THE TASO RESEARCH PROGRAM: RETROSPECT AND PROSPECT

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Abstract: Collaborative interdisciplinary research teams are still relatively unusual within the social sciences. Teams that combine both social and physical scientists are even more rare. Yet there are major research opportunities and challenges offered when distinct, yet complementary, foci of expertise are brought to bear on a common empirical problem.

In this paper, we begin by introducing McMaster University's Research Program for Technology Assessment in Subarctic Ontario (TASO). We summarize briefly the first phase of these research activities in Northern Ontario, and its accomplishments, and outline the projected second phase of our research which is focussed on community economic and social development among the Cree communities of the Mushkegowuk Tribal Council.

Résumé: Il est encore rare dans les sciences sociales de trouver des équipes de recherches interdisciplinaires qui collaborent. Même plus exceptionelles sont les équipes rassemblant des chercheurs provenant des sciences sociales et physiques. Cependant, il y a d'amples opportunités de travaux de recherches, et de défits qui se présentent lorsque des disciplines distinctes mais complémentaires sont mises à l'oeuvre afin de résoudre un problème empirique commun.

Cet article décrit le Programme... (TASO) de l'Université McMaster. Les auteurs présentent brièvement la première phase des activités de recherches dans le nord de l'Ontario et les résultats obtenus. Ils esquissent la seconde phase prévue qui mettra l'accent sur le dveloppement social et économique communautaire parmi les communautés Cree du Conseil Tribal Mushkegowuk.

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The TASO Research Program

In the early 1980s, several McMaster faculty members with long-term interests in northern research made the commitment to work together on a major new project in the James Bay region. The background to this collaboration was an emergent friendship and growing awareness of common interests arising through work on the President's Committee on Northern Studies. This body was founded in the 1970s to obtain funding from the federal Department of Indian and Northern Affairs for graduate student training in northern research. The program was markedly successful in recruiting graduate students into northern research careers. The sheer enjoyment of its intellectual activities (e.g., seminars) soon overshadowed the Committee's funding activities and made for unusual collegiality among McMaster's northernists. When the opportunity was presented early in the 1980s, several faculty members were stimulated to move beyond their individual research careers into collaborative research on a multidisciplinary scale.

We proposed to do collaborative research on the probable environmental, social and economic impacts of hydro-electric projects then being planned for Northern Ontario by Ontario Hydro. For some years, we had been concerned about the lack of advance study and the inadequate scientific knowledge of the environmental and social effects of the Baie James hydro-electric project in northern Quebec. When Ontario Hydro's plans were announced, our attention immediately turned to Northern Ontario. Established as TASO, we received generous seed funding from the Donner (Canadian) Foundation, and subsequently received major funding support from SSHRCC and NSERC.[2]

TASO Results: Phase One

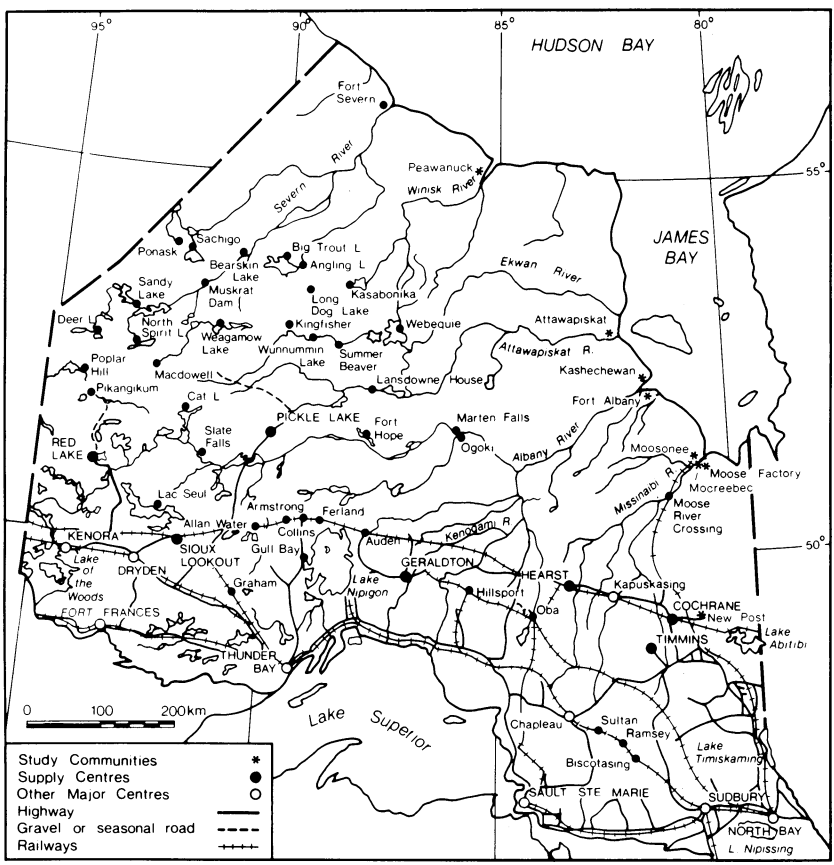
The research program was focussed initially on the Moose River Basin, where Ontario Hydro's expansion plans were most imminent. The program was broken down into two main parts—environmental research, conducted by physical scientists (biologists, climatologists and hydrologists), and social and economic research, conducted by social scientists (anthropologists and economists). These components involved the six principal investigators and their teams of graduate and undergraduate students, and, in the case of the anthropology component, several Native researchers from the communities of Moose Factory and Moosonee.

