

# *The Significance of Demographic Changes Occurring in the Canadian East Arctic*

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At this moment in history, most privileged nations, high in industrial and agricultural productivity, share with the less-developed nations of the Third World an increasing concern with obtaining intelligence resulting from demographic research. This concern is manifested in the increasing numbers of individuals and institutions undertaking research in population-related topics, and national and international conferences to discuss the results of such research. Canada, an incipiently developed nation, with about one person in five officially classified as living in poverty, evidently has need of such research; however, it is apparent by reference to social science journals and governmental reports that in relation to the need, pathetically little such research is in fact conducted in Canada.

A serious consequence of the scarcity of population research here is that politicians and planners appear to continually underestimate the degree to which failure of various economic development plans result from social and demographic causes.

Some people argue that less-developed regions having large land areas and small populations (e.g. Brazil, Newfoundland, or the N.W.T.) are in no way faced with a population problem, unless it be too few people. However, the crucial factor is not density of people, but too great a ratio of people to capital resources. This imbalance can be remedied by increasing capital, usually through borrowing or attracting investment, but to convert these potential gains to actual increases in wealth takes time, as well as skill. The question for under-developed regions there-

fore, becomes one of growth of capital versus growth of population, and because of the accelerating demands in these regions today for improved education, health, communication, housing and other material facilities, a rapid rate of population growth generally prevents any successful attempt to remedy the prevailing unfortunate economic situation.

This paper contains a preliminary statement of certain demographic trends evident in the Canadian East Arctic, and a partial exploration of consequences stemming therefrom. A more important intention, and one fitting the memory of the distinguished scholar and humanist this volume honours, is hopefully to provoke population research in the less-developed regions of Canada, regions where the need is greatest and the time shortest to assist in rational development programs.

### *Theory of the Demographic Transition*

Growing out of the classical Malthusian argument linking population and economic production, has come the theory of the demographic transition, which relates changing birth and death-rates to the complex of variables associated with the process of modernization. In this connection it is observed that societies characterized by a high degree of local self-sufficiency and correspondingly low involvement with market exchange, typically have a high death-rate which tends to fluctuate in response to varying and uncertain economic productivity and periodic health crises. Birth-rate will necessarily be maintained at a high level to sustain a population having little control over a high death-rate. The maintenance of high fertility in these pre-industrial societies stems largely from peoples' recognition of the "value" of children, because of, for example, their contribution to the household economy and their future role in providing security to ageing parents.

The fact that mortality rates are especially high among children in such traditional societies results in high value being placed on repeated child-bearing; however, because of the prevailing mortality rates, population growth nevertheless proceeds slowly in these societies.

According to the theory of the demographic transition, both mortality and fertility are affected by the sequelae of economic development. Such development usually results in decreasing local self-sufficiency, growth of increasingly impersonal economic transactions, and changes in status and roles within both the community and the individual household. Typically, as a result of such developments, larger population groupings become established (under the dictates of newly relevant economies of scale) and in this new social and economic situation children become less of an economic asset and may even constitute a burden frustrating attempts to attain certain newly perceived goals.

Early in this development stage, death rate begins to decline dramatically as a result of improvements in health, material and communication levels, but birth-rate appears more refractory. The reasons for this differential response appear to be social: societies traditionally accept the ideal of minimizing suffering and death, but no such consensus exists regarding the desirability of producing fewer children. The net effect of this dramatic decline in deaths with an unchanging birth rate is to produce a "population explosion." Usually the economic developments that initiated this move toward modernity can at least in the short-run sustain the increasing population, though sometimes population numbers and aspirations quickly outstrip the ability of the immature economy to meet the new demands placed upon it.

Changes associated with modernization in time begin to erode certain traditional beliefs and practices. Those members of the society who place increasing value on maximizing the new occupational, material and political goals presented will in varying degrees adopt the life style of apparently successful members of the modern society. Thus, generally, new norms of behaviour, including reproductive behaviour, diffuse through the modernizing society from the more progressive, and often elitist, elements, to the emerging urban proletariat, so that eventually the birth-rates and death-rates of the modernizing society will approach those of the dominant modern nation-state.

