitted to obtain DTS licences in their service areas.

The question of DTS has not yet been the subject of formal public discussion in Canada.

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4. The attachment of customer premises equipment to the telephone network

Almost without exception, North American telephone companies developed regulations prohibiting the attachment to the telephone network of any devices not owned by them, except with their express consent.

In the United States, one of the first important dents in the general prohibition on such attachment was made in 1956 when the Court of Appeal overturned an FCC decision denying attachment of the Hush-A-Phone device. This decision provided the basis for the liberalization of terminal attachment, although general attachment prohibitions remained.[17] The Carterfone case[18] furthered the case for liberalization in 1967, leading to a re-examination of the carriers' interconnection policies. The outcome of this examination was the FCC's approval of a set of modified tariffs requiring AT&T to permit customer provision of terminal devices subject to certain conditions, one of which was the mandatory use of a telephone company-provided interface device. The FCC went on to consult the National Academy of Sciences as a means of determining the technical factors affecting terminal interconnection.

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The outcome of this and other reviews of terminal attachment policy was that the FCC established a set of equipment registration standards and a certification program in 1972 which eliminated the need for a carrier-provided interface device.[19] The registration program was extended to include a wider variety of customer provided equipment in 1976.[20]

In Canada, S.5(4) of the Bell Canada Special Act provides that the Company has the power to prescribe the conditions for attachment of equipment to its facilities, subject to the approval of the Commission (S.5(5)). In its General Regulation No. 9 promulgated in 1953, the company forbade customer ownership of terminal equipment and the attachment to its system of any device or circuit that it did not provide, except as specifically permitted by it.

These regulations were upheld by the courts in 1955[21] and by the Canadian Transport Commission twice in 1975[22]. After the denial of the attachment application, the Harding Corporation instituted a claim against Bell Canada for wrongful interference with the company's business and wrongful discrimination. An outcome on the merits has not yet been reached although it has been determined that Bell's General Regulations do not constitute a defence to an action in delict or tort.[23]

The first case authorizing direct access by customer owned equipment to Bell Canada's telephone network was Challenge Communications Ltd. v. Bell Canada.[24] In issue was the question of whether network addressing mobile radio-telephone equipment could be allowed direct access to the telephone company's network. Pre-

viously, Bell had permitted subscriber ownership of manual mobile radio telephones, whereby access to the Bell network was effected through the intervention of one of the company's telephone operators. In 1977, when Bell filed a new tariff for automatic mobile radio telephones, permitting direct dial access to the telephone network, Bell denied access for customer provided equipment to this new service.

Challenge Communications was successful in its application before the CRTC to have the tariff declared invalid and contrary to Section 321 of the Railway Act in that, inter alia it constituted an unjust discrimination against suppliers of mobile telephone equipment other than Bell Canada. Specifically, the Commission held that suppliers were prevented from offering the more advanced automatic mobile telephone equipment on an equal footing with Bell and that the relief contemplated by S.321 applied to competitors of the telephone company as well as its subscribers. In addition to declaring Bell's tariff invalid, the Commission ordered Bell to file an amended tariff which would allow competitive suppliers to offer the service on the same terms and conditions as Bell.

Once the applicant had shown that the company had granted itself a preference, the statutory burden shifted to Bell to prove that the discrimination was not unjust. Bell raised a variety of defences, all of which were rejected by the Commission. The legal issue centred on the relative priority of the provisions of the

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Railway Act in comparison to the company's General Regulations prohibiting the attachment of customer owned equipment to the network. It was held that the General Regulations did not render the company immune from the Commission's tariff-approving function embodied in S.321 of the Railway Act. In the case of a conflict between the provisions of a statute and a regulation passed thereunder, the statute prevails.[25]

The technical arguments raised in defence of the discrimination and rejected by the Commission related to the preservation of the integrity of the network, retardation of research and development if customer-owned equipment were introduced, and the unfair loss of revenues to Bell if other suppliers of automatic telephone equipment were allowed to benefit from this "new" service developed at Bell's expense. As regards the latter, it was held that Bell's equipment represented a slight improvement on the competition but did not constitute a new and different service.

The Federal Court of Appeal upheld the decision of the Commission that Bell's tariff violated S.321 of the Railway Act[26], and leave to appeal the decision to the Supreme Court of Canada was denied on June 19, 1978.

The next development in the terminal attachment context was the proceeding initiated by an application by Bell Canada on November 13, 1979 to amend Rule 9 of its General Regulations. The standards and conditions governing the attachment of subscriber-provided equipment are subject to the Commission's scrutiny pursuant to S.5 of the Bell Canada Special Act. An interim decision, Telecom Decision CRTC 80-13 was issued on August 5, 1980[27] and an extended hearing on the matter was held in November

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and December 1981, with a final decision expected later in 1982.

Rather than continuing to address the attachment of terminal equipment on a case by case basis, interim standards were established which provided a degree of certainty for subscribers, in the sense that a "type-approval" procedure was specified whereby subscribers may attach single line terminals of a type meeting specified technical standards without entering into a special agreement with Bell.

For key systems or PBX installations, however, the Commission considered that there should be a special agreement between the subscriber and the Company to ensure proper coordination of the installation and activation of such systems.[28]

Other issues considered by the Commission included the avoidance of harm to the network, and the tariff implications of the attachment of subscriber-provided terminal equipment.

There has also been consideration of the attachment of terminal equipment in British Columbia and Alberta. Interim terms and conditions regarding terminal attachment to the telephone system of B.C. Tel have been adopted, the CRTC holding that the same considerations as established in the case of Bell should govern.[29] The Commission, in reaching its decision, held that its authority to prescribe technical standards required a prior finding that the standards in place were contrary to s. 321 of the Railway Act since the B.C. Tel Special Act contains no provision comparable to section 5 of the Bell Special Act. Having so determined, the Commission was empowered both to alter the tariffs and to prescribe the technical standards necessary to give effect to these changes in the tariff.

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The CRTC's jurisdiction is exercised in regard to the two largest telephone companies in Canada, Bell and B.C. Tel. The third largest, Alberta Government Telephones (AGT), has been involved in terminal attachment hearings before the Alberta Public Utilities Board. The AGT application would have allowed attachment of customer-provided terminal equipment in AGT territory for both single and multi-line telephone subscribers and would have ended the rental of single telephones by AGT to both residential and business subscribers. The Alberta Public Utilities Board denied the application since it could not agree to the termination of the rental option of single line telephones to business and residential subscribers.[30] In so doing, the Board paid deference to AGT's submission that the company was not prepared to accept a hybrid of rental and customer ownership of single line telephones. While the issues of unfair competition, anti-competitive practices, cross-subsidization and the establishment of an arms-length subsidiary by AGT were raised at the hearing, the Board did not consider these to be appropriate matters to deal with at that time. AGT has now applied to the Board to vary the decision and to permit the rental option to be included.

With the exception of Island Telephone Company in Prince Edward Island, which was ordered by the courts to permit it,[31] terminal attachment is not presently permitted in the territories of other TCTS members.

5. The resale of telephone company switched transmission capacity

Resale of the switched transmission capacity of the telephone company has long been prohibited by regulations throughout North America.

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It has been regarded as the most fundamental encroachment upon the telephone company's monopoly.

Yet with bulk discounting of facilities as in the case of Telpak, and with new techniques of multiplexing, it had become quite feasible to offer resale services. In the Resale and Shared Use of Common Carrier Services Decision of 1976, the FCC determined that telephone company restrictions on the resale and sharing of private line services were unlawful.[32] This permitted the advent of "value added carriers" who could lease telephone company lines at bulk discount rates and offer services to the public, which had added value through some use of data processing.

At the same time, the FCC did not consider it appropriate for value added or specialized common carriers merely to reoffer switched telephone company transmission capacity on a public basis. Yet in 1974, MCI filed tariffs for a new metered-use interstate telephone service called "Execunet". AT&T objected on the grounds that this new service was comparable to switched public message telephone service, that it therefore encroached upon the telephone company's monopoly and that this was beyond the scope of MCI's SCC's status. The FCC agreed with AT&T.[33] This decision was, however, overturned in the U.S. Court of Appeals in 1977 on the grounds that the FCC had not determined that AT&T should have a monopoly in the MTS field.[34] Interconnection to AT&T facilities was ordered by the court in 1978 and other switched message services followed.[35] AT&T subsequently filed its Exchange Network Facilities for Interstate Access (ENFIA) tariff, to be applied to all

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common carriers using AT&T's local facilities to transmit switched message services.

In Canada the issue of resale has arisen a number of times and the CRTC has stated that it wishes to examine the issue further.[36] Currently it remains prohibitied and MTS and WATS remain protected as monopoly services. Thus, in Decision 79-11, the CRTC stated as follows, at page 245:[37]

> "the Commission has concluded that it is necessary in the public interest to protect MTS and WATS services from direct competition and therefore agrees with CNCP that it should not be permitted to offer the equivalent of public long-distance service. The necessity for according a certain protection for MTS and WATS services arises for three reasons: first, the possibility of voice service offerings that would depart significantly from conventional private line services and might therefore lead to a substantially greater erosion of MTS-WATS revenues than currently obtains; second, the significant contribution that MTS makes to the costs of Bell's local exchange facilities; and third, the desirability of maintaining a uniform route-averaged MTS rate structure which has been found to be in the public interest."

