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THE HOUSEHOLD AS AN ECONOMIC UNIT IN ARCTIC ABORIGINAL COMMUNITIES, AND ITS MEASUREMENT BY MEANS OF A COMPREHENSIVE SURVEY

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ABSTRACT. Northern aboriginal communities are widely recognized as having mixed, subsistence-based economies. The chief characteristic of this economy, aside from the contribution of subsistence harvesting and related activities to household well-being, is that the household operates as a "micro-enterprise" that is the basic unit of production as well as consumption. This economic form has persisted into the present day, contrary to the predictions of many social scientists and policy-makers. This paper outlines a model of the household in mixed, subsistence-based economies, and describes its characteristics and activities. While the discussion focuses on northern Canada, the model is thought to apply generally in the circumpolar North. Quantitative measurement of northern aboriginal household characteristics and activities has been limited, however, because national and regional data collection systems are not designed specifically to capture these phenomena. The model is therefore based primarily on the results of in-depth case studies, and the systematic measurement of subsistence harvesting. This paper describes the development, for the first time, of a questionnaire specifically designed to document quantitatively the key characteristics of the household economy as part of a comprehensive survey of living conditions in the circumpolar Arctic.

Northern aboriginal communities are now widely recognized as having mixed, *subsistence-based* economies in which the harvesting of country food for primarily domestic consumption plays a significant role in their economies and cultures. Less well understood is how these economies work at the micro-economic or household level. Yet an accurate understanding of how households function is essential for the development of appropriate economic and social policies and programs as they apply to households in small, northern communities. We show, by means of a descriptive model, how the household operates as a "micro-enterprise", a locus of production as

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well as consumption in the context of the mixed, subsistence-based economy.

The first part of this paper provides a brief description of the mixed, subsistence-based economy in the North, how the household functions as the key socio-economic unit in that economy, the development of appropriate measures of activities and flows in this economy and of indicators of well-being, and the contemporary policy applications of the model and its calibration. The second part of the paper describes the development of a post-censal household survey of household and harvesting activities in northern Canada that is based directly on the household model described in part 1.

1. THE CONTEMPORARY MIXED, SUBSISTENCE-BASED ECONOMY

The post-World War II period was one of rapid change in the Canadian North. Cold war defence activity, and major resource developments aided by both public and private investment in transport, energy, and town infrastructure, led to profound macro-economic change. A wage economy based on mining, construction, and transport, and centred in the new resource and administrative towns, accounted for economic growth, while the fur trade, which had been the economic mainstay of the small communities, went into decline.

It was postulated by social scientists, and assumed by policy makers, that hunting and its associated ways of life would disappear as commercial production and wage employment became prevalent in northern and isolated areas (viz. Murphy and Steward, 1956; Robertson, 1961; Graburn, 1969). A "dual economy" might persist for a while, in which modern economic development might coexist with subsistence village economies in separate enclaves, but it was widely predicted that people would move from their camps and villages to sites of industrial wage labour (which would arise at major resource development sites or planned development nodes). Emigration from the traditional economy (which would simply wither away) to the new economy would thus be the key route to modernization and acculturation. Economic and

social development policies were devoted largely to facilitating this process, through the sedentarization of the aboriginal population in "modern" communities with appropriate housing and infrastructure, and the promotion of education and employment similar to those of the settled and industrialized parts of Canada.[1]

The predictions and assumptions that prevailed in policy-making circles from the 1950s to the 1970s did not prove true, however, and indeed were actively resisted by aboriginal northerners. What emerged or persisted instead, in aboriginal communities all across the North,[2] was a mixed, subsistence-based economy that integrates two spheres of activity, institutions, and practices: market and subsistence. This has been documented by numerous studies in recent decades,[3] on the basis of which it is possible to make certain generalizations about the mixed, subsistence-based economy and the role of the household in it.