The effect of population increase on economic growth during the period of demographic transition (i.e., from a high to a lower fertility population) is a complex one. Thus, though a large popu-

lation with a smaller rate of increase will, after a period of time, produce the same number of people as a smaller initial population with greater rate of increase, the respective effect each would have on economic consumption and investment will likely be very different, even if all other factors were the same. In general one can say that though a fast rate of population growth requires a correspondingly high rate of capital investment to maintain living standards, it unfortunately does not follow that faster population growth creates the needed supply of investment capital.

This problem becomes especially acute in low-income areas, where it often proves difficult to attract large investments of capital, and where the high rate of population growth characteristic of such areas requires diversion of most available capital into urgently required replication of existing facilities: houses, schools, administrative infrastructure etc. The net result is the channelling of assets into fixed capital rather than working capital where it could be put to productive use. The consequences of too great a population growth on developing areas can be seen in many parts of the world, including under-developed regions of the developed nations: low per capita income, under-employment through restricted job opportunities, and creation of a dangerous and unrealistic economic structure based on a high rate of borrowing with concomitant and progressive fiscal and political dependency on outside sources of influence and control.

### *Population*

Any demographic study must inevitably rely on statistical evidence; equally inevitably in the less-developed regions, statistical reporting is generally poor in quality and in coverage. In the present study most demographic and economic data are taken from Reports of Area Economic Surveys sponsored by the Industrial Division of the Department of Indian Affairs and Northern Development.

Problems of economic development relate only secondarily to the size of the population undergoing development; however, of direct concern are the rate of growth and the age distribution of that population.

Whereas in the past, high mortality effectively prevented traditional high-fertility populations from undergoing rapid rates of increase, now with progressively decreasing death-rates, the birth-rate has become the principal dynamic force in determining those population characteristics of most relevance to the outcome of social and economic development programs.<sup>1</sup>

The age composition is important insofar as it determines the ratio of producers to consumers (the so-called dependency ratio); too many dependents not only prevents the level of capital accumulation required for effective development "take-off", but also may require a level of taxation for revenue production that serves to curb incentive and hence increased productivity.

In a population, such as the East Arctic, having negligible in-or out-migration, age composition is determined principally by fertility, and is so irrespective of level and trends in mortality rate.

For the above-mentioned reasons, this present study will focus only on fertility, and will postpone consideration of the other major demographic variables, viz. mortality and migration.

In longitudinal studies on increasing populations, birth-rate is a meaningless statistic for comparative purposes, as it neglects to account for the progressive increase in number of women of reproductive age. For this reason fertility ratio is a better measure of the number of births occurring, after allowing for other changes in population composition.

The effect of demographic variables on economic development depends importantly on which of two contrasting situations pertain: (1) A high income area, where the problem is that of assuring full utilization of available resources; or (2) A low income and low capital area, where the need is not to stimulate increased demand for goods, but rather to improve income.

Evidently in the first situation, which characterizes a mature economy of high productivity, increasing the population can have a beneficial economic effect, whereas in the second situation consumption will not be increased by the mere presence of more people, and in fact decreasing per capita income and increasing

immiserization in practice tends to be the almost inevitable result of increasing population size.

The Northwest Territories, together with such provinces as Newfoundland, can be classified as a region of low population density coupled with rapid population growth. These demographic properties characterize certain less-developed nations in Africa, the Near East and Latin America. In addition to sharing similar demographic characteristics, these various areas experience common social and economic problems, most pressing among which are the increasing surpluses of people for which jobs and other economic and capital support must be provided, and acute social disorders associated with increasing urbanization and modernization.