6. Enhanced services

Enhanced services typically involve both transmission and some other function, such as message forwarding, often involving data processing.

In the United States, by virtue of a consent decree of 1956, AT&T had been prohibited from offering data processing services. Yet a variety of new services appeared to be blurring the distinction between communications and data processing.

The FCC made a concerted effort in its 1973 first Computer Inquiry decision to distinguish between services that were "primarily" one or

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the other and prevented AT&T from offering data processing services of any kind.[38] However in its second Computer Inquiry decision of 1980 the FCC relaxed the restrictions on the provision by telephone companies of services involving data processing (which it referred to as "enhanced non-voice services"), although it required AT&T, because of its market power, to offer these services (as well as customer premises equipment) through an arm's length subsidiary.[39] The Decision also ruled that enhanced non-voice services and customer premises equipment should no longer be regulated.

Under the AT&T divestiture proposal, AT&T (and not the local operating companies) would continue to offer the services. It is unclear whether this would be required to be done by an arm's length subsidiary. In Canada at least four enhanced services have been introduced to date, two by Bell Canada, one by CNCP and one by Shell Canada Limited.

On May 25th, 1981, Bell Canada received the permission of the CRTC to initiate a "market trial" of its custom calling voice message service in six centres in Southern Ontario. A customer calls a specified telephone number at which his message is recorded, and is then delivered via the telephone network to a specified destination or destinations. This appears to be similar in concept to the "Customs Calling Services II" offered by Pennsylvania Bell, with one important difference being that the latter uses a digitized storage facility and a computerized interface, whereas Bell Canada's service is premised on the use of a live operator interface and an analogue tape recorder.

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In September of 1981, Voice Message Service, a division of Shell Canada Limited, initiated its Voice Message exchange on a commercial basis in the Toronto area. The Shell system employs the ECS Voice Message Exchange (VMX) which has been attached to the local Bell network in virtue of the interim CRTC terminal attachment arrangements.

VMX may be used in either a forced delivery or a mailbox mode. In the mailbox mode, the only one currently offered, a person wishing to send a voice message dials an access code to reach the system, gives a personal identification code, and then sends his message. Incoming messages are then held in the recipient's "electronic mailbox", which he can access from remote locations by giving his personal identification code.

Bell Canada's second form of store and forward message service is the Envoy 100 Service. Envoy 100 is a text communication service that provides for the storing and forwarding of messages using electronic switching equipment located on the company's premises. Company or customer-provided asynchronous terminals, using the standard ASCII code character set and operating at speeds from 110 to 1200 bits a second, may access the system. Access to Envoy 100 Service to input messages or to retrieve messages is permitted by means of datapac service, TWX service, primary exchange service and message toll service.

CNCP has also introduced a store and forward service which permits direct communication between word processors via CNCP's infoswitch data network. This service called INFOTEX received Commission approval in 1982.

The issue of enhanced services has yet to be dealt with in a comprehensive manner by any of Canada's regulatory bodies. The CRTC is the only regulatory body to date which has even considered the issue.

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In Telecom Decision CRTC 81-10 of May 25, 1981, the CRTC considered Bell Canada's application for the initiation of its voice message service.[40] In its decision, the Commission expressed some concern about establishing regulatory guidelines for the provision of enhanced services, and stated that a public hearing would be held prior to granting final approval to Bell's filing. At the same time, the Commission ordered Bell to provide, at tariffed rates, the facilities required by any party wishing to conduct a "similar trial".

While both Bell Canada and the CRTC are apparently in favour of allowing competitors to conduct "market trials" for the provision of enhanced telecommunication services, the major regulatory issues concerning enhanced services have yet to be dealt with by either the CRTC or any other Canadian regulatory body.

7. Conclusion

The question of new entry and competition in the United States is still very much in flux, particularly in view of the deregulatory decisions of the FCC, the proposed AT&T divestiture, and a flurry of telecommunications bills in Congress.[41] Nevertheless, it is clear that the barriers to entry (subject only, in cases of interconnection to the telephone system to satisfying minimal technical standards) have essentially been removed. The focus has shifted entirely from the question of entry to the conditions of fair competition between established carriers and new entrants. In Canada, the situation is quite different.

Partly this is due to the greater strength of the deregulatory

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winds in the US and partly to the fact that the FCC as a single regulatory body has enjoyed the jurisdiction to take the initial decisions in all the issue areas on a national basis, subject only to appeals to the courts.

In Canada, by contrast, the virtues of competition are not as cheerily perceived in all parts of the country. Indeed, in most provinces, particularly in the Prairies where the telephone companies are Crown-owned, the monopoly of the telephone company is relative sacrosanct, and the onus - usually a heavy one - is clearly on a would-be competitor.

Of equal importance, the various issue areas are subject to the jurisdiction of different federal or provincial authorities depending on the telephone company involved. Even where the CRTC does make the initial determination, its decisions are not only subject to appeals to the courts on questions of law and jurisdiction, but are also subject to review by the federal cabinet on policy grounds.[42]

In Canada, new entry into the telecommunications sector will likely be dealt with for the foreseeable future on an ad hoc basis, issue by issue, jurisdiction by jurisdiction, or even case by case, with the central question being the impact of new entry on the telephone company.

At the same time, it is important for the Department of Communications to try and develop general criteria that could be

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applied to particular cases of new entry that arise, in order to try and bring some policy consistency to bear in an area where many diverse agencies are at work, each imposing its own regulatory policies and economic views.

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II. Criteria for Judging the Desirability of Various Forms of Entry

In developing criteria to determine the appropriate regulatory structure and level of entry for the issue areas which have been identified, it is useful to start by considering the statutory criteria which govern the regulators.

Since Canada's two largest telephone companies are subject to the jurisdiction of the CRTC, reference should be made to the relevant provisions of the Railway Act. These provisions vary in the degree of specificity with which they guide the Commission in its deliberations, so it is useful to consider the manner in which several of them have been interpreted.

At one extreme, section 320(11) simply requires Commission "approval" for all contracts, agreements and arrangements between the regulated company and any other company with authority to operate a telephone system or line. This section covers inter alia the interchange of communications traffic and the division of tolls, but is entirely silent as to possible criteria governing Commission approval.

In considering Telesat's participation in the TCTS connecting agreement in 1977, the Commission held that the relevant test to be applied under section 320(11) is "the public interest, viewed

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in a broad sense"[43]. In assessing the public interest the Commission identified several criteria to consider including the reasonableness of rates, the effective regulation of rates, the impact of the agreement on the carriers' duty under section 321(2) not to make any unjust discrimination or unreasonable preference, the effects on Telesat's autonomy, the effects on the availability and expansion of satellite services in Canada and the effect of the agreement on competition in telecommunications services[44].

Sections 265 and 320(7) of the Railway Act, which govern systems interconnection and the exchange of telecommunications traffic, contain more specific principles than section 320(11). Section 265(1) directs all carriers to afford to all persons "all reasonable and proper facilities for the interchange of traffic". Section 320(7) empowers the Commission to order carriers to provide interconnected services upon such terms, including compensation, as the Commission deems "just and expedient".

In the CNCP Interconnection decision[45] the Commission stated that the statutory provisions of the Railway Act provide a basic guide as to the interests required to be assessed in reviewing an application for interconnection under sections 265 or 320(7). In assessing the public interest the Commission identified at least ten criteria to be balanced in reaching its decision[46].

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- universality of service
- consumer choice and responsiveness to consumer need
- quality of service
- the justness and reasonableness of subscriber rates (including subscribers of connecting companies)
- the requirement that rates and conditions of service not confer an undue preference or disadvantage
- innovation in the telecommunications industry, and in Canadain business generally
- efficiency of telecommunications systems
- optimal allocation of resources taking account of geographic differences
- the structure of rates, including route-averaged pricing, rate group structures, and rural service rates
- industry structure

As mentioned above, section 321 of the Railway Act also contains principles which have been instrumental in guiding the Commission on issues of new entry. This section basically prohibits the carrier from either unjustly discriminating against any person or granting an undue preference or advantage to any person, in respect of tolls, services or facilities provided by the carrier. The determination by the Federal Court of Canada in the Challenge Case[47] in 1978 that section 321 applied to protect suppliers competing with Bell Canada has become the focus of most of the competitively motivated applications to the Commission since that date.

From this brief analysis of some of the key provisions of the Railway Act it becomes readily apparent that the statutory

tests currently embodied in that act, as interpreted by the Commission and the courts, are sufficiently broad to permit a comprehensive analysis of the economic, competitive and regulatory implications of new entry. Specifically, these statutory criteria may involve an attempt to define the appropriate balance between the efficiency and equity considerations raised by a new entry proposal, as well as the potential impact on existing carriers, other new entrants, and other interested parties. Other issues to be considered include the feasibility of monitoring the impact of new entry from a regulatory and administrative point of view and the impact of decisions to allow entry on other regulatory jurisdictions.