Environmental Research

The environmental component of TASO's research program studied the micro-climate, hydrology and plant ecology of the west coast zone of James Bay. Our major concerns included: the examination of the interrelations be-

tween freshwater drainage and the local climate, coastal plant growth, Bay water and ice conditions; the determination of the extent to which changes in freshwater flows, resulting from hydro-electric dam impoundments, would affect the coastal environment.

With the approval and logistical assistance of the Moose Factory Band Council, environmental research began on a site near the mouth of the Kesagami River in 1984. After two field seasons, a more northerly research field station was established north of the Ekwan River. The environmental studies had three main components: climatology, hydrology and biology.



(i) Climatology

Working in conjunction with the hydrology and biology groups at the Kesagami River and Ekwan sites, the climatology group concentrated on measuring the balance of solar energy, water absorption and evaporation in

the main coastal vegetation zones. This research covered full growing seasons for all major vegetation types, including upland sedge grass meadow, lowland sedge swamp meadow, willow-alder swampland, and spruce and larch forests. These measurements have been employed in the development and testing of statistical evaporation models used to predict some of the environmental effects of changes in freshwater regimes resulting from water impoundments and diversions, and of expected circumpolar climate warming (the "Greenhouse" effect).

(ii) Hydrology

The hydrologists have made detailed studies of the flooding of wetlands by groundwater seepage and overland flow of snowmelt, ice-blocked and beaver-dammed streams, and rainfall. Group members have analyzed variations in the annual cycle of streamflow in the coastal region, and the effects of water diversion projects on the Albany-English and Ogoki Rivers, and the Kenogami-Long Lake system, which have greatly altered the natural rhythms of run-off. Much of their work has focussed on water and salt mixtures and movements in coastal marshes near the Kesagami and Ekwan sites. They discovered that, whereas much of the marsh salt at Ekwan is the residue of evaporated tidewater, the salt found in Kesagami's coastal marshes is leached up from early post-glacial sediments rather than deposited by incursions of tidewater from James Bay. These findings are important because salt levels influence the survival and growth of marsh grasses, and hence the life cycles of waterfowl and animal populations that use them.

(iii) Biology

The biology group has studied the main types of plant communities at the Kesagami and Ekwan coastal areas, particularly the different distributions of plants found in the raised beach and wetland zones. The raised beaches show the development of vegetation types that come with increasing age, height and drainage, culminating in spruce and larch woodland. The wetlands too show successive stages of plant development, over the range from most to least saline water conditions. Input from these studies is contributing to the development of statistical models to predict the effects of changing water conditions associated with water diversion projects on plant life and other ecological circumstances.

Additional details on the environmental research program can be found in TASO Report No. 31 (George and Preston 1989).

Social-scientific Research

Like the environmental researchers, the anthropologists and economists in TASO have also been concerned with identifying and assessing the impacts of resource-based development. However, as might be expected, the social and economic research programs have been more directly related to the indigenous Cree Indian populations of the James Bay coast and the factors influencing their historical and current social and economic conditions. We turn now to a discussion of some of the highlights of TASO's social scientific research.

(i) Economics

The economists have focussed on two main areas of study: the costs and benefits of northern energy resource development alternatives, and the evolution of the local economies of James Bay coastal communities.

The precipitating factor in the establishment of TASO was the indication that Ontario was conducting economic investigations and site analyses for the expansion of hydro-electric capacity and construction of new capacity in Northern Ontario. TASO undertook a number of studies in an attempt to assess the likelihood that Ontario Hydro would have an economic incentive, based on expected economic gains, to expand its northern operations in the James Bay drainage basin. The proposed northern projects in the TASO study included the Little Jackfish River, the Lower Mattagami River redevelopment and the Moose River Basin new sites. The basic questions were: would the northern hydro-electric projects yield economic rents? When would be the best time to undertake them? What would be the cost of delaying them? The cost-benefit analysis was posed as a linear programming problem, with Ontario Hydro's objective being the minimization of system costs, given constraints on demand growth, existing capacity, costs of alternative generation, etc. Unfortunately, a second set of questions concerning the impacts of hydro-electric expansion on Native peoples and the environment was addressed only in a cursory way.

The preliminary study (TASO Report No. 1; Muller and George 1983) reported the results of the cost-benefit analysis of ten proposed hydro-electric projects in Northern Ontario then under active consideration by Ontario, and on exploratory estimates of the environmental costs likely to be associated with the projects. The partial net benefits from hydro-electric expansion of the Lower Mattagami River complex and construction of the new sites in the Moose River Basin were estimated to be of the order of $125 million if coal-fired generating capacity remained in use, and about $1000 million if excess coal capacity was unavailable (as might be the case if acid-rain legislation made coal-fired plants unacceptable). Together with a preliminary estimate of maximum environmental costs in the Moose River sys-

tem of approximately $22.5 million, the cost-benefit analysis suggested that the projects would generate sufficient partial net benefits to more than compensate for the environmental costs incurred. The tentative conclusions were, then, that the net benefits to Canadian society from hydro-electric development in Northern Ontario would be large, and that the projects would be a "socially profitable" investment. However, these findings would need to be refined as more complete data on local social impacts and environmental consequences becomes available.