In Greenland, population is labelled the number one problem;<sup>2</sup> in Canada, the Northwest Territories Council recently passed a resolution calling for an intensive program to make birth control information and appliances freely available in the Territories,<sup>3</sup> and a medical study recently conducted in the East Arctic warns of the need for immediate planning to cope with the possible consequences of one of the highest rates of population growth the world has ever known.<sup>4</sup>

Such statements are not unreasonably alarmist; preliminary research suggests that in the period 1954-60, the fertility ratio in such East Arctic hunting communities as Port Harrison or the Belcher Islands was 186 and 130 respectively. The figure 186 is higher than any reported in the United Nations *Demographic Yearbook* of that period, and is very close to that of the most fertile human population known (viz. 192.6 in the Hutterites). This places in perspective the rates calculated for two populations representing the more urbanized East Arctic settlements of the present time, namely Frobisher Bay and Cape Dorset, having fertility ratios of 330 and 299 respectively (calculated from 1962-3 and 1966-7 data).

The unusually high fertility of the current Eskimo population in the Canadian East Arctic has not yet produced its greatest manifestation, for infant mortality rates are still about five times the national level.

A comparison between a nomadic hunting community without access to modern health care (Belcher Islands, 1960 data) and a sedentary hunting community provided with basic modern health facilities (Grise Fiord, 1967), indicates that the average number of children per family increases by about 50 per cent, with a shift in modal numbers of children per family from two and four to five and six.

Table 1 illustrates certain typical demographic changes taking place in the East Arctic as a result of recent modernizing trends.

TABLE 1  
RECENT DEMOGRAPHIC CHANGES  
IN THE IGLOOLIK REGION, N.W.T.

	1961	1968
Population Size	527	735
Percent of population living in camps	74.2	18.7
Percent of population aged 16 years or less	34.5	55.9
Number of dependents per male aged 16 years or more	3.0	4.2

Source: CCIBP/HA Progress Report 1968.

### *Economic Trends*

The economic trends apparent over the whole of the East Arctic during the past decade reflect a general increase in per capita cash income, though this trend is still characterized by periodic and largely unpredictable fluctuations in individual income much as in the earlier days of trapping-dominated arctic economy. Large scale involvement in wage-work is restricted to a few of the larger population centres (Groups II and III, table 2) though all communities in the region now contain individuals who have experienced at least a few seasons wage-work on local construction projects, or other work outside of their home communities.

TABLE 2  
EAST ARCTIC COMMUNITIES: ECONOMIC STATUS OF INDIGENOUS LABOUR FORCE

Group	<i>Nature of Gainful Employment</i>	<i>Community</i>	<i>Population (Approximate)</i>
I	(i) Predominantly based on hunting and trapping; (ii) Very limited opportunity for permanent wage employment; (iii) Small amount of seasonal, casual wage employment.	Arctic Bay Belcher Islands Broughton Island Clyde River Grise Fiord Lake Harbour Port Burwell Repulse Bay	225 230 215 265 90 150 120 165
II	(i) Probably half the community at least dependent on hunting, trapping and handicraft production; (ii) Small proportion of population have permanent wage employment; (iii) Most members of work force can obtain seasonal casual work.	Eskimo Point Iglulik Pangnirtung Pond Inlet Southampton Island Whale Cove	450 735 670 300 250 200
III	(i) Small proportion of community dependent on hunting and trapping; (ii) Moderate proportion engaged in wage work, more or less permanently; (iii) Most persons can obtain periodic wage employment.	Baker Lake Cape Dorset Chesterfield Inlet Rankin Inlet	550 470 200 430
IV	(i) Negligible economic dependence on hunting and trapping; (ii) Considerable proportion of work force permanently wage employed; (iii) Varying opportunity for all to obtain periodic casual work.	Frobisher Bay Resolute Bay	1000 150



TABLE 3  
 SOURCES OF EARNED AND UN-EARNED CASH INCOME IN TWO ARCTIC COMMUNITIES  
 (as percentages)