The remainder of this section will be devoted to further suggesting criteria for regulators to consider in assessing the merits and impact of new entry.

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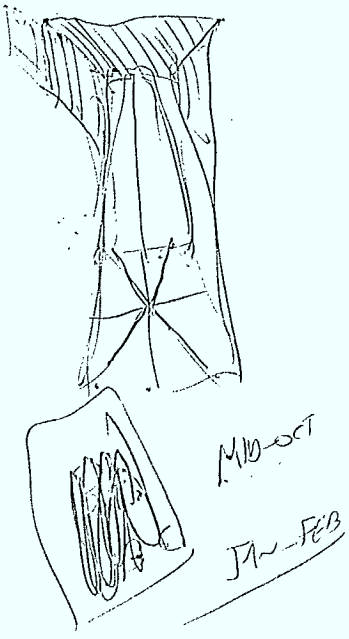
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1. Efficiency

Considerations of economic efficiency can be grouped into four major categories which relate to both technological conditions of production and market structure. These considerations include: economies of scale, the cost savings of aggregating output in a single firm rather than in two or more firms; economies of scope, the cost savings of producing two or more distinct services within a single firm; sustainability, the ability of the least cost supplier to maintain minimum efficient prices and to prevent socially inefficient competition without the protection offered by regulation; and predatory pricing, pricing below cost by dominant producers with the intent to drive competitors out of business.

(a) Economies of Scale

Economies of scale for any single service are said to exist when a 1% expansion of the service is accompanied by a less than 1% increase in the inputs required to produce that additional output.

A more general method of measuring scale economies is to examine the change in cost accompanying an increase in service output. Thus, if output increases by 1% and costs increase by only .9%, economies of scale are said to exist. "The definition in terms of cost changes is especially useful when a larger scale of output is characterized by changes in optimal input proportions. This appears to be the case in telecommunications, where a larger scale of operations is often accompanied by increased capital intensity."[48]

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(b) Economies of Scope

"Economies of scope" are said to occur when the production of two or more services within a single firm leads to lower costs than if each service is produced separately by individual firms. Such scope economies can occur if there is some cost component shared by two or more services.[49] For example, one could conceive of having two separate telephone networks - one devoted to local service and one for long distance service. Each home would then have two telephones, one for local calls and one for long distance calls and two sets of wires to the home. However, the two separate networks would duplicate some plant that could be used by the two services in common, since there are few homes where the telephone is continuously being used for either local or long distance calls. This sharing of common plant - the telephone and telephone wire - leads to economies of scope - average costs are lower for at least one of local and long distance service by combining the facilities for the two services within a single plant or firm. Note, that while in this example there may be good reasons to combine facilities within one firm, the offering of services may still be done by more than one firm.

(c) Sustainability

Recent theoretical research has shown that a natural monopoly might not be able to "sustain" its prices against entry even if

those prices are the ones that maximize economic efficiency[50]. As a result regulation may be necessary in order to prevent entry which raises the total costs of production. For example, consider a monopolist who offers a variety of services under conditions of substantial economies of scale and modest economies of scope. These services are to some extent substitutes for each other. A competitor wishing to enter one of the monopolist's markets also enjoys substantial economies of scale (but no economies of scope since the competitor is a single product firm). Under these conditions, entry by the competitor may be feasible if the competitor's costs are below the monopolist's price in the one market. This entry would, however, increase total costs of production since the monopolist will have to reduce his service offerings in this one market. The costs of the monopolist supplying the other markets however increases because of the losses in economies of scale and scope which flow from the reduction of this one output. This possibility is the central result of the "sustainability" literature.

Sustainability is only a potential problem under certain empirical conditions. Conditions which impact on sustainability include the presence or absence of substantial economies of scale and modest economies of scope in the monopolist's operations, and whether or not the new service is a substitute for existing services.

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If there are no economies of scale, sustainability is not likely to be an issue, since a number of firms can probably operate in the industry without any increase in the total costs of production. If economies of scope are substantial, then the monopolist will have a sufficiently large cost advantage that no competitor would dare enter. If economies of scope are non-existent, then again entry into "competitive" markets is efficient since total production costs will not increase as a result of competition. If the services are not substitutes, then entry into one market does not reduce demand for other services offered by the monopolist. Note finally that since the issue of sustainability exists for the price structure of the existing firm (not the entrant), examination of the cost conditions and the prices established by the existing firm are necessary data to know whether or not a sustainability issue may arise. If the technological conditions of producing telecommunications services do not involve substantial economies of scale and modest economies of scope, sustainability concerns can be ignored. If these technological conditions are extant, then the prices and costs of firms desiring to enter specific telecommunications markets must be examined.

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(d) Predatory Pricing

Predatory pricing involves the cutting of price below both one's own cost and a competitor's cost so as to drive the competitor out of the market or to force the competitor to sell its assets to the predading firm on favourable terms.[51]

The incentive to predade (price below cost) may be present in regulated markets where the existing firm is dominant or has a monopoly position in one or more markets, and faces competition from a specialized firm in other markets. The existing multi-product firm may be able to raise its price in the dominant market to cross-subsidize its losses in the competitive market, and thereby to drive its rival out of business. Such a cross subsidy is not one that is justified on the basis of equity considerations, but is simply designed to cover the cost of driving out rivals. In fact it also leads to an inefficient pricing structure. More importantly, predation in such a case may drive out more efficient rivals.

This is not to say that low prices are necessarily predatory. Indeed, where competitors are forced out or entry forstalled only by prices being kept low, competition is doing its job. The question is an empirical one, and requires careful scrutiny over the prices of the firm with dominant or monopoly power.

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2. Equity Issues

In economic terms, many of the major equity issues pertaining to the provision of telecommunications services revolve around the concepts of "externalities". An externality is a positibe or negative effect on a third party flowing from an economic decision by a given person as to whether or not to become a party to a specific transaction. Externalities may require that prices deviate from the economist's usual norm of incremental cost of service.

Externalities can be classified into three clear and distinct types for regulatory purposes. The first type is the social externality, which manifests itself in at least two ways. First, the more people who are accessible within a telephone system, the more people any one subscriber can call and therefore the greater the value of service to him. It arises, second, in the tieing together of the majority of residents of a given community into a single universal system. This permits wide access for business and social purposes and speedy communication during emergencies. The existence of such a social externality is a motivation for pricing access to the telephone system below incremental cost to the customers at the margin.

The second general form of externality may be called a technical externality or technical third party effect. For example, if one utilizes customer premises equipment (c.p.e.) which causes technical harm to the network then one imposes costs on other users of the network. These harmful effects associated with technical incompatibility can be prevented by imposing a single set of uniform standards for all equipment. These standards can be determined a priori, can be

easily imposed on all potential and actual providers of the equipment, and will not distort the pricing decisions or revenue calculations of existing or potential firms. Technical externalities are therefore externalities that are relatively easy to ensure against by imposing proper technical standards.

The third form of externality or third party effect is referred to as a pecuniary externality. A pecuniary externality is said to exist when the provision of some new service or some new price offering causes a reaction by a firm offering multiple services and changes the existing price structure such that prices are raised to some third party.

The existence of pecuniary externalities requires the multiple offering of services within a single firm at prices other than cost and with the result that the different services make different contributions to either overhead or profit or both. This raises the issue of cross-subsidization, and in turn the possibility of "cream-skimming" by competitors.[52]

Besides the economist's notion of equity considerations, the concepts of universality and fairness may also require deviations from a more efficient set of prices. Thus in most jurisdictions, basic residential telephone service is provided at similar prices to all subscribers in a given community irrespective of the different costs of serving them at their different locations.

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Where a regulated monopoly provides virtually the entire range of telecommunications services, it is readily able to charge a price for any given service which does not reflect the costs associated with providing that particular service. In addition to rate averaging across services, the firm's tariffs can be set so as to subsidize service to unprofitable locations or to particular customer groups by generating revenues above costs on other routes and for other classes of consumers, for example through value of service pricing.

In these circumstances, a shift from a monopoly to a more competitive structure in any market segment would tend to have the effect of forcing prices down closer to cost. Not only would efficiency be increased in these markets, but, in terms of fairness, potential competitors would no longer be denied access to lucrative markets. On the other hand, the erosion of the carrier's monopoly revenue base can also lead to the elimination of sources of funds for cross-subsidies.

It is therefore up to the regulator to determine the merits of requests for entry, to decide which cross subsidies, if any, are socially justified and to determine how they should best be implemented. In this context, it should be noted that if entry is permitted and if value of service pricing and the need to make the existing firm whole are considered important social objectives, then the prices of both existing firms and entrants must be examined to ensure that the desired contributions are still made. Finally, in terms of fairness to existing firms, customers of the dominant firm and entrants alike should provide proportional contributions to these cross-subsidies.