Although wage employment and the market system are now quite familiar to northern aboriginal communities, there continues to be a substantial level of economic activity that takes place outside of the market sphere. These spheres are brought together, not simply side by side in a class-divided village, but directly within the household. The household is the basic unit of both production and consumption, in contrast to industrial economies in which, typically, firms produce and households consume. Apparently most households effectively integrate hunting and gathering (or "harvesting") with wage labour and commercial production.[4] Thus harvesting, or the so-called "traditional economy" has not disappeared in the face of modernization. The norm is that, unless there has been some major and persistent form of harvest disruption (see below), subsistence has evolved and survived, as people have integrated it with market activities in their daily lives. The economies of these communities are underpinned by distinctive social and property relations which are neither "traditionally" aboriginal nor like those prevailing in adjacent non-aboriginal communities.

Thus, *subsistence activity* does not constitute a separate and distinct economy in northern communities, but is combined, at the individual, the household, and the village level with wage labour and transfer payments. People move between subsistence and market activities, depending on opportunities and preference. Subsistence

in a mixed economy thus acts like a sponge, absorbing labour when other opportunities decline, and releasing it when they arise. Measures of the health and viability of the contemporary subsistence system should therefore include its absorptive capacity and resilience.

Considering the period since 1950, it may be said in general that commodity production (e.g. fur trapping, crafts) has declined, and wage income has become the chief source of cash for most households. The successful harvesting household is often also the successful wage-earning household, as this cash income is used for purchasing harvesting equipment, and especially fast means of transport. This is the key means of resolving the time allocation problem, mainly for men, between wage work and harvesting. There has also been increasing specialization among households, so that some harvest far more than their own needs and share or exchange the surplus. As people have access to a greater diversity of store-bought foods, there is less urgency to harvesting, and this is probably also a key means of resolving the time allocation problem, mainly for women, between wage work and such activities as butchering, hide preparation, and making clothing, although this has been less well documented. Per capita consumption rates of country food are probably in decline (although in most places, still very substantial).[5] This in turn reduces the pressure on local carrying capacity, and the same resource base can sustain a larger population without stress. So long as harvest disruption does not occur, wage employment does not normally displace harvesting, and people have greater choice about their activities and their diet.

Economic and social relations among households in a community are guided by kinship principles, which are the primary determinant of access to resources and the organization of labour for productive activities, as well as of the distribution of goods and services for consumption. Kinship is reinforced in the short term, and reproduced over generations, by the sharing of work, the learning of skills and values in the course of production, the distribution of goods and services, and the organization of consumption.

The rules and principles of kinship guide the formation of the temporary supra-household economic units or task groups such as partnerships, crews, or camps. At the societal level, institutional

arrangements of property, tenure, and resource control are effected through the kinship system. Thus the basic economic institution is the household, but these are connected by kin ties to other households in extended families (or other social institutions such as clans), and in co-residential groups such as camps and villages (geographical units) which may also include non-kin. These supra-household groups may also constitute systems of political authority, however the model we present here deals only with *economic* organization and allocation.

Subsistence is a distinctive socio-economic system not simply by virtue of the particular set of resources on which it relies, or even the particular activities and practices by which those resources are transformed into useful things. It is distinctive because of the primacy of kinship in the economy, and particularly as the structure through which even today subsistence is financed and conducted (Wenzel, 2000). It is this feature perhaps above all that sets it apart from essentially market-based systems in which production and exchange can occur in the absence of social ties, and in which price and accumulation are predominant considerations (Langdon, 1986; Searles, 1998).

In market societies, personal well-being is often conceived as the ability to procure commodities, and few goods and services remain outside the market. This leads to a more individualized view of well-being. In subsistence-based societies, in contrast, security and well-being tend to be more associated with system maintenance than individual gain. Security and well-being are achieved through cooperative production, wide distribution, and mutual aid, each organized by kinship. This is celebrated, consolidated, reinforced, and reproduced by sharing, feasting, ritual observance, and associated ethical norms. There is much incentive to maintain the system, little to disrupt it. Hence subsistence-based societies tend toward conservatism, valuing and promoting system stability over individual accumulation.