Year	Furs & Skins	Wages	Transfer Payments	Handicrafts	Cash Income Per Capita
Baker Lake N.W.T.					
1951-2	55.6	6.2	38.2	0.0	\$ 56
1952-3	26.5	5.4	69.0	0.0	\$ 66
1958-9	8.6	42.3	48.2	0.9	\$168
1960-1	14.8	44.8	40.2	0.2	\$327
1961-2	2.8	46.3	47.8	3.1	\$329
Lake Harbour N.W.T.					
1963-4	69.0	11.7	14.3	5.7	\$422
1964-5	63.5	16.8	14.1	5.7	\$433
1965-6	38.1	25.6	16.2	20.1	\$344
1966-7	28.2	37.6	17.5	16.7	\$525

Source: A.E.S.R. 63/2 and 67/2.  
 Note: Baker Lake population 1951-59 and 1960-62 assumed to be 450 and 500 respectively.

Another obvious trend is the decreasing importance of hunting and trapping as economic inputs into the household economy and the concomitant increase in importance of wage-work, handicrafts and transfer payments (table 3). These data reflect both the chronic under-employment of the population and a neglect on the part of investigators to account realistically for the contribution that production of country foods makes to the household economy. This latter point is hard to quantify with any precision; it seems reasonable to suppose that a value equal to the replacement cost of that food if obtained from the store would be the most useful measure to adopt. Production of country food in several east Baffin Island communities averaged 1200 lbs. per capita/annum in 1965-66,<sup>5</sup> and allowing a conservative fifty cents a pound substitution with store-bought foods, the value is seen to be \$600., or at least twice that estimated as applicable for the whole of the N.W.T.<sup>6</sup> The value is bound to depend on the local circumstances, but we may safely assume that most individuals in the Group I and II categories (table 2) will currently derive at least half their real per capita economic input from the land, in terms of meat, skins and furs produced. Stated in slightly different terms, the few data presented in table 4 suggest that cash flow into most East Arctic communities would have to be doubled or trebled to maintain existing living standards if hunting and trapping activity were to cease.

TABLE 4  
ANNUAL PER CAPITA CASH INCOME, 1965-66

Broughton Island	\$540
Cape Dorset	\$456
Clyde River	\$220
Lake Harbour	\$344
Padloping Island	\$370

Source: Foote, 1967; A.E.S.R. 67/2.

What are some of the economic implications of the present rate of population growth in the Northwest Territories? Housing and education are two high priority, high cost areas of social development where a start has been made and therefore where statistics are presently available. Health, communication, recreation, cultural development are examples of areas where present expenditures are unrealistically small or virtually non-existent.

In the next five years, the elementary school population will increase by about 50 percent through recruitment of those pre-school age children already born. A 10 per cent net annual increase in school enrolment has been sustained by capital investment averaging \$3.05 million per annum since 1958 together with a current (1968 data) annual operating budget in excess of \$12 million. Assuming only a 6 per cent per annum inflationary increase in costs, educational expenditures at the same level of investment will amount to about \$100 millions over the next five years in the N.W.T. and in Eskimo communities in Arctic Quebec. This estimate implies that the standard of educational facility to be provided remains the same as at present; however, currently about 95 per cent of student enrolment and 90 per cent of classrooms are involved with elementary education only. Assuming a progressively increasing recruitment of students to high school and vocational school classes, capital and operating costs are likely to rise sharply in response to the increased demand for these more costly professional and physical facilities. Furthermore, it is not unreasonable to suppose that existing facilities constructed more than a decade ago will soon require replacement. This accelerating cost trend is beginning to be apparent: capital cost of arctic education in 1967-8 increased by 61 per cent over the previous years allotment for an increase in student members of only 9.7 per cent. A recent report has warned that in support of the educational effort in the North there must be an increased expansion of "the pre-school program, the in-service courses for teachers, the number of classroom assistants, the adult education program and research oriented to cross-cultural educational problems."<sup>7</sup> Such essential programs scarcely contribute to the present educational budget.