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3. Regulatory Considerations

A discussion of the criteria governing entry would not be complete without a discussion of regulation itself -- the incentive structure, effectiveness, cost and any transitional problems likely to arise if regulation were to increase or decrease. Regulation by its very nature involves built-in delays which can diminish the dynamic aspects of competition. The regulatory process is also expensive, both to the companies involved in a hearing and to the public who bear the administrative costs of the regulatory tribunal. Where regulatory approval is required for entry, such approval can act as a significant entry barrier to the small and medium sized firms who do not have the resources to either build a system or provide a service and to obtain the requisite regulatory certification. In examining the questions of the appropriateness of various kinds of entry and alternative regulatory structures, where entry is deemed to be in the public interest, regulatory oversight should not operate as a burden to discourage entry by small potential competitors.

There is in addition the matter of monitoring the effects of new entry in order to detect possible unfair practices. This can be very difficult to implement in practice where existing firms and new entrants offer a mix of regulated and unregulated services, and where costs are difficult to separate.

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4. Impact on Other Jurisdictions

A fourth criterion to consider is the impact that the authorization of new entry in one regulatory jurisdiction (e.g. the federal) might have on the regulatory environment in another jurisdiction (e.g. the provinces). This issue was discussed in the CRTC's decision in CNCP Telecommunications: Interconnection with Bell Canada[53]. The Commission held that a factor to be taken into account in deciding whether or not to approve CNCP's entry into the interconnected private line voice and data markets was the potential effect on subscribers to provincially-regulated telephone companies. In that particular case, the CRTC calculated that such impacts would be negligible.

5. Other Policy Issues

Finally, there are a number of other relevant policy considerations that may arise in areas other than telecommunications. For example, with respect to the attachment of terminal equipment to the telephone system, it may be proper to consider relevant trade policy issues such as whether or not to restrict eligible equipment to that emanating from countries offering reciprocal attachment rights to Canadian-manufactured equipment.

In addition, stimulating new or increased use of the telecommunications system may have an impact on domestic employment, on export performance and on the growth and development of an innovative potential in the telecommunications equipment manufacturing industry.

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As in the case of the previous criterion, there is a question of how to bring considerations in other policy areas and other jurisdictions to bear on the regulatory process. The point is that new entry decisions in the telecommunications sector cannot be treated in isolation from other sectors that are affected by the quality, efficiency and cost of the telecommunications system.

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III Applying the Criteria

1. Possible New Entry Regulatory Scenarios

For purposes of applying the criteria developed in the foregoing part to the various issue-areas discussed in the first part of this study, five regulatory scenarios have been selected, that span the likely range of new entry in Canada. In each, the operation of a dominant firm - the telephone company - is assumed, but entry restrictions on potential competitors and tariffing procedures are varied. Each of these five scenarios involves explicit tradeoffs among two or more of the criteria. Our purpose is not to suggest which regulatory structure is best suited to each particular issue-area, but only to point out the particular advantages or pitfalls of each. The following are the five regulatory scenarios.

Under the "monopoly" scenario the dominant firm provides the service or facilities in question and is regulated as to all operations of its business. This most closely resembles the present situation in regard to local exchange telephone services, MTS and WATS.

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Under "restricted or regulated competition" the entry of potential competitors to the dominant firm is possible but requires regulatory approval, as do the prices charged. This is the case for example, with systems interconnection involving federally-regulated companies.

The three remaining scenarios are variations of "open competition", where no approval is required for entry. Under "open entry - price regulated", tariffs for all firms, both dominant and new, must be approved by a regulatory agency. Under a scenario of "open entry - dominant firm price regulated", new entry does not require regulatory approval; however the dominant firm must go through regulatory tariffing procedures. Under "open entry - no price regulation", full competition is allowed without any regulatory restrictions on either the dominant firm or new firms with respect to entry or pricing. We turn to an examination of each scenario.

(a) Monopoly

The provision of facilities or services on a monopoly basis is warranted, on efficiency grounds, when a single firm is the least cost supplier. In such circumstances regulation serves at least three purposes. First, for a single product firm, regulation is necessary to prevent monopoly profits from being earned. In a multi-product context, regulation is necessary both to prevent monopoly profits and to prevent entry which could be inefficient in terms of total costs of production (the sustainability problem). Also in a multi-product context, where

competitors to the dominant firm exist in only some markets, regulation is also necessary to prevent predatory behaviour on the part of the dominant firm.

There need not be any trade-off between equity concerns and efficiency of operation in the regulated monopoly form of market structure. If efficiency dictates that a single supplier exist in the market, then both equity and efficiency concerns suggest the need for regulation of this natural monopoly. Similarly, the other criteria for deciding among alternative regulatory forms (administrative feasibility, impact on other jurisdictions, and other policy issues) can be met under a regulated monopoly structure.

In contrast, monopoly provision of services may also be provided, not because of the efficiency of single firm operation, but because of the desirability of an extensive network of cross-subsidies. If profitable routes or services provide the source of revenues for cross-subsidies it may be desirable to inhibit entry into these markets to prevent competitive pressure on prices from eliminating the implicit cross-subsidies[54]. In this case, equity criteria might suggest the need for entry restrictions, while efficiency might require the removal of such restrictions. The resulting regulatory structure is complex and expensive to all parties, as the regulator must prevent the regulated price signals from generating service or facilities expansions that are not cost-justified either on the part of the monopoly firm or of potential entrants.

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(b) Regulated Entry

Under regulated or restricted competition, as noted earlier, potential competitors to the dominant firm must obtain regulatory approval to enter a market and the regulator can determine terms and conditions of entry, access to the facilities of the dominant firm and so forth. All firms, dominant or otherwise, are subject to regulatory review and must provide basically the same information to the regulatory authorities in order to obtain permission to offer services or price approval. An advantage of regulated entry is that the regulator is in a position to assess social benefits and there is regulatory recourse in cases of competitive unfairness. The disadvantage, however, lies in the degree of regulatory oversight required, the administrative costs, and the substantial entry barriers faced by potential competitors who must incur heavy costs and some uncertainty in obtaining regulatory approval to enter a market.

Regulated entry can be the appropriate regulatory structure where efficiency or equity considerations do not dictate single firm operation, yet where unrestricted entry may lead to production inefficiencies or to socially unacceptable reductions in cross-subsidies.

The differences in market behaviour and performance between a monopoly structre and a regulated entry structure depend on the degree of competition allowed between firms, competition in service

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offerings, prices and technological advancements. Competitors of the dominant firm will of course want to offer lower prices . Therefore, regulated entry will likely generate a different price structure from that emanating from the single firm example. As noted previously, regulation of the dominant firm on efficiency grounds must be concerned with the potentials for monopoly profits, predation and sustainability concerns.

(c) Open Entry - Price Regulated

Under this scenario approval for entry is not required but tariffs for all services of both dominant and non-dominant firms must be approved by the regulatory body. The major firm is envisaged as operating in monopoly, dominant and competitive markets.

Unrestricted entry in particular market segments would tend to lead to economic efficiency, as long as prices in these markets were allowed to fall to competitive levels. However, the primary rationale for regulating the prices of entrants is to maintain high prices on profitable routes and thereby support cross-subsidization. It may, however, be difficult to maintain the appropriate levels of contributions from competitive services because of the greater number of firms and hence the greater pressures to reduce prices. Moreover, to the extent high prices are maintained, fairness would dictate that competitors and dominant firm alike contribute proportionately to the subsidies.

The elimination of the requirement of approval for entry reduces some entry barriers to the establishment of new firms as well as some regulatory burdens and administrative costs. However, price regulation can itself be a costly, time-consuming and complex process, particularly where the effort is made to achieve satisfactory subsidy levels by all service providers and to avoid predation by the dominant firm. With regard to the other criteria, conflicts with other jurisdictions can be reduced since price changes are normally a principal source of of interjurisdictional fears. Open entry may however be in conflict with other policy goals where, for example, new entrants import foreign equipment and reduce the degree of Canadian content in the system.

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(d) Open Entry - Dominant Firm Price Regulated

Under this scenario the dominant firm operates in monopoly, dominant and competitive markets and is the only firm which must meet tariffing requirements. While any firm would be allowed to compete in the provision of services or operation of facilities, in reality the dominant firm would likely retain its monopoly local exchange market, be dominant in message toll service (MTS) and provide local exchange, MTS and other services within the umbrella of a single firm. No regulatory oversight would be provided for non-dominant carriers. Under this scenario non-dominant firms would be free to offer facilities or services on a non-regulated, non-tariffed basis.

Removing the need for regulatory approval of the tariffs of non-dominant firms, in the absence of any advantages to single firm operation, should increase the efficiency of operations. By reducing the price/cost margin in competitive markets, however competition could interfere with equity objectives. Regulatory oversight would still occur since the major carrier would remain a multi-product firm with dominant and monopoly areas of service, and could engage in predatory pricing. However since this oversight would be confined to the dominant firm it would not tend to increase the regulatory burden on competitors.