In subsistence-based systems, the ends of economic activity tend to be inseparable from the social system, and are more likely to be the maintenance of the system of social relations rather than accumulation at the level of enterprise. Not only is there a distinctive system of social organization of production, but also of property

relations, not least with respect to land tenure, land use, and resource management. Nonetheless, subsistence activities are economically "rational" (i.e. operate according to principles of efficiency and utility), in the sense that on average, outputs exceed inputs over each production cycle (Usher, 1971; Wolfe, 1986; Wenzel, 1991). Subsistence is not merely recreation or a "lifestyle choice" simply because it operates largely outside of the market.

Both subsistence activities and subsistence outputs are essential for the maintenance of the social system. Through both production and distribution, norms and virtues such as patience, sharing, and mutual aid are reinforced and reproduced. Subsistence must therefore be understood as a system of human relations involving the organization of production, distribution, and consumption, in which the reproduction of social relations is as much a concern as the production of material goods.

2. THE HOUSEHOLD AS THE BASIC ECONOMIC UNIT

The household is the basic socio-economic unit in the mixed, subsistence-based economy. This is the unit that must be characterized and modeled to enable meaningful economic measurement. In this economy there are neither families as pure consuming units, maximizing their utility, nor firms as producing units maximizing their profits. Production and consumption are combined in the one basic unit, the household, which functions as a micro-enterprise, except that instead of maximizing profits and accumulation, it minimizes costs (or maximizes efficiency), in order to maximize utility.

Figure 1 indicates how the household works as a micro-enterprise in organizing productive activity and allocating the factors of production (land, labour, capital) so as to optimize income flows from both the market (public and private sectors) and subsistence spheres of the economy.

These income flows take four chief forms. Cash income accrues primarily from wage employment (which may be regular, seasonal, or casual), the sale of commodities (such as furs, fish, or crafts), or transfer payments (such as old age or disability pensions, unemployment insurance, or social assistance). Income in kind accrues from

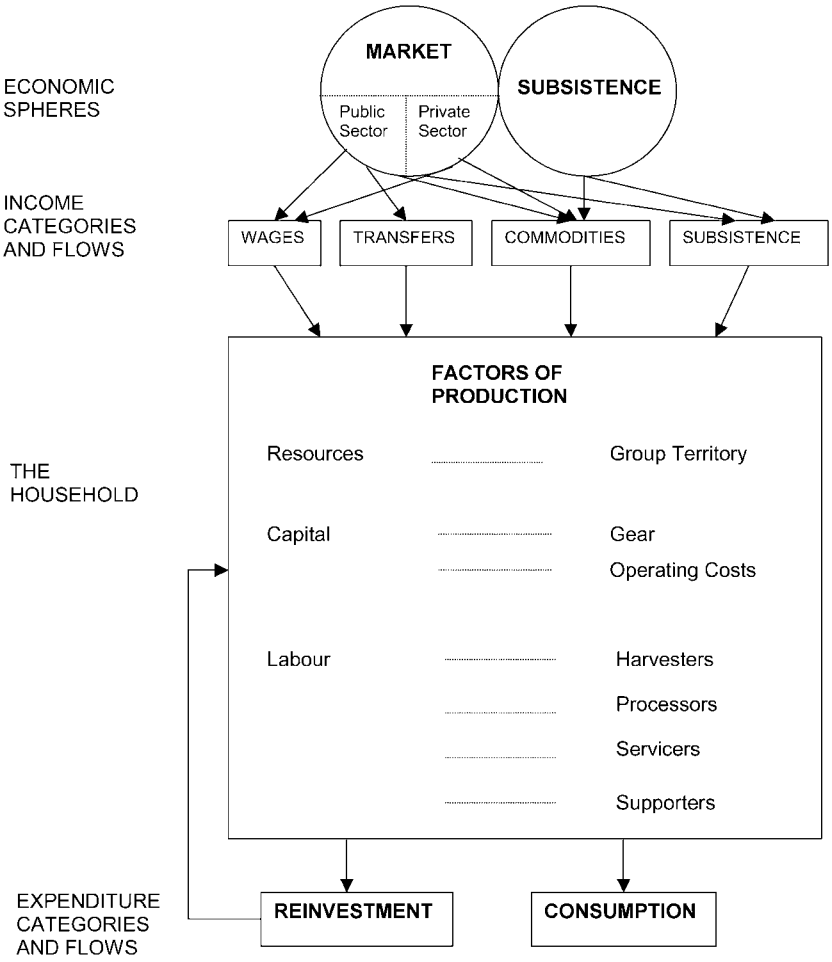

Figure 1. The household in a mixed subsistence-based economy. The direction of flow indicates the path of income (cash and in-kind) from the major sectors of the economy via income categories to the household. The household factors of production are indicated in the "household" box (source: Usher and Weinstein, 1991: 12).

subsistence production (the harvesting of country food, firewood, or other materials for household and community use).