The present inability to meet the increasing cost of providing more and more services to the North is nowhere more apparent than in relation to the greatly needed Eskimo Rental Housing

Program started in 1965. It was confidently forecast that a projected capital investment of \$12.5 million spread over five years would end the totally inadequate housing situation in the Arctic. However, after the allotted five years the federal authorities admitted failure of the program and estimate that it would require an additional \$250 million to complete.<sup>8</sup> In some communities the increase in population absorbs the total annual allotment of new houses without allowing any replacement of pre-existing sub-standard dwellings.<sup>9</sup>

### *Health*

Given the declining status of native medical practice in most parts of the Canadian East Arctic there can be little doubt that one of the most important predisposing influences in the movement from nomadic life on the land to increased sedentarization in permanent settlements has been peoples' desire to escape certain consequences of sickness and debilitation. It is important to stress that it is the *consequences* of sickness (particularly the lack of economic security for dependents) rather than sickness itself that is minimized by settlement living, for in many localities the incidence of sickness rises dramatically with movement to permanent settlements and concomitant destruction of a viable ecologic adaptation. This trend can be exemplified by the recent history of the Belcher Islands' Eskimo population. In 1950 this population numbered about 160, and was judged one of the most healthy groups in the East Arctic: the active tuberculosis rate was about one-tenth that on the adjacent east coast of the Hudson Bay and on Baffin Island.<sup>10</sup> The situation had not appreciably changed by 1954, as the two hospital evacuations that year were of immigrants recently arrived from the mainland.<sup>11</sup> In 1959 a large part of the population, now numbering about 180, had started to congregate at a school construction site, and the following year the largest evacuation in the Islands' history occurred when fourteen individuals were removed to T.B. sanatoria in Ontario.<sup>12</sup> Islanders' in 1970 numbered around 230, and efforts were being made to concentrate the total population in one settlement; at that time eighteen people were receiving hospital treatment in the south.<sup>13</sup>

There are many factors influencing the morbidity patterns of a population, and three that undoubtedly relate to the movement into settlements are diet, housing and size of family. In all probability substitution of a balanced diet largely composed of fresh country foods by an unbalanced diet of imported foodstuffs has contributed more than any other single factor to the poor health record of settlement living, for with the consequently lowered health resistance of the population several current unsolved health problems pose a very real threat.

Housing and family size can be considered together, for the burden of sickness will fall most heavily on those households with the greatest degree of crowding. Studies elsewhere indicate that under better housing conditions there is a marked relationship between the incidence of lower respiratory tract infections and the standard of maternal care provided, whereas under unfavourable housing conditions no such relationship could be established.<sup>14</sup> Insofar as both housing standards are improving and family size is increasing, it might be expected that the larger family size will in some degree at least offset the improvements in health to be expected from the large investment in improved housing. The most important effect on health of increasing size of family, is to increase the exposure of infants to infectious disease (e.g. pneumonia, gastro-enteritis) at an earlier age, when risk of the disease being fatal or having permanent effects are greatest.

As a result of the relationship between poor health, large families and poverty, public health activity among the underprivileged include active birth control programs in the advanced countries of Europe and in the United States, as well as in the less-developed nations of the Third World. There are salutary lessons to be learned from the conduct of these programs wherever they are held; the example of the United States might be briefly considered here. With a current budget of \$50 million, publically financed family planning programs in the United States reach only about one million women. It is forecast that extension of the program to the five million women who would benefit from such services could be achieved at an estimated cost of \$150 million. Despite the \$50 per capita cost of administering these programs (about twice the cost of similar programs in many Asian

and Near Eastern countries) considerable criticism has been directed toward the Federal administrations responsible and with particular concern felt toward the manner in which oral contraceptives are dispensed.<sup>15</sup>

In view of their effectiveness, even when improperly administered by understaffed and overworked public health agencies, such chemical contraceptives tend to be favoured in federally administered anti-poverty programs in the United States. It is pertinent to note that similar contraceptive measures and administrative problems typify the situation in the Northwest Territories today.