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(e) Open Entry - No Price Regulation

The final entry scenario, one which is highly unlikely to occur in Canada, would involve no supervision over any aspects of the market. Any firm could establish any level of service, at any price. Under competitive conditions, i.e. where no firm has an advantage over any other firm, where there are no entry barriers and no possibilities for long run profits, competition would lead to economic efficiency.

Where there are sustainability problems, open entry can reduce economic efficiency as well as having deleterious equity effects. Where equity considerations result in prices being set above costs, competition will disturb these cross-subsidies. The regulatory burden is, however, non-existent and no artificial entry barriers are created. Conflicts with other jurisdictions and other goals (such as maximizing Canadian production) can exist.

2. The U.S. Experience with Liberalizing Entry

Before turning to an examination of specific Canadian telecommunications issue-areas in the light of the different entry scenarios it is useful to examine U.S. experience to determine the merits or demerits in practice of some of these new entry scenarios.

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As previous sections have indicated, liberalization of restrictions on entry into U.S. telecommunications markets appears to have proceeded to the point where only local exchange service will be treated as a monopoly service in the near future. This liberalization has occurred in stages, each one of which has created economic and regulatory problems.

Originally, in the U.S.A., entry by specialized common carriers such as MCI was permitted under a scenario which resembled what we have labelled 'regulated entry'. Specific applications to provide service or facilities had to be approved by the F.C.C. This approval became increasingly easier to obtain, although all firms, dominant and non-dominant continued to require tariff approval. That form of regulatory oversight lasted until 1980 with the "Computer II" decision and the resulting forbearance from regulatory approval over non-dominant firms[55]. In the AT&T divestiture proposal of January 1982, the U.S. appears to be moving towards two separate regulatory regimes - monopoly provision of local services and, ultimately, open entry with no tariffing requirements for other services. As the U.S. moved

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through the different entry scenarios from monopoly to regulated entry, pressure was placed on the prices of the dominant firm. These increasing competitive pressures, however, led in turn to increasingly lengthy and complex regulatory proceedings, higher regulatory costs, frustration with regulatory procedures, and a growing number of appeals to the courts. Telpak provides a case in point.

In January 1961, AT&T filed a tariff for four 'Telpak' rates, involving bulk discounts for private line service[56]. Motorola and Western Union objected. The decision of the FCC revolved around two issues:

1) was Telpak a substitute for private line service
2) was the tariff justified on a
   a) cost basis
   b) competitive necessity basis

The FCC was convinced that Telpak A and B (offerings involving 6 and 12 circuits respectively) were not compensatory. Furthermore, the FCC stated that it had insufficient information at that point to decide on the cost basis of Tariffs C and D (24 and 60 circuits respectively). The FCC had this to say about the competitive necessity of the dominant firm's ability to lower prices in response to competition:

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> "(price cutting is justified)...to contribute to the overall economy of the business by retaining business threatened to be lost to competition or obtaining new business which would not otherwise be obtained...(price cutting is not justified) if the volume rates are not high enough to cover the costs attributable to the business retained or obtained, they do not contribute to the overall economics of the operation, but on the contrary impose a burden on other classes of users."57

To paraphrase the FCC's views in 1965; responsive price cutting by AT&T was allowed if, at the least, no other users were made worse off - or in economic terms if the prices at least covered the directly attributable costs (variable costs) of service.

Controversy over the compensatory nature of Telpak rates C and D continued until 1976/1977. Eleven years after its initial 1965 decision, the FCC had clarified its views on the relevant issues and had reduced to two its criteria for judging whether or not discrimination was justified:

> "202. We indicated above that to justify a discrimination under Section 202(a), the competitive necessity test is to be applied only to Bell's TELPAK offering and that this test, under the circumstances herein, consists of two criteria: whether there is a need to meet competition and whether the established rates benefit other users. Our task here is to decide whether the pricing differentials between TELPAK and like services are justified by the need to prevent TELPAK users from shifting to substitute sources of supply. Additionally, it remains to be determined whether the rate level discrimination between TELPAK and like private line services benefits users of Bell's other services."58

This fourteen year analysis of rates and costs by the FCC was due in part to the fact that AT&T was a dominant carrier offering multiple services produced by a production process involving common inputs. As indicated earlier, under such circumstances, regulatory

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oversight over the dominant firm is required in order to ensure that predation does not occur. However, the degree of cost examination required to 'prove' the compensatory nature of any single tariff would appear to be quite formidable.

We must be careful not to draw simple direct analogies to Canada from the U.S. experience. The Canadian circumstances differ in terms of market size, regulatory jurisdiction and the number of firms (not unrelated topics), and the existence already of CNCP/ TCTS competition. While the presence of a dominant firm in the telecommunications sector means that regulatory oversight over its activities will undoubtedly have to continue, the essence of the regulatory dilemma in Canada is to respond to increasing competitive pressures within a structural framework that is administratively simple, low cost, fair and efficient. A focal point of concern will involve the establishment of fair and responible rules to govern the competitive response of the dominant firm.

3. The Criteria and the Issue-Areas

In this section an effort is made to apply the criteria developed in the previous part to the issue-areas identified in the first part. For purposes of this discussion the issue areas are grouped into terminal, transmission and enhanced service categories. While this results in certain entry scenarios being favoured in certain issue-areas, our aim is not to make recommendations but to outline advantages and disadvantages.

(a) Terminal Attachment

Customer premises equipment (c.p.e.) is not part of the multi-product offering of the existing carriers in that common plant or equipment is not used to provide, for example, both local exchange service and the production of terminal equipment. As a result, the issues of economies of scope and sustainability do not arise in connection with c.p.e. While the arguments for universal access to telephone service are strong, there do not appear to be strong universality arguments in regard to particular pieces of equipment. As a result, there do not appear to be grounds for the monopoly provision of c.p.e.

On equity grounds, competitive offerings of c.p.e. do reduce prices of terminals, and it can be argued that this loss in subsidy to the dominant firm is made up for by efficiency gains.

Of the five regulatory models, open entry with price regulation for the dominant firm only would appear to maximize efficiency and at the same time guard against predation by the dominant firm. Under any model, common standards should be set by regulation for all equipment to avoid the possibility of technical harm to the network.

In the United States, the Computer II decision provided for completely open entry with no tariffing by any firm, except that AT&T was required to offer c.p.e. through an arms-length subsidiary.[59] An enormous amount of discussion was generated in the

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United States on how such separate subsidies could be set up, the accounting rules to be used, and in particular on the valuation of such terminal equipment at the date in which it was transferred to the subsidiary. Other issues that arose included the question of whether the operation of phone centres by the dominant firm was a form of predatory behaviour, since phone centres both sold terminal equipment and allowed new customers to subscribe for telephone service.

Under the AT&T divestiture proposal, the local Bell operating company would not offer c.p.e. By contrast, in Canada, the monopoly provider of local exchange service will likely continue to offer c.p.e. with the possibility remaining of predatory pricing behaviour, and hence the possible need for regulatory oversight of the prices of the dominant firm.

(b) Transmission Facilities

The three issue-areas discussed above in regard to new entry into the provision of transmission facilities include the construction of private network facilities, systems interconnection, and resale of transmission capacity.

The issue of entry into the provision of transmission facilities has obvious equity implications insofar as revenues on message toll and WATS services currently constitute one sources of subsidy to local exchange service. Entry, by putting downward pressure on prices for network facilities, clearly affects these internal contributions.

In economic terms, a monopoly structure would be appropriate if there were sufficient economies of scale to render a single firm the least cost provider of transmission facilities or sufficient economies of scale and scope to render a single firm the least cost provider of both intra-exchange and transmission facilities. Absent these extreme natural monopoly conditions, some degree of competition would be acceptable, the limits of which would be dependant on the potential for predatory behavior, the existence of externalities, or a sustainability problem.

Turning first to the issue of sustainability, it has been indicated that the circumstances required for a multi-product monopolist's pricing structure to be unsustainable are significant economies of scale, modest economies of scope and services which are to some extent substitutes for each other. In such circumstances, cost-justified entry may occur in a particular market which is inefficient in relation to the pricing of the monopolist's group of products taken as a whole. In this context, the question becomes whether, treating the various categories of transmission facilities as the relevant product set, the current price structure is sustainable in relation to potential entry in the construction of private systems or the provision of private line services. In the latter case, if sustainability were an issue, entry would force prices down on the dominant carrier's private line services, reduce overall demand for its transmission facilities (assuming substitutability among them) and thereby increase total productions costs as well as prices charged for its other transmission facilities.

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Thus, where sustainability is a problem, it is necessary to prohibit entry; however, the conditions for sustainability to be a concern are mainly conditions relating to the cost characteristics of the multi-product dominant firm, characteristics which can be determined ex ante. Absent such characteristics and absent any price information for non-dominant firms, it is not clear that this potential problem should justify continued monopoly. Further, sustainability assumes the ability of the dominant firm to implement efficient sustainable prices which preclude entry. To the extent that the dominant firm must maintain any cross-subsidies in place and cannot respond to entry by implementing such prices then inefficient entry cannot be avoided even if the natural monopoly is sustainable. Moreover, if cross-subsidization is occurring and therefore the dominant firm is not using socially efficient prices prior to entry, one would not be able to determine whether price adjustments in response to competitive entry indicated a sustainability problem or simply represented the elimination of subsidies.