In order to obtain these sources of income, the household utilizes and organizes the factors of production available to it as much according to principles of kinship and alliance as those of the market, perhaps especially with respect to the allocation of land and labour. The household's factors of production are:

Land. Land, in the context of northern aboriginal communities, means the territory (both land and water) traditionally and currently used and occupied by the members of that community. Traditionally, these territories were held in common and access by individuals and households occurred under local property rules. Under modern land claims agreements in Canada, these territories consist of large areas to which every beneficiary has priority or exclusive rights of access to certain resources. However, access to specific places for harvesting continues to occur under traditional rules. Land is free to those entitled to access: households do not have to purchase land, or pay rent or fees for it. Their material well-being is thus enhanced by this avoided cost. By the same token, however, land is not a marketable asset of households, because they do not possess land in individual freehold tenure (and the household as a micro-enterprise has no market value).

Labour. Labour consists of the skills, knowledge, and capacities of the various members of the household, who at various times may act as wage earners, harvesters, and commodity producers, or provide unpaid household services such as butchering, skinning, food preparation, mechanical repairs, making clothes and equipment, child and elder care, and the like. Some of these unpaid services are internal to household maintenance and reproduction, others provide material support to harvesters and commodity producers. Subsistence and commodity production thus depend not only on harvesters themselves, but also on those who process the catch, those who provide direct services, and those who provide financial support.

Household members may engage in several of these activities, both in the long term as their skills and roles evolve, and in the short term (seasonally or even daily), as opportunity arises or necessity dictates. Given the diversity of activities in which a household engages, its members must have a diversity of knowledge and skills. Some are gained through mainstream public education and training, some (in the form of "traditional knowledge") are gained through participating in subsistence activities and the passing of knowledge from one generation to another within the household and community. Both forms of education are essential for the successful household in a mixed, subsistence-based economy.

Capital. Household capital consists primarily of the productive equipment required for harvesting and household production: snowmobiles, all-terrain vehicles, trucks (and formerly, dog teams), boats, motors, firearms, fishnets, camping equipment, sewing machines, and the like.

The household is an enterprise whose assets include the indivisible share of aboriginal lands as a factor of production, and the actual means of production (capital equipment). To the extent that the capacity and yield of the land are reduced, or the costs of operating on the land are increased, the "profits" or surplus of the enterprise may be diminished in the sense that both efficiency of and returns on the investment of capital and the deployment of labour are decreased. The effect is either diminished production or greater investment of time or capital in order to maintain the level of production.

To summarize, *Land* (resources) is the basis of all productive activity in a subsistence system. It is the critical asset to which all producing units (households) must have access. *Labour* is organized to produce goods for sale and for home consumption from the land, and where possible to earn income from the sale of labour (wages). Individual members of the household can earn, or become eligible for, cash from various sources such as wages, commodity sales, or transfer payments. Some household labour is also directed to unpaid tasks of maintenance and reproduction, without which the household could not survive and function effectively as an economic unit. As Figure 1 indicates, the household consumes only part of the income it receives, as it invests some of it in *Capital*, for the purposes of both subsistence and commodity production. This investment is directed to both capital assets, and to ongoing operating and maintenance costs such as gasoline, ammunition, repairs, and parts.

Although the categories of land, labour, and capital are those of neoclassical economics, they are appropriate for modeling the mixed, subsistence-based economies typical of recent decades. Even where these village economies have in some respects been poorly integrated to the wider market economy, the links were sufficient that the neoclassical paradigm applies with respect to matters of economic decision-making. Trade links were well established

during the period. Market rather than administered prices were clearly established for basic consumer goods, as well for those producer goods for which there was a market (furs, fish, handicrafts). Wage labour was at least sometimes available as were, increasingly, transfer payments.