The second study (TASO Report No. 13; Muller and George 1985) refined the cost-benefit analysis to investigate the optimal expansion of Ontario Hydro, taking into account tha basic alternative generating modes of hydro-electricity, coal-fired and nuclear power. The conclusion was that new hydraulic development proposed for the Moose River Basin did yield economic rents to Ontario Hydro at start-up of $275 million (valued at $132 million in 1985), that development would be most profitable in the period 2000-2004, and that the opportunity cost of postponing the projects rose fairly rapidly over time. It was clear too that nuclear power (a good steady output source) and hydraulic generation (with good peak-period response) should be regarded as complements rather than as substitutes in Ontario's expansion plans. (Coal-fired generation is likely to be phased out as hydraulic and nuclear generation expands.) Finally, this study did not address any of the social costs which such developments imposed on other social groups, particularly Native peoples (except insofar as they were reflected in the financial costs borne by Ontario Hydro), and this was a distinct limitation of the analysis.

A third study on hydro-electric power (TASO Report No. 27; George and Van Schaik 1988) examined the factors influencing the choice of small-scale, hydro-electric generation in the electrification of remote Indian communities in Northern Ontario. The study concluded that small-scale hydro was a realistic, cost-effective solution to electricity-supply problems in many such communities compared with the most usual alternative, diesel generation, and was more likely to be compatible with the economic and social goals of Native peoples than large-scale projects, because of its minimal environmental damage.

The other major policy analysis undertaken as part of the TASO program was Andrew Muller's "back of the envelope" cost-benefit analysis of the GRAND Canal project (TASO Report No. 26; Muller 1988). This scheme calls for conversion of all or parts of James Bay into a freshwater lake which would accumulate run-off from northern rivers in Ontario and Quebec. The water would then be pumped south to the Great Lakes for consumption, export to the United States and stabilization of lake levels.

The specific problems posed by Muller, again cast in a benefit-cost framework, was whether this project would yield economic rents. Although estimated costs and benefits were crude, they provided rough order-of-magnitude estimates which led to the conclusion that the GRAND Canal scheme would not be economically viable. Estimated benefits were but a small fraction of estimated costs, even before identification and quantification of social costs, environmental costs and the opportunity cost of water itself. Indeed, the cost of delivering water to the Great Lakes was estimated to be in the order of \$145-\$300/Ml (1Ml = 1000m^3), far in excess of current costs of water delivery to markets surrounding the Great Lakes. The major problem confronting proponents of the GRAND Canal project, then, is that there is no identifiable market for water at the range of prices necessary to meet delivery costs. To reverse this assessment would require identification of a large potential market for exported water and a well-specified engineering plan to deliver water at costs far below those now contemplated.

New hydro-electric developments and redevelopment of existing sites are prominent in Ontario Hydro's latest expansion program (Ontario Hydro 1989). Indeed, further development of the Moose River Basin is once again part of Ontario Hydro's expansion agenda, and is soon to be the subject of environmental assessment hearings. Moreover, the GRAND Canal scheme continues to receive occasional attention at "think-tanks" and in the media, latterly as an adjunct of Phase Two of Quebec's James Bay project, notwithstanding the common fears of disastrous environmental consequences and the possibly huge economic losses associated with the project.

TASO's studies of regional economic history suggest that the economy of the James Bay Cree communities has adapted into a combination of traditional pursuits (hunting, trapping, fishing and fowling), government transfer payments and wage work, and that community and regional economic development is most likely to succeed through an understanding and extension of this locally evolving process.

The West Main Cree have adapted to European technology and institutions without cultural disintegration (TASO Report No. 25; George and Preston 1987). The Cree have readily made use of European "tools" (e.g., steel traps, guns, skidoos) which increased the efficiency of the trapline and the hunt. European institutions, such as the fur trade, government services, education and Christian religions, etc., have introduced even more profound changes into Cree society. Village residence has become the norm, and Cree life has become more complex, extending beyond the traditional emphasis on family, kin and hunting group to participation in a "political" structure which is perhaps the most pervasive European technological import of all.

"Going in Between" (George and Preston 1987) was a study of the place of work and wage employment within this changing Cree environment. The

social and cultural context of work is very significant to the Cree, and European insensitivities on this point have often led to their misunderstanding, historically, the Cree's cultural aversion to wage work. In the 20th century, this aversion has gradually been submerged by the North American industrial work ethic, and most Cree now are willing and indeed anxious to accept wage work. Indeed, as was shown in many submissions to the Ontario Royal Commission on the Northern Environment, the Cree want to see the local wage economy expanded and, at the same time, desire increased access to traditional resource-based activities to ensure cultural continuity. Wage employment, whether full-time or part-time, is necessary to enjoy higher levels of consumption and a better quality of life, and to accumulate funds to underwrite the expenses of hunting and trapping, even if only for short-term or recreational purposes. One of the most important challenges facing the Cree, and other aboriginal communities, is to identify economic and institutional mechanisms which will enhance the local delivery of these joint goals of increased wage employment and access to traditional pursuits.