The other main efficiency consideration is the potential for predatory behavior; however, unlike the issue of sustainability, the market structure which provides safeguards against predatory practices only requires regulation of the dominant firm and not potential or actual competitors. If the dominant carrier is able to raise prices for some of its monopoly services to subsidize prices in competitive markets, regulatory oversight over prices in all sectors in which the dominant firm operates is required.

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The absence of regulatory oversight over prices charged by the dominant firm in competitive as well as monopoly markets creates the potential for predatory behavior. For example, if the dominant firm is allowed to provide all transmission facilities on an unregulated basis but continues to provide intra-exchange services on a monopoly basis, the source of the subsidy for predatory pricing would be the charges for local exchange services; that is either subscribers to local telephone service or customers of services requiring access to local facilities must support predatory prices in competitive markets. As regards the former group, prices charged to customers of local exchange facilities typically do not cover costs; that is, the subsidies flow the other way. Therefore, the revenues required to support predation in competitive markets would likely be generated by means of charges for access to local exchange facilities which discriminate against the competitors to the dominant firm. Moreover, if in addition to local exchange facilities, MTS and WATS services remain as regulated monopolies then prices for these services may be adjusted to support predatory behavior in competitive inter-exchange markets.

It may be suggested that an adequate safeguard against such anti-competitive practices would be to require an unbundling of charges for the various component facilities offered by the dominant firm and to ensure access to facilities provided on a monopoly basis on the same terms and conditions as are available to the dominant firm. For example, if local exchange facilities remain subject to regulated monopoly, competitors would be assured of compulsory system interconnection and identical access charges to those paid by the dominant firm. However,

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unregulated entry coupled with the unbundling of charges guards against predatory pricing only if the prices charged by the dominant firm in remaining monopoly markets are subject to separate scrutiny by the regulator. While this task would be relatively straightforward if local exchange facilities alone were provided on a monopoly basis, the inclusion of MTS and WATS services within the dominant firm's monopoly structure complicates the matter. In particular, to the extent that high prices on the latter services were sanctioned to subsidize local rates, it would be difficult to ensure that a portion of these excess revenues was not used to offset losses in competitive markets. Thus, it would appear that monitoring against predation requires regulation of all prices charged by the dominant firm.

Turning to equity considerations, the primary implication of open entry in the construction of transmission facilities is the revenue impact. To the extent that subsidies flow to customers of local telephone service from revenues from transmission services, the diversion of revenues to competitors interferes with the current policy of cross-subsidization and reduces the internal flow of contributions. It may be argued that the construction of facilities on routes not previously served by the dominant firm does not raise this concern in that therewere no revenues being generated on these routes. On the other hand, if this new demand for services had to be met by the dominant firm, then unless there were a marked change in pricing policy, these customers might pay the prices that would provide a contribution to local rates.

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In the case of systems interconnection, access charges can provide a mechanism for maintaining contributions from customers of services using inter-exchange facilities to rates charged for local telephone service. At the same time, these access charges must not be set so as to discriminate against competitors in relation to the dominant firm; hence, the need for unbundling rates and requiring competitors and the dominant firm alike to pay identical access charges. As regards the level of contribution required to be made by competitors to compensate for the diversion of revenues associated with the transfer of customers from the dominant firm to the competitor, the CRTC made the following statement in the CNCP interconnection decision,

> "The determination of particular levels of contribution which local service and inter-exchange service should respectively make to the costs of local facilities is a matter which has substantial implications for the relative levels of local and long distance rates and...the Commission considers that this judgement should in the end be made by regulators and not by the companies involved."[60]

While the erosion of revenues associated with new providers of inter-exchange service may be mitigated by appropriate access charges, there are two remaining inter-exchange markets in which it has been suggested that entry would cause a revenue loss which may not be recoverable. These are MTS and WATS, and resale and sharing of lines. As regards the former, it has been argued by telephone companies that a substantial contribution to the cost of common facilities used for local and inter-exchange services has been made by MTS revenues. To the extent that direct competition in MTS and WATS significantly lowers

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the price of these services, then it may be that even with the payment of access charges, former contribution levels from this source may not be achieved.

Resale and sharing of lines raise the problem of revenue erosion in respect of inter-exchange services in that resale carriers can lease lines in bulk at a discount and make a profit by reselling at a price below that offered by the dominant firm. This source of downward pressure on prices for private line services would make it difficult to attain the previous level of contributions even with the imposition of access charges on competitors who require connection to the local exchange facilities. At the same time it should be noted that the bulk discounting involved in Telpak services, for example, similarly reduces contributions.

It would seem inevitable that under both the above situations prices would be reduced towards costs for these services and that limiting entry might be necessary to protect contributions.

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(c) Intra-City Facilities

In addition to the local exchange facilities of the dominant telephone company, there are three other modes of delivering intra-city communications, cellular radio, cable and digital termination systems. The appropriate market structure for each of these delivery systems will be discussed in turn.

By local exchange facilities, we are referring only to the local plant and switching equipment and not to the customer premises equipment. Notwithstanding the advent of cable, cellular radio and digital termination systems, in the foreseeable future the local exchange will undoubtedly remain the monopoly of the dominant telephone firm owing to the prevalence of scale economies. Indeed, under the AT&T divestiture proposal, the BOC's will continue to provide local exchange service on a monopoly basis for this reason.

While the continued monopoly provision of local exchange facilities on a regulated basis is dictated by efficiency considerations, adherence to the principle of universal service suggests that prices to subscribers of local telephone service will be subsidized by contributions from other users of these facilities. In particular, revenues earned on services requiring access to local exchange facilities, whether provided by the dominant firm or a competitor, will generate funds for subsidy purposes.

As regards the appropriate market structure for cellular radio, it has been previously noted that in the United States, spectrum concerns have caused the FCC to allow a maximum of two cellular systems to be licenced per service area, with 20 MH_z of spectrum

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allocated to each system. It therefore seems clear that the scarcity of frequencies precludes unlimited competition in cellular mobile telephone systems and requires restricted entry in the provision of these services.

Another efficiency consideration which may indicate a need to limit entry is the potential for alternative intra-city systems to interfere with the realization of economies of scale in the provision of intra-exchange services. This concern applies equally to cable and digital termination systems as to cellular radio to the extent that these operate as substitutes rather than as complements to the local exchange.

A remaining issue is the regulatory implications of the potential for anticompetitive conduct on the part of the dominant firm. In particular, since cellular service is most valuable where provided on an interconnected basis to the telephone network, the dominant firm may charge predatory prices for access to the local exchange facilities. One potential response is to prevent the firm providing monopoly local exchange facilities from entering this market; however, in the United States the FCC has indicated that the divestiture proposal does not preclude the BOC's from providing cellular mobile telephone service. Alternatively, as noted previously in the context of systems interconnection, it may be sufficient to require the dominant firm, if it chooses to enter this market, to furnish interconnection to competitors on a non-discriminatory basis.

Turning to digital termination systems (DTS), the efficiency considerations which speak to the need for restricted entry comprise the limited spectrum (if such communications are effected by means of

off-air delivery) and interference with the efficient operation of local exchange facilities (since DTS bypasses the local telephone system). In addition to the need to limit entry, participation by the dominant firm in DTS may have to be monitored to prevent predatory pricing. As noted previously, while the dominant firm may be permitted to enter competitive markets, the only effective safeguard against predation is regulation of all prices charged by the dominant firm. In addition, competitive providers of DTS must be assured of interconnection with the inter-city transmission systems of the dominant firm on a non-discriminatory basis.

The final alternative intra-city system to that of the telephone network is cable. Given the suitability of cable for point-to-multi-point transmissions, the most likely uses of the cable system will be in the provision of non-programming services which allow a large number of subscribers to access the same information source for their particular purpose. Since the interactive capability of the cable system is limited at present, these services are not substitutes for local telephone service; however, the provision of meter-reading, fire alarm and security surveillance services by cable companies is directly competitive with similar service offerings by the telephone companies. Again, one would have to consider whether competitive provision of these services interfered with the efficient operation of local exchange facilities and whether restrictions on entry were thereby justified.

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As regards the regulation of the non-programming services provided by cable television operators, absent economies of scope in the provision of programming and non-programming services or among various non-programming services, there is no reason to prohibit competitors from entering the market by leasing spare channels from the cable operator. Should non-programming services be provided by both cable operators and competitors over the same facilities, the issue of predatory pricing could arise, either through programming service revenues provided on a monopoly basis subsidizing losses in the competitive non-programming services market, or through the allocation of the joint costs of monopoly and competitive services in a manner that generated subsidies from the former to the latter. Thus, while there maybe economies of scope in the provision of these two categories of services, it would be necessary to monitor the cable company's prices in all markets to ensure that prices charged to competitors for leasing channels did not discriminate against them in a manner which could not be cost-justified and that cable subscribers not wishing to receive non-programming services were not forced to subsidize them either directly or indirectly.