The World Health Organization has established guidelines for the use of oral contraceptives because of their possible danger to women who may already be pregnant, or who have various cancers, liver dysfunction, epilepsy, heart disease or a history of blood clots. In response to criticism, the U.S. Food and Drug Administration adopted these safeguards, which include a detailed medical history, physical examination with special emphasis on gynecological aspects, counselling on the possible side effects and follow-up examinations every six or twelve months; furthermore they recommend that only specialists in obstetrics or gynecology prescribe the pill. The U.S. Department of Health, Education and Welfare has signalled its concern by proposing to establish a data bank containing medical histories of all patients who receive treatment in publically-financed family planning programs.<sup>16</sup>

### *Discussion*

I assume that the major economic aims of development programs are, primarily to create work places, and secondarily to ensure that these jobs raise incomes beyond those existing before the implementation of the program. With these aims in mind, the relationship existing between fertility and development is negative: therefore decreasing fertility becomes a pre-condition for, or concomitant of rational development programs in less-developed capital-poor regions. This generally accepted view is based on the economics of providing workplaces and of supporting dependents.

Most development plans aim to introduce into less-developed regions the technology and productive techniques of modern in-

dustrial society. Accepting this predeliction of planners, which though normative is by no means rational, the creation of one workplace is often approximately equivalent to the average annual income of a worker. In other words, a man would require to obtain the equivalent of one year's salary to establish his own workplace.<sup>17</sup> In the developing countries one prevented birth is equivalent, on economic grounds alone, to up to twice the average per capita income.<sup>18</sup> As worker incomes in developing regions are well below those of workers in more advanced societies, the likelihood of an individual establishing his own job in the face of repeated paternity is virtually nil. Furthermore, to create workplaces in developing regions with expanding populations, large infusions of public money become necessary and can only be made available at the expense of other pressing developmental and welfare projects. To justify, or divert attention from, neglect of these other vital services frequently leads governments to invest public funds in prestigious yet largely inappropriate schemes; for example technologically sophisticated industries, which serve to destroy existing workplaces faster than modern replacements can be created.<sup>19</sup>

A crucial question, then, is, Can fertility decline be brought about before, or at least in step with, the modernization process? There are those who believe it can;<sup>20</sup> others disagree. Freedman, for example, argues that reduced mortality, often a concomitant of modernization, is a necessary pre-condition for a reduction in fertility.<sup>21</sup> It is certainly true that those fertility control programs that have stressed maternal and child care as well as making available a greater overall measure of health care, are the ones that enjoy most success in their primary objective. Allowing that the technology for effecting lowered fertility is now readily available, it is apparent that the institution of such programs is largely a political issue: whether such programs are put into effect hinges in many cases on whether they are perceived as promoting a variety of other social values as well as population limitation. Thus, the British House of Commons gave unopposed second reading to a Family Planning Bill on February 17, 1967 after a Gallup poll had indicated that, (1) many parents found themselves with more children than they desired; (2) they were unaware of the connection existing between their poverty and

family size; and (3) they would certainly have limited their family size if certain information and facilities had been available. The Family Planning Bill in question empowered local authorities to make available free and greatly expanded family planning facilities for social, rather than medical, reasons.<sup>22</sup>