TASO's work on community development has been exploratory to date, and its tentative conclusions (TASO Report No. 28; George 1989) pointed to the need for further detailed study, a need which has since become the focus of the second phase of the TASO project and is now underway. (See below.)

The basic challenge in community development is to identify and establish sound economic bases for Native communities. The sources of Native income and employment can be identified as the traditional-subsistence sector, the wage and proprietorial sectors, and welfare and transfer payments. The most important goal is to increase earned incomes as a share of total income. Cree wish to participate in the wage economy, even though they are aware of the costs of doing so (e.g., the conflict of traditional values with personal characteristics inculcated by the wage economy, the danger of separation from the community as a consequence of job mobility, the spiritual alienation from the land implied by some types of non-renewable resource extraction. The apparent trade-offs between lost traditional values and pursuits, and increased earned incomes and employment through wage labour are of great concern. The Cree will need to make informed choices about economic alternatives, both through greater skills acquisition, made possible by improved educational and training opportunities, and by the provision locally of a wider range of economic opportunities.

For many Cree communities, improving their economic viability is essential. There are formidable obstacles to the development of wage-employment opportunities, especially in profit-seeking enterprises (such obstacles include low skill levels, low levels of occupational and capital mobility, high input costs, low input availability, low market access). There is grow-

ing interest in promoting private individual-operated business as the focal point of local economic growth. But there are also strong arguments in favour of band development corporations as catalysts of local development; they fall mid-way between private enterprise and public-sector business in terms of performance objectives (e.g., profitability criterion) and, consequently, may be better situated to underwrite some of the costs of promoting complementarity between wage-income and traditional economic activities.

Whatever institutional form business opportunities take, the remote Native communities are concerned to promote increased economic opportunities and stability locally, and the paramaters of community development planning seem to be readily agreed upon: reduced external dependence and greater local control; greater access to and use of locally available resources; a preference for economic diversity and flexibility rather than a one-industry economic base; protection of Indian culture and traditional pursuits.

The practical issues involve questions of "import" substitution and reliance on "exports"—both defined for practical purposes as trading with southern Ontario—and of reliance on "outside" work—again defined as acting on employment opportunities requiring mid- and long-term absences from the community. Nevertheless, there is widespread acknowledgment that meaningful local employment will reduce out-migration, and that small-scale enterprises based on resource-intensive activities and complementary service-sector activities are likely to be the cornerstones of successful community development planning. Strong community leadership will be central to success (see TASO Report No. 20) and changes in the government regulatory framework, both provincially and federally, will likely be necessary to enhance Cree access to the resource base and to investment capital.

(ii) Socio-Cultural Research

This section emphasizes TASO's primary research on the contemporary population and quality of life in four communities in the Mushkegowuk region, ranging in population size from 100 to 2000 and our initial work on the main elements of continuity and change for the region as whole.

TASO Report No. 12 examined the history and contemporary (1983) situation of the hamlet at Moose River Crossing, a community of about 100 Native people who manage without leadership by a band council. This brief study illustrates the first steps in making a baseline profile. It is of particular value because it demonstrates the cultural basis of social organization of all the communities of the region, by emphasizing the importance of extended family kinship in giving a community its informal organization.

About one-third (37) of the people at Moose River Crossing belong to the Moose Factory Band, and another third is almost evenly split between the Albany (21) and Attawapiskat (19) Bands. But most households include descendants of one of the two founding families, and it is the ties of kinship that organize the clusters of the houses, the membership in trapping groups, and the strength of commitment within the community. One older couple comprises the only non-Native household. These factors are fundamental, and are found to underly the more complex social organization of each of the larger communities in the region.

The history and contemporary (1987) situation of the settlement of Peawanuck, newly created after the flood of Winisk, is outlined in TASO Report No. 30. Peawanuck is a community of about 200 Native people with leadership by a chief and council, and membership in a regional administrative council.

These families gathered gradually into a very loosely organized community as a response to the presence of a trading post (from 1901) and an Oblate mission (brief visits from 1900 and permanent residence since 1935) at the mouth of the Winisk River. In 1930 they signed into Treaty No. 9, complying at that time with the government requirement for an elected chief and two councillors (for a population of 85). This form of leadership is tenuous; in the 58 years of the elected chiefship era, there have been 14 elected chiefs.

The people continue to be organized by kinship and family ties and by coaster or inlander orientations; that is to say, families whose traditional ecological orientation has been riverine and coastal (and Cree in their cultural background), and families whose traditional ecological orientation has been inland (mostly descended from Ojibwa who migrated north in the 19th century). Both of these modes of organization are primary factors in the clustering of house sites at the new location at Peawanuck, and in the membership in hunting groups.

By comparison, the history and contemporary (1984) situation of the towns of Moosonee and Moose Factory, the two large, adjacent, complex settlements with quite different histories and contemporary organization, are considered in TASO Report No. 21. The population size is just under 2000 for each, and in each the population consists of fairly large proportions of status and non-status Native people, and of non-Native people, divided into long- and short-term residents.