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(d) Enhanced Services

Enhanced services combine communications and data processing services and involve a terminal component at which data processing can be performed, a local exchange component and a transmission component. In certain cases the data processing component may be provided at the switching centre rather than at the terminal.

In addressing the question of an appropriate regulatory framework for enhanced services, in view of the novelty and likely variety of such services it is useful to make a number of initial assumptions. One is that there are few economies of integration in providing all the separate components of any enhanced service within the dominant firm. There are, for example, no overall additional costs in other non-integrated firms attaching the terminals necessary to provide enhanced services to the facilities of the existing carriers, at fair and reasonable rates.

A second assumption is that there are numerous alternative suppliers available to offer equivalent services at prices equivalent to those of the dominant firm, by leasing the facilities in question from the carriers.

A third assumption is that no one competitor would become dominant in the enhanced services market.

These assumptions permit us, at the outset, to dispose of the issues of economies of scale, economies of scope and sustainability and to conclude that there is no justification on efficiency grounds for the monopoly provision of enhanced services by a single firm.

In terms of equity, since these are new services which have not previously generated contributions, it is difficult to argue in favour of providing enhanced services within a monopoly structure, or even under a scenario of regulated entry, on grounds of revenue erosion adversely affecting subsidies. While that is not to say that cross-subsidies could not be generated under a regime of providing enhanced services on a monopoly basis, the same subsidies could also be provided through appropriate access charges.

Turning to the three types of open entry considered earlier, the justification for forcing non-dominant firms to seek approval for entry or tariffs would also appear to be lacking, and the question remaining would be whether the dominant firm should be permitted to set prices without regulatory approval.

The only issue that would appear to require continued regulatory oversight is that of predatory pricing by the existing dominant firm. This firm may attempt to use revenues earned in markets which remain subject to regulated monopoly to subsidize losses in enhanced services markets. In the U.S.A., the Consent Decree of 1956 did not permit AT&T to offer enhanced services, thereby precluding the potential for predatory behaviour. Similarly, the proposed AT&T divestiture, by prohibiting the BOC's from offering enhanced services, also prevents the potential for predation. In Canada, since dominant carriers are not prevented from offering enhanced services, tariffing of these services would appear to be necessary for the dominant firm. In addition, for competition to be effective, the dominant firm's tariff for enhanced services would have to be unbundled and the unbundled component offered

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to competitors on the same basis as it is available to the dominant carrier. Given the above assumptions, enhanced services may therefore be offered under a regulatory scenario in which only the dominant firm must tariff since only that firm can engage in predatory action. It is not obvious, however, that simple unbundling will, by and of itself, eliminate all possibilities for predatory behaviour on the part of the dominant firm.

Even assuming that the dominant firm abides by the unbundling principle, and charges each competitor an access fee and transmission charge identical to that which it charges itself, it may still be the case that the dominant firm's tariff rate for the enhanced service is lower than the cost of any potential competitor. This would have to mean that the dominant firm could offer the terminal component at a price below the costs of its competitors. This situation could arise if the dominant firm was setting access fees in excess of costs for all customers and using this profit margin to subsidize its own terminal and processing costs or if the dominant firm was undercutting its competitors' prices for terminals. Under our above assumptions, the former would not be possible, since we have assumed that the dominant firm has no advantage compared to any potential competitor in offering the enhanced package of services. As regards the latter, it would appear unlikely in a competitive terminal market. In either case, given the unbundling of charges, the regulator would be able to detect predation relatively easily.

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Re-examining our initial assumptions, however, if there were economies of scope or scale in providing enhanced services, then it would be possible for the dominant firm to provide the services at lower costs than for competitors who own no facilities. At the same time, if the economies of scale were limited to the network component, there would be no justification for also requiring enhanced services to be provided on a monopoly basis by the dominant firm. Instead, an appropriate access fee should be charged to all firms wishing to provide enhanced services to permit them to take advantage of those scale economies of operation.

The economies of scale and/or scope in the centralized network portion of enhanced services is clearly a subject for further analysis. At this point it is possible only to present some preliminary thoughts on the issues. First, economies of scale in processing, resulting from the ability to utilize larger or more efficient computers, are clearly available to all firms - dominant and non-dominant alike. These economies of scale, if they then did exist, might mean that only a few firms could operate in the market, but these scale economies would not necessarily provide any advantage to the owner of telecommunications facilities. Economies of scope would exist if the costs for the combined service were lower by providing the enhanced portion within the firm providing the facilities portion as well, such as in providing both switching and processing on a class 5 local exchange switch. In such a case, the firm which provided both the processing and the switch would enjoy lower costs than the firm which owned

separate processing equipment and leased access to the local exchange system. Such economies of scope would then suggest advantages for such enhanced services to be offered by the dominant firm.

Except for the case where there is some piece of equipment (say a switch) which can only be used by the dominant firm to provide both enhanced services and a telecommunications function, the provision of enhanced services would appear to be best organized within a competitive framework where only the dominant firm must meet regulatory tariff requirements.

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Conclusions

We have outlined a number of possible regulatory structures to deal with entry into various telecommunications markets. Our criteria for assessing the merits or demerits of each potential structure in each particular case have been based on considerations of efficiency; fairness to all parties - dominant firm, potential competitors, users; regulatory and administrative feasibility; impact on other jurisdictions; and other relevant policy considerations.

We have accepted the fact that a dominant telecommunications firm is likely to operate in most regions, that firm offering a wide variety of services, e.g. local exchange, transmission, MTS, WATS, private line, and enhanced services, these services being offered under varying degrees of competitive pressures.

In the U.S.A., competitive pressures have led to quickly evolving regulatory and market structures. From monopoly provision of most services in 1950, it is likely that in several years only local exchange service will be offered under monopoly provisions by separate companies not offering any other service.

Two important but sometimes contradictory issues for regulatory structures are the efficiency of multi-firm versus single firm operation and the revenues gathered in the market, particularly as they compare to costs. Efficiency and equity considerations can be in conflict when efficiency dictates competitive entry and equity requires that cross subisidies be achieved or maintained. Both efficiency and equity concerns suggest the need to prevent predatory

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action on the part of the dominant firm.

In conclusion, while it is beyond the scope of this phase of the study to make recommendations, the regulatory scenario that appears appropriate in a number of issue areas is to allow open entry by non-dominant carriers and to require regulatory approval only for the prices of the dominant firm. However, except for the cases of pure monopoly and pure competition, it would be essential under any of the other regulatory scenarios discussed in this study for the following principles to apply.

First, the dominant firm should be required to unbundle any tariff into separate charges for each component. For example, for an enhanced service involving terminal, network access and transmission components, each of the three components should be tariffed separately.

Secondly, the dominant firm should be required to allow access to its facilities on a non-discriminatory basis. In the case, for example, of an enhanced service, competitors to the dominant firm should be able to gain access to the network on the same terms and conditions as are available to the dominant carrier.

Third, regulators should establish access fees which generate the desired level of contributions to designated services or users.

FOOTNOTES

1. "Instant World: A report on telecommunications in Canada", Information Canada, Ottawa, 1971.

2. Department of Communications, Interim Report - Intercity Microwave Licensing Review, (Public Comments on Gazette Notice DGTN 004-80, November 29, 1980), July 1981, Annex A. The other issues mentioned in the notice were:

   - The present microwave licensing and spectrum allocation policies provide only for intercity trunking of a limited number of video channels;
   - The granting of a private commercial licence raises concerns about sharing, reasonable access, charges, operational arrangements and other conditions related to the utilization by others of the services or facilities (details of the applicable Radio Regulation Part II, section 38(1) to (5) are available at the Regional and District Offices of the Department); and
   - The implementation of extensive intercity microwave facilities to serve contiguous high density markets may inhibit extension of new programming services to people in areas which can only be effectively served by satellite.

3. Allocations of Frequencies in the Bands Above 890 MC, 27 FCC 359 (1959).

4. Microwave Communications Inc., 18 FCC 2nd 953 (1969), reconsideration denied 21 FCC 2nd 190.

5. Specialized Common Carriers Decision, 29 FCC 2nd 870, (First Report and Order, 1971); Second Report and Order, 47 FCC 2d 737, aff'd sub nom Washington Utilities and Transportation Commission v. FCC, 513 F.2d 1142, cert. den. 423 US.836 (1975).

6. Bell System Tariff Offerings, 46 FCC 2nd 413 (1974).

7. CNCP Telecommunications, Interconnection with Bell Canada, Telecom. Decision CRTC 79-11, May 17, 1979.

8. CNCP Telecommunications, Interconnection with the British Columbia Telephone Company, Telecom. Decision CRTC 81-24, November 24, 1981.

9. Colins v. Bell Canada, Telecom. Decision CRTC 79-12, June 7, 1979.

9a. Colins v. Bell Canada, Telecom. Decision CRTC 79-14, July 26, 1979.