It is true that in the short run, improvements in living standards can be achieved without tampering with fertility levels both in less-developed nations and in the under-developed regions of the developed nations. However, self-sustaining economic growth must be the aim of any rational development program, and this can be greatly facilitated by releasing growth capital otherwise increasingly committed to maintain the *status quo*. The situation in Newfoundland illustrates the predicament experienced by that part of a developed nation having the demographic and economic characteristics of an under-developed territory, for according to the latest available statistics, Newfoundland has the highest provincial birth-rate, the highest unemployment rate, and lowest per capita income. The provincial capital is second only to Calgary as the fastest growing Canadian city, yet the public indebtedness has almost reached one billion dollars (for a population of about half a million), a serious crisis exists in financing both education and health services, and the costs incurred in establishing one workplace in the infant new industries ranges up to a third of a million dollars. It is evident that more than mere fertility contributes to these fiscal excesses, yet it is known that any regional economy undergoing reorganization, regardless of size of territory, stage of development, or ruling political persuasion, will achieve appreciably higher total production in twenty or more years if it reduces its fertility at that point.<sup>23</sup> Indeed, such an economy assumes an increasingly better position from the moment fertility decline commences.<sup>24</sup>

It is pertinent here to explore the extent to which population limitation is perceived by government agencies as a relevant part of development programs in the Northwest Territories. The question was first raised in the Northwest Territories Council on February 26, 1968, when a formal motion was passed calling for immediate implementation of a comprehensive birth control program to counterbalance lagging economic development. The sequence of events immediately connected with and resulting from



this motion are set out in the appendix. In summary the result, up to the Council Session of January 1970, indicated that the Federal Department of National Health and Welfare had made no special efforts and was anxious to pass the responsibility to the Education Service of the Territorial Government, which in turn appeared totally unprepared to venture into this complex and highly technical field. At the time of these evasions, the Criminal Code forbade any effective action; but it is certainly unfortunate, even though predictable in view of prevailing Canadian attitudes to this issue, that the proscriptions of the law (which was known to be in process of amendment) should be used as a justification for doing next to nothing for two full years, rather than planning resolutely for the time when effective action could be taken to increase the welfare of a significant number of people. Without evaluating further the present status of this proposal it is quite apparent that the attitudes and resources of the Northern Health Service and the Territorial Government are such that nothing effective will be accomplished in this regard in the foreseeable future: unhappily for the people affected, the vast corpus of knowledge available in this vitally important area appears to be unknown to the administrations charged with these urgent responsibilities.

### *Conclusion*

Any scientist professionally concerned with development would agree that a region having the economic and demographic characteristics of the Northwest Territories today is heading for serious social, economic and political problems unless effective measures are taken, without delay, to slow down the rate of population increase. Most of the less-developed nations who see modernization and industrialization as desirable goals bow to this inevitable conclusion, including many whose traditional, religious or political ideologies until recently encouraged high fertility.

Historically many pre-modern societies have achieved voluntary low fertility without having access to modern contraceptive knowledge or devices. Now however, because of current low mortality rates, every modern means available is necessary, for time and efficacy are crucial variables influencing the eventual

outcome. Thus, despite the level of expenditure that may be necessary to establish a responsible and effective program of voluntary population control, and omitting consideration of arguments that question the validity of cost-benefit analysis to this problem, there is probably no wiser investment of public funds possible in under-developed regions.<sup>25</sup> The economic benefits alone are calculated to be about twenty-six times the program costs in the United States,<sup>26</sup> and once established, the cost of expanding coverage can be very modest, perhaps averaging \$1 per couple per year.<sup>27</sup>

It is evident that benefits of these programs should only incidentally be stated in economic terms; it is the overall improvement in the quality of life that makes such programs politically viable. Another reason to guard against undue emphasis on economic and medical aspects, is that ultimately, reduction in population fertility results from sociologic factors associated with institutional changes occurring in society, especially if the new demographic norms are to be maintained long enough to affect development positively. The interested reader is referred to recent reviews concerning administrative and anthropological aspects of population control.<sup>28</sup> Here, I will only repeat Berelson's conclusion, that there is no easy or single way to effect population control, though a variety of practical and generally ethically acceptable means do exist at the present time.

The role of government in this field should be to facilitate the voluntary adoption of new norms of family size, which will reflect the conscious expression of new social goals, or changed strategies employed by members of society to achieve these goals.