The focus of this research was on the changing roles of women in domestic and wage work, and data were obtained from 330 women, both Native and non-Native, in five age categories (14-19, 20-29, 30-44, 45-59 and 60 and over). For each group, the report contains a section on childhood experience, formal education, marriage and household, geographical mobility,

work, and leisure and community activities, plus sections on residence, ethnicity and "stake in community." Over half the adult women were employed in 1983. The quantitative data and the statements of individual women show clearly that there have been many, and major, changes in both domestic and wage work during the past 50 years.

However, much of the information in the report refers to the whole population, and the main community institutions and organizations (more than 40) are described. This study gives a good start on understanding the social, ethnic, political, educational, economic, religious, recreational and residential complexity of the two communities. Many of these complexities are trends that may develop in the other Cree communities in the coming years.

Main trends or types of change in the 20th century on the west coast of James Bay (Preston 1986) include: gradually moving the locus of "home" from the bush into town, near the mission and store; getting accustomed to the constraints and opportunities of town life; taking more of a role in a Christian church; learning and using English; learning and using new social categories, such as status and non-status Indians; and learning and using new political strategies, such as negotiation with government agents. We have only very preliminary studies of some of these trends, but for a few we have done more detailed research.

For example, as mentioned above, we have studied the process of economic change in an assessment of the economic strategy of "going in between" a capitalist economy and a hunting-gathering economy (TASO Report No. 25; George and Preston 1987). We found cultural continuity in the strategies with which the Cree adapted to environmental changes for traditional hunting and trapping. Such adaptations have included the technology and bargaining of the fur trade, 20th-century technology and institutions, including wage work alternatives to the annual cycle of getting a living in the bush, and both federally-administered social services and transfer payments and Native-administered services and payments. For many Cree, making a living is something they do in the community, and the bush is now a place where they go in order to touch base with their heritage. For others the bush is still their contemporary hunting and trapping grounds. For all, the economics of life is worked out by "going in between" the old ways and white peoples' ways.

A second type of change of which we have some knowledge is the role of leadership in making responses to developments in the James Bay region. We find that leadership has evolved through several stages. Initially, leadership was provided by the colonial white "bosses" (traders, missionaries) at the trading posts, whereas in the bush a more informal, traditional leadership role was exercised by experienced and competent Cree males. Then, in the early years of this century, the federal model of elected chiefs and coun-

cils was added, shifting in the 1960s and 1970s to young bilingual chiefs whose residential school experience provided them with more than reading, writing and arithmetic. (They grew up in a school system that, without intending to, allowed the young people to develop skills in figuring out how to "negotiate the system." They could then develop these skills as cultural brokers [TASO Report No. 4], which helped them to displace the colonial-style white leaders.) In the 1980s, these young men have grown older and more adapted to their tasks, becoming more experienced and sophisticated bureaucrats, more confident of their independence from local whites, and better able to play the strategies and secure the resources available from within the system of provincial and federal government agencies (TASO Report No. 20).

A third change is the religious movements in the history of the west coast of James Bay, including the prophetic movement led by Wasitay and Abishabis in the 1840s, reaching from Severn to Moose, with hymns and prayers written on small boards or birch bark in syllabics (Preston 1988). This prepared the way for the setting up of missions; for example, we have made a study of Catholicism at Attawapiskat, where a permanent mission was set up in 1905 and where most people became part of a congregation, replaced the old hunting songs with Catholic hymns and learned Cree syllabics to the extent of fair literacy (Preston 1987).

Some Reflections

The first phase of the TASO research program has been a conspicuous success when measured by the customary standards of academic research – research grants awarded, conference presentations, refereed and non-refereed publications.[3] By some other measures, however, the program failed to accomplish all of its objectives. Foremost among these unmet goals was the challenge of integrating the research activities and results of the separate environmental science, socio-cultural and economic research groups. In particular, the environmental scientists found many more common links among the biological, climatological and hydrological research programs than with the work of the social scientists, and vice versa. Among the social scientists, most progress was made in developing a close working relationship, and ultimate consensus on a common research focus on Cree community development and future viability. Even this growing consensus among the social scientists was accompanied by the realization that the first phase of the program had left undone a great deal of important social scientific research, especially in terms of the detailed study of the social and economic determinants of Cree community development.

TASO's Future Agenda

Future environmental science research by members of TASO will likely be much broader in its geographic focus. The growing concern for global climate warming and the "Greenhouse" effect is directing climatological and hydrological research interest away from a narrow focus on James Bay and the James Bay Lowlands, to Hudson Bay and beyond to the Canadian Arctic, and, indeed, to the circumpolar Arctic. Their research on climate modification will continue to be important for plant and animal ecological research and will be relevant to a wide range of northern activities, including hunting and fishing, ocean, river, and overland travel, water supplies, fuel supplies, building materials and so forth.