9b. Colins V. Bell Canada, Telecom Decision CRTC 80-16, 29 August, 1980.

The final decision in this case approved the final rates for access from the company's switching equipment to radio paging terminals operated by licensed RCC's. See Colins v. Bell Canada: Final Rates, Telecom. Decision CRTC 81-1, January 12, 1981.

9c. On January 8, 1982, the U.S. Justice Department and AT&T announced that they had concluded a consent decree under which all of the Bell System local operating companies (BOC's) would be spun off to AT&T stockholders and the ongoing anti-trust trial launched by the Department of Justice would be discussed under the arrangement the BOC's would essentially be confined to local exchange service and would be regulated on the traditional basis. They would not provide inter-exchange telecommunications services, information services or customer premises equipment, which would all be left for AT&T to provide on a competitive basis. At the time of writing the enormous ramifications of the proposal are under review in Congress and elsewhere and the consent decree has not yet been accepted by the presiding judge in the anti-trust case.

10. Non-Programming Services by Cable Licensees, CRTC Public Announcement, June 6, 1978.

11. Non-Programming Services by Cable Television Licensees, CRTC Public Announcement, March 26, 1979, at pp. 2-3.

12. Decision CRTC 79-266, March 26, 1979
79-530, August 21, 1979
79-561, August 29, 1979
79-562, August 29, 1979
79-653, October 22, 1979
80-7 , January 8, 1980
80-21 , January 11, 1980
80-54 , January 29, 1980
80-305, April 24, 1980
80-361, May 15, 1980
80-494, July 30, 1980
80-633, September 22, 1980
80-712, October 24, 1980
80-766, November 13, 1980
81-216, March 26, 1981
81-919 to
81-922, December 30, 1981.

13. Ibid.

14. Introductory Statement Relating to Decisions CRTC 81-919 to CRTC 81-922, Applications for the Cable Distribution of Non-Programming Services on an Experimental Basis, December 30, 1981.

15. Ibid., at pp. 7-9.

16. Ibid., at p. 4.

16a. FCC, CC Docket No. 79-318.

16b. FCC, Report and Order FCC 81-161, April 9, 1981.

16c. See "Telecommunications Reports", vol. 48, No. 9, March 1, 1982 at p. 10.

16d. Department of Communications, Radio Act, Notice No. D67N 009-81/ D67R 019-81, 18 September 1981. While the filing date for submissions was set at 15 February 1982, a detailed examination of these is beyond the scope of this paper.

16e. Discussion Paper, Department of Communications, Ottawa, Canada, September, 1981, at pp. 10 and 11.

17. Hush-A-Phone Corp. v. U.S., 238 F.2d 266 (1956).

18. Re Use of Carterfone in Message Toll Telephone Service, [1969] P.U.R. (3d) 417 (FCC); 13 FCC 2d 420 (1968), reconsideration denied, 14 FCC 2d 571.

19. Interstate and Foreign MTS and WATS, Docket No. 19528, 35 FCC 2d 533 (1972); First Report and Order, 56 FCC 2d 593 (1973), Reconsideration 58 FCC 2d 716.

20. Second Report and Order, Docket No. 19528, 58 FCC 2d 736 (1976).

21. Bell Canada v. United Sterl-A-Fone Corp. Ltd., [1955] O.R. 1.

22. Re Dr. Morton Shulman [1975] Canadian Transport Commission Reports 244; Re Harding Corporation, Canadian Transport Commission, Order T-658, May 22, 1975.

23. Harding Communications Limited v. Bell Telephone Company [1975] Que. S.C. 1116; Bell Telephone Company v. Harding Communications Limited [1977] Que. C.A. 54.

24. Challenge Communications Limited v. Bell Canada, Telecom Decision CRTC 77-16, December 23, 1977.

25. Belanger v. The King (1916), 54 S.C.R. 265.

26. Bell Canada v. Challenge Communications Limited (1978), 22 N.R. 1; (1978), 86 D.L.R. (3d) 351 (Fed. C.A.).

27. Bell Canada - Interim Requirements Regarding the Attachment of Subscriber - Provider Terminal Equipment, Telecom. Decision CRTC 80-13, August 5, 1980.

28. Telecom. Decision CRTC 80-13, at pp. 34, 46-50.

29. British Columbia Telephone Company - Interim Terms and Conditions Regarding the attachment of subscriber-provided terminal equipment, Telecom. Decision CRTC 81-19, October 22, 1981.

30. Public Utilities Board, Alberta, Decision No. E81235, Alberta Government Telephones, December 22, 1981.

31. IN THE MATTER of the Public Utilities Commission Act and IN THE MATTER of the Electric Power and Telephone Act and IN THE MATTER of an application by Garden of the Gulf Court & Motel Inc. for approval of connection of customer owned equipment to the network facilities of the Island Telephone Company, Limited. Supreme Court of Prince Edward Island, June 17, 1981 (unreported, No. GDC-2333, overturning the decision of the Public Utilities Commission, Prince Edward Island, July 23, 1980).

32. Resale and Shared Use of Common Carrier Services, 60 FCC 2nd 261 (1976).

33. MCI Telecommunications Corporation v. FCC (Execunet) 56 F.2d 365 (D.C. Circuit, (1977), cert. denied, (1978), 434 U.S. 1040.

34. Ibid.

35. Ibid.

36. See for example Bell Canada, British Columbia Telephone Company and Telesat Canada: Increases and Decreases in Rates for Services and Facilities Furnished on a Canada-Wide Basis by Members of the Trans Canada Telephone System and Related Matters, Telecom Decision CRTC 81-13, July 7, 1981, at p. 207.

37. CNCP Telecommunications, Interconnection with Bell Canada, supra, n. 7.

38. 1st Comp. Inq. Regulatory and Policy Problems presented by the Interdependence of Computer Communications Services and Facilities, 28 FCC 2d 291 (1970), (Tentative Decision); 28 FCC 267 (Final Decision, aff'd in part sub nom. GTE Services Corp. v. FCC 474 F.2d 724 (2d Cir. 1973), decision on remand, 40 FCC 2d 293 (1973).

39. IN THE MATTER of Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), Docket No. 20828, Final Decision, 77 FCC 2d 348 (1980); Reconsid. FCC 80-628.

40. Bell Canada - Voice Message Service Trial, Telecom Decision CRTC 81-10, May 25, 1981.

41. See for example Bill HR 5158 or Bill S 898 passed by the Senate.

42. See for example Telesat Canada, Proposed Agreement with Trans-Canada Telephone System, Telecom Decision CRTC 77-10, August 24, 1977; (1977) 3 C.R.T. 265; Reversed by Order in Council P.C. 1977-3152, November 1, 1977, and Bell Canada, British Columbia Telephone Company and Telesat Canada: Increases and Decreases in Rates for Services and Facilities Furnished on a Canada-Wide Basis by Members of the TransCanada Telephone System, and Related Matters, Telecom Decision CRTC 81-13, July 7, 1981, reversed in part by Order in Council P.C. 1981-3456, December 8, 1981.

43. Telesat Canada, Proposed Agreement with TCTS, Telecom Decision CRTC 77-10, August 24, 1977, at p. 276.

44. Ibid., at pp. 276-277.

45. CNCP Telecommunications, Interconnection with Bell Canada, supra, n. 7, at p. 113.

46. Ibid.

47. Bell Canada v. Challenge Communiations Limited, supra., n. 26.

48. Fuss and Waverman, "The Regulation of Telecommunications in Canada", Economic Council of Canada, Technical Report Series, No. 7, March 1981.

49. This example is taken from Fuss and Waverman, ibid.

50. Ibid.

51. While economists differ on whether short or long-run costs should be taken into account in diagnosing predation, they agree on the evil of the disease.

52. Third party effects can also exist where a firm offers multiple services but does not engage in cross subsidization. This situation is created by the technological issue of sustainability raised earlier. It can be shown that a monopoly providing all services and offering them at prices which maximize social welfare will, under the threat of entry by a single service firm, have to raise prices in other markets. As a result of this entry, social welfare is not maximized and social resource losses incurred.

53. Supra., n. 7.

54. See for example Richard Posner, "Taxation by Regulation", Bell Journal of Economics, Spring 1971.

55. Supra., n. 39.

56. Telpak; Docket 14251; Tentative Decision March 14, 1964; Memorandum Opinion and Order, December 23, 1964; Memorandum Opinion and Order, May 3, 1965.

57. Memorandum Opinion and Order, December 23, 1964, p. 1116.

58. In the Matter of AT&T Company, Long Lines Department (TELPAK), Docket No. 18128, 61 FCC 2d 587 (1976) at p. 657; reconsideration granted 64 FCC 2d 971; reconsideration granted in part 67 FCC 2d 1441.

59. Supra., n. 39.

60. Supra., n. 7, at p. 257.

61. As an example, see the discussion by Cowan and Waverman on the economies of integration between data processing and telecommunication services, Bell Journal, Spring 1972.

NEW ENTRY INTO TELECOMMUNICATIONS SERVICE MARKETS IN CANADA