It is pertinent to observe that worsening economic conditions do not lead to fertility decline any more than do family planning programs in themselves. Reduced fertility can occur, under certain conditions, without efforts being made by public agencies and without benefit of modern contraceptive methods, but the combination of rising aspirations and unfavourable health and economic prognoses for the Northwest Territories suggest immediate need for an enlightened government attitude and incorporation of population control action as an integral part of rational development programs in the Canadian Arctic.

## *Appendix*

At the 36th Session of the Northwest Territories Council (February 1968) the Chief of Northern Health Services, Federal Department of National Health and Welfare, stated that he was unable to maintain existing health facilities in the coming year due to cuts in the 1968-9 Northern Health Service budget<sup>29</sup>.

A few days later at the same Council, after introducing Formal Motion Number 10, the proposer of the Motion provided statistics to indicate that the rate of growth of the Indian and Eskimo population of the Northwest Territories was 6.7 and 5.2 per cent per annum, rates that if unchanged would result in a doubling of population in ten and a half and thirteen and a half years respectively. The title of Formal Motion Number 10 was "Dissemination of Birth Control Information and Devices" and the purpose was to instruct the Commissioner

to immediately undertake in conjunction with the appropriate health authorities, a formal universal and intensive scheme for the dissemination of information about birth control and family planning. In conjunction with this program the Commissioner should develop a system through which various birth control devices can be made freely available to anyone wishing them.<sup>30</sup>

Following a short discussion this motion was passed by Council.

Formal Motion Number 64 entitled "Family Planning" was introduced at the 37th Session of the Northwest Territories Council (July 1968) and called for Council's reaffirmation of instructions given the Commissioner at the 36th Session. In speaking to this motion, the Commissioner cautioned that these objectives could only be met subject to the provisions of the Canada Criminal Code, but that a paper dealing with statistical aspects of the "minor" population explosion occurring in the Territories would be placed before Council. Formal Motion Number 64 was carried overwhelmingly.<sup>31</sup>

The mover of Motions 10 and 64 sought a written return on the progress made in regard to an active birth control program at the next Session of the Northwest Territories Council (January

1969). The reply mentioned the restriction placed on positive action by the, as yet unamended, Criminal Code, but stated:

- (1) family planning literature was available at all northern health centres;
- (2) eight community health workers are undertaking a refresher course at which family planning methods will be taught;
- (3) a similar course is being planned for one other centre in the Mackenzie region.<sup>32</sup>

At the 39th Session of the Council (June 1969) the mover of the Birth Control Motion asked whether passage of the Criminal Code amendments in Parliament now permitted intensification of family planning programs in accordance with the instructions of the Council. The Commissioner replied that the matter was under review and that:

- (1) birth control information was available in northern health centres,
- (2) consideration was being given to the possible use of the education system, and
- (3) because of certain peoples' strong feelings on the subject the Administration could not admit to any degree of success in its efforts to implement Council's instruction.<sup>33</sup>

The written replies supplied at the 38th Session prompted the following questions at the 41st Session of the Council (January 1970):

- (1) is (the material in the written reply) the extent of the educational program at the present time?
- (2) how many people is this program reaching?
- (3) are there plans to extend and strengthen the program to bring it more into line with the (formally requested) wishes of Council?<sup>34</sup>

A 300-word written reply indicated that the Northern Health Service had not extended the program beyond that outlined earlier, but it was willing to extend instruction to teachers in Territorial

schools. For its part the Territorial Education Service suggested the following "practical possibilities" to "extend and strengthen" this program "keeping in mind the limited resources of the Curriculum Division":

- (1) if finances allow, a Grade VI text on sex education could be introduced into the schools;
- (2) films for use in schools are currently available;
- (3) the Inuvik school is planning a Grade X course in Family Life;
- (4) two senior educational administrators are willing to meet with the Hay River PTA to discuss a Family Life program for Hay River school;
- (5) the Curriculum Division attaches considerable importance to Family Life programs, but these must fit in with other plans for curriculum revision.<sup>35</sup>

### *Notes*

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