The geographic concentration on the James Bay Lowlands and its Cree communities remains fundamental to the social scientific aspects of the TASO research program, however. We are now entering a new phase in which the socio-cultural and economic determinants of sustainable community development in the Cree villages of the Mushkegowuk Tribal Council area will be the focus of research.[4] Our research group will study and analyze the baseline characteristics of Cree communities, the obstacles to their development, including governmental regulatory restrictions that curb economic initiatives among Native peoples, and investigate some possible solutions to improve the future viability of such communities. Using a series of community workshops, videos and research reports, the group will help the Cree to identify economic and institutional mechanisms that will enhance the local delivery of the joint goals of greater wage employment opportunities and increased, more secure access to the natural resource base and traditional pursuits.

Regional Economic Development Prospects

Economic prospects are decidedly unfavourable now for remote communities in Northern Ontario. The primary resource-based industries will likely be slow-growing sectors of the Ontario economy for the next several years. Indeed, the more rapid economic growth of the Southern Ontario economy may well attract more migration from Indian communities in the north.

Nevertheless, Native economic development in Northern Ontario is an important public policy issue. In our view, community mobilization is the crucial first step in local development, whether attention is directed to traditional non-wage pursuits at one extreme or to affiliation with the Euro-Canadian wage economy at the other. Economic viability based on local resources and production for local markets will not come easily. High transport and distribution costs, high fuel costs, seasonality and other limitations pose serious obstacles to the stability and scope of local economic opportunity.

There is a distinct need to develop and expand the economic base of Native communities with due regard for their social and cultural priorities in order to better support Indian populations. Small-scale enterprises, compatible with renewable resource use and with traditional Indian culture, are one component in this development strategy. Tourism and outfitting was singled out by the Ontario Royal Commission on the Northern Environment as a priority. Moreover, some non-renewable resource industries under enlightened management (or under joint corporate-Band management) have been supportive of Indian social and cultural priorities. Examples from the Northwest Territories and the Prairie Provinces suggest that, with long-distance commuting and suitable rotational work schedules, the compatibility of non-renewable resource extraction and the continued identification of Native wage-workers with remote reserve communities and traditional ways may be greater than was once believed. Such innovative work arrangements have been slower to develop in Ontario, however. Whatever the alternative, it is important that Band Councils in remote communities stress flexibility and diversity of income and employment in developing local resources, and acknowledge the contribution of traditional economic activity to the stability of community income and employment.

James Bay in the 1990s

The solutions to the immense challenges facing these communities are difficult to conceive. Where does TASO fit? The focus of TASO's current research program is to identify both the general processes and the specific practical steps contributing to community-directed economic development in the Cree villages of the Mushkegowuk Council, and to provide the informational basis for economic choices that may be made at the local level.[5] If such choices are to be realistic, the information will have to be appropriate in form and content for a Cree clientele, workable in terms of economic costs and benefits, and responsive to the resources and constraints of the subarctic environment. We propose, then, to provide background information on changes in traditional economic pursuits, to draw on this information to suggest alternative choices and practical strategies for development, and to make projections regarding the costs and benefits of these strategies.

In June 1989, the authors made a presentation of our proposal to a meeting of the Mushkegowuk Council and received their endorsement of our project. Three principal components of the project correspond to the three main categories of economic activities – traditional pursuits, new resource-based activities and locally administered services.

(i) Traditional Pursuits

Basic studies will be undertaken of land occupancy and use over the past 100 years, showing patterns of continuity and change, and relating these changes to the increasing influence of government programs such as medical services, family allowance and welfare payments, schooling, housing, and employment projects. Local-level management of resources will be a primary focus of our inquiry, involving several related themes: the study of traditional and neo-traditional leadership systems in the utilization of game populations, in particular the role of trapping territory leaders and the institution of hunter-trapper associations; an examination of whether these institutions may have a role in economic development planning; the study of the feasibility of co-management of local resources—that is, the sharing of management responsibilities between local Cree institutions and the Ontario Ministry of Natural Resources; an examination of the local Native land ethic, stewardship principles and hunting rules, in order better to understand how compatible they are with an integrated management or co-management of the region's resources.

The land-use studies will provide the historical basis to interpret present patterns of resource use and social organization, just as our studies of land stewardship will help determine the capacity of Native leadership institutions for community development planning and the conditions under which community-based resource management can be expected to work.

(ii) New Resource-Based Economic Activities

This research will require: an examination of the contemporary employment patterns and trends and economic institutions among Cree First Nations; the identification and analysis of resource-based industrial and service-sector opportunities, including mining, hydro-electricity and tourism; the study of the impact of the existing regulatory environment on Cree economic behaviour, and the identification of changes in the regulatory framework necessary to improve entrepreneurial and investment potential among the Cree.

The fundamental challenge is to identify ways in which the Cree can lower the risks of investment and increase the gains from productive economic activity, especially through increased and more secure access to the resource base. Appropriate adjustments in the regulatory framework may facilitate the redirection of traditional Cree rent-seeking behaviour to the exploitation of new resource-intensive and complementary service-sector activities.

(iii) Locally Administered Services

Impending decentralization and the announcement of the federal government's Aboriginal Economic Development Strategy make local services a critical part of the project. Our investigations will include: studying the op-

portunities and risks associated with the devolution of functions performed by Indian and Northern Affairs Canada, Health and Welfare Canada, and other relevant ministries, and with increased provincial government support for more locally administered services and revenues; and identifying ways in which this decentralization will give communities increased ability to identify and relate local needs and development opportunities to external sources of capital, skills and markets. Locally administered services are likely to offer significant employment creation in remote Indian communities, and to give these communities greater control over development initiatives. At present, without adequate preparation, bands run the risk of being charged with taking on the administration of economically weak programs currently being managed or advanced by the federal government. Their assumption of these responsibilities should be predicated on definitive analysis of existing community economic bases and identification of sound economic developmental opportunities. Our study will build, in part, on earlier research on changing styles of Cree leadership and the role of leadership in responding to developments in the James Bay region.

In effect, by aiming to conserve and utilize renewable resources while investigating resource-based industries and local services, the TASO project seeks to operationalize a kind of "mixed" economy or "sustainable" development discussed in Canada at least since the Mackenzie Valley Pipeline Inquiry. The project is ultimately focussed on the ways in which Cree culture and social values can inform formal economic analysis, help identify and mobilize support for "profitable," culturally compatible, economic activities, and thereby increase the economic viability of remote Cree communities. In our view, not only will improving the economic viability of these communities contribute to greater Cree employment and wage income, but it will also help to promote Cree goals of increased cultural autonomy and self-determination.

Summary and Conclusions

The Indians of Northern Ontario are wrestling with complex issues of community development strategy and resource mobilization. Development tied to non-renewable resources runs the risk of increased dependency on the south. Growth based on the renewable resource base alone risks a low-income equilibrium. In either case, the future vitality of remote reserve community life depends on careful articulation and monitoring of the relationship between wage employment and traditional economic pursuits, and the development of a culturally appropriate institutional framework for community economic planning.

The TASO project directly addresses these important public policy issues. We hope that our findings will prove useful for the Mushkegowuk Council and its constituent First Nations (Peawanuk, Attawapiskat, Kashechewan, Fort Albany, Moose Factory, Mocreebec, Moosonee and New Post) in their attempts to improve community economic viability and to increase community and regional independence. We hope too that our methods and results will contribute to solving some of the persistent economic challenges facing other aboriginal communities in Canada and elsewhere in the world. Admittedly, these are ambitious, perhaps even immodest goals for TASO.

Ultimately, in northern research, the research findings of social scientists and the results of environmental science are linked together through the interaction effects of environmental, social and economic changes on northern populations and communities. Our interdisciplinary cooperation in TASO to date has been a productive, useful, learning experience for us all and has increased our respective sensitivities to the challenges of research in fields significantly different from each other's.

There is much to be gained from close collaboration in interdisciplinary research, and the longstanding working relationships developed in Phase One of the TASO research program give us confidence that future joint research efforts are practicable and desirable. Clearly, the growing sense of public concern, indeed urgency, about global climate change and its environmental, social and economic repercussions can only heighten the appreciation of interdisciplinary research programs of the kind TASO represents. On a more cautious note, we are very much aware that cases of successful interdisciplinary and multidisciplinary research collaboration between social and physical scientists are rare. Our essential optimism, tempered as it must be by our mixed experiences in Phase One and our knowledge of other interdisciplinary research failures, is conditioned by appropriate doses of healthy scepticism and pragmatic realism. It is a large task, and a vitally important task, that TASO has assumed, and we can only hope we are equal to it. The future life-choices of people in many remote Cree communities in Northern Ontario may well depend on our results.

Notes

1. The authors are, respectively, Professor of Economics and Professor of Anthropology, and principal investigators in the Research Program for Technology Assessment in Subarctic Ontario (TASO), at McMaster University, Hamilton, Ontario, Canada, L8S 4M4. An earlier version of this paper was presented to the Department of Anthropology's faculty-student seminar at Wilfrid Laurier University, March 1990.
2. The six principal investigators in the first phase of the TASO program were: K.A. Kershaw (Biology), M.K. Woo and W.R. Rouse (Geography), P.J. George and R.A. Muller (Economics), and R.J. Preston (Anthropology); Preston was also Director of

TASO. Both the significant achievements and some of the unfullfilled expectations of TASO's first phase are summarized in George and Preston 1989.

3. By the end of Phase One, TASO research had resulted in 31 TASO research reports, more than 40 research publications and five graduate and undergraduate theses, all completed with the aid of more than $800 000 in research grants. See George and Preston 1989 for details.
4. Phase Two of TASO's social-scientific research is entitled "Culturally Appropriate Economic Strategies for Locally and Regionally Directed Community Development: The Mushkegowuk Region, James Bay, Ontario," and is being funded by SSHRCC in the amount of $223 625 during 1990-93.
5. Multi-Band groupings such as Tribal Councils may be able to overcome some of the deficiencies of small scale associated with economic decision-making by single Bands. The larger groupings, for example, can better afford to have a permanent staff of economic planning and policy advisors to facilitate the acquisition of specialized knowledge by staff persons, and to hire requisite consulting expertise as needed (Cassidy and Bish 1989).

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1988 James Bay Syncretism, Persistence and Replacement. *In* Papers from the Nineteenth Algonquian Conference, edited by W. Cowan, pp. 147-156. Ottawa: Carleton University Press.

Appendix: TASO Research Reports

1. *Evaluating the Environmental Impact of Hydroelectric Development in Northern Ontario: A Preliminary Report.* By R.A. Muller and P.J. George. September 1982, 50 pp.
2. *Prediction of Annual Floods in Northern Ontario Basins.* By Ming-ko Woo and Peter Waylen. January 1983, 15 pp., figures.
3. (Out of print. Superceded by TASO Reports Nos. 16 and 17.)
4. *Algonquian People and Energy Development in the Subarctic.* By Richard J. Preston. June 1983, 25 pp.
5. *The Royal Commission on the Northern Environment: Preliminary Hearings, Submissions, and the Interim Report, 1977-78.* By Jennifer M. Blythe. August 1983, 48 pp.
6. *Optimal Expansion of Hydroelectric Capacity in Northern Ontario.* By R.A. Muller and P.J. George. August 1983, 37 pp.
7. *A Survey of Social Impact Assessment: Theory and Practice.* Vol. 1: *Public Policy and the SIA Process.* By Peggy Martin Brizinski. October 1983, 56 pp.
8. *A Survey of Social Impact Assessment: Theory and Practice.* Vol. 2: *Baseline Profiling.* By Peggy Martin Brizinski. October 1983, 58 pp.
9. *A Survey of Social Impact Assessment: Theory and Practice.* Vol. 3: *Projection, Assessment and Evaluation.* By Peggy Martin Brizinski. October 1983, 65 pp.
10. *A Survey of Social Impact Assessment: Theory and Practice.* Vol. 4: *Social Impact Assessment in the Canadian Northlands: An Introductory Appraisal.* By Peggy Martin Brizinski. September 1983, 99 pp.
11. *A Survey of Social Impact Assessment: Theory and Practice.* Vol. 5: *Bibliography.* By Peggy Martin Brizinski. September 1983, 27 pp.
12. *Moose River, an Unorganized Community in Northeastern Ontario: A Preliminary Report.* By Jennifer M. Blythe. November 1983, 27 pp.
13. *Northern Hydroelectric Development in an Optimal Expansion Program for Ontario Hydro.* By R.A. Muller and P.J. George. April 1984, 33 pp.

14. *Modification of Streamflow Regime by Regulation in Northern Ontario Basins.* By Peter Waylen, Ming-ko Woo and Anne Paterson. August 1984, 41 pp., figures, tables.
15. *The Royal Commission on the Northern Environment: Main Hearings.* By Jennifer M. Blythe. November 1984, 57 pp.
16. *Large-Scale Indicators of the Impact of Hudson and James Bays on Climate in the Hudson Bay Lowlands.* By Richard L. Bello and Wayne R. Rouse. April 1985, 24 pp.
17. *The Potential for Climatic Modification in the Hudson Bay Lowlands through the Influence of the Ocean on the Energy Balance.* By Wayne R. Rouse and Richard L. Bello. May 1985, 27 pp., figures.
18. *Vegetational Analysis of Southern James Bay.* By Kern Ewing and Kenneth A. Kershaw. May 1985, 44 pp., tables, figures, appendices.
19. *Simulation of Snow Depth in the Forest.* By Ming-ko Woo and Peter Steer. May 1985, 13 pp.
20. *Recent Developments in Eastern Cree Leadership.* By Richard J. Preston. May 1985, 18 pp.
21. *I was Never Idle: Women and Work: Moosonee and Moose Factory, Ontario.* By Jennifer M. Blythe, Peggy M. Brizinski and Sarah C. Preston. June 1985, 226 pp.
22. *FORUM: The James Bay and Northern Quebec Agreement, Ten Years After.* Montreal, November 14-15, 1985. By Richard J. Preston. December 1985, 26 pp.
23. *Probability Distribution of Low Flows in the Arctic Watershed of Northern Ontario.* By Peter Waylen. March 1986, 32 pp.
24. *The Physical Environment of James Bay and a Preliminary Assessment of Environmental Impacts.* By Steven G. Hardill. July 1986, 50 pp.
25. *"Going in Between": The Impact of European Technology on the Work Patterns of the West Main Cree of Northern Ontario.* By Peter J. George and Richard J. Preston. September 1986, 25 pp.
26. *Some Economics of the Grand Canal.* By R. Andrew Muller. October 1986, 28 pp.
27. *Small-Scale Hydro Development: An Answer to the Energy Needs of Remote Communities in Northern Ontario.* By Peter J. George and David Van Schaik. November 1986, 20 pp.
28. *Native Peoples and Economic Development: Prospects for the Cree and Ojibway Indians of Northern Ontario.* By Peter J. George. September 1987, 31 pp.
29. *Snowmelt and Breakup of Small Rivers along the Southern James Bay Coast.* By Richard Heron, Ming-ko Woo and Peter Steer. January 1988, 34 pp.
30. *The Weenusk Cree: A Preliminary Background Report of Locals, Locations and Relocations.* By Janice E. Graham. March 1988, 58 pp.
31. *TASO Retrospective: An Assessment of the First Phase of the TASO Research Program, 1982-88.* Edited by Peter George and Dick Preston. April 1989, 72 pp.

Note: TASO Research Reports are available at a modest price upon request from Dr. Richard J. Preston, Department of Anthropology, McMaster University, CNH-535, Hamilton, Ontario L8S 4M4.