Consequently, people could make choices about production and consumption, and there is evidence that they did so on what would be recognized as an economic basis today (viz. Brown and Burch: 204). Individuals who operate in both the market and subsistence spheres must use some form of common measurement of opportunities and values because they are frequently calculating the returns on both cash and non-cash earning activities so as to maximize efficiency or minimize costs (Smith, 1991: 358–361).

We have focused on the household as the primary unit of activity, in order to illustrate how it functions as a producing as well as consuming economic unit, but this is not a complete picture. Aboriginal communities typically maintain inter- or supra-household links, through which distribution and exchange of labour, information, and produce (especially food) occur. Distribution and exchange take a variety of forms, which need not be specified in detail here except to observe that they can occur directly between individual households, or through some supra-household mechanism such as a community elder or leader who channels these flows, or through generalized reciprocity and mutual aid among several households. Extensive sharing and exchange mechanisms exist in subsistence economies in part at least because some households are more successful than others. In such economies, however, successful households do not accumulate wealth for their own private use, they share their produce (or a large part of it) with other households. These "superhouseholds" (viz. Wolfe, 1987) are essential to the well-being of the community as a whole, precisely because they distribute their excess production widely through the kinship system.

To review, the key innovative features of this otherwise classical model of the household that take account of the critical realities of mixed, subsistence-based village economies are:

1. The local economy consists of both market and subsistence spheres, and many if not most households are oriented to both of these spheres, not exclusively to one or the other.
2. Income flows to households from both of these spheres in the form of wages, commodity production, and transfers (cash income), and of subsistence (income in kind).
3. The household deploys the factors of production available to it (land, labour, capital) so as to capture these sources of income, in a flexible manner.
4. Household success requires successful integration of market activities, subsistence production, and household reproduction. The model explicitly rejects the assumption that those without paid jobs are "unemployed" and hence make no productive contribution to economic well-being.
5. Individuals maximize their ability to provide for their households not necessarily by having a single skill, occupation, or job, but several. Nor is it appropriate to assume that individuals derive their livelihood from any single sector of the regional economy.
6. There is substantial cooperation and sharing among households, generally along lines of kinship, to optimize these flows of income and to ensure a general distribution of benefits.
7. Most importantly, because there are not two separate economies, people do not choose between living in a "traditional" economy or "modern" economy, nor are they in transition between the two. The modern economy in northern communities is in fact a mixed, subsistence-based economy.

In the conventional economic model, the regional economy is made up of firms that produce, and households that consume. In this model, the regional economy also includes households that both produce and consume. The household, by virtue of its economic organization and functioning, also develops and reinforces social ties and bonds, and cultural norms, that are part of the explanation of why people choose to live where they do. In isolated aboriginal communities, where conventional private sector activity has been, and generally still is, very limited, the household is the essential socio-economic unit of production. Historically, in such communities there were neither families as pure consuming units,

maximizing their utility, nor firms as producing units maximizing their profits. Production and consumption were combined in the one key unit, the household, which functioned as a micro-enterprise, except that instead of maximizing profits, it minimized costs, in order to maximize utility.[6]

3. WHY A NEW MODEL?

As the notion of "development" came to dominate the purpose and objectives of government administration in the North, the measures of success, and of personal well-being, were logically assumed to be those of the southern industrial model to which it was assumed the North would progress. Chief among these indicators were employment, income, and education. No account was taken of subsistence production and activity, because this was assumed to be no longer relevant.[7] For example, the first labour force survey conducted in the territorial North (Meldrum and Helman, 1975) specifically excluded hunting, trapping and fishing that did not generate cash income. Similarly, early environmental impact statements on northern resource developments used indicators entirely derived from an industrial economy and disregarded subsistence production altogether (CAGPL n.d., Canada-Manitoba, 1974).

By the 1970s, it was becoming obvious that the standard instruments of socio-economic measurement (e.g. the census, labour force surveys, regional GDP accounts) left much of the northern economy under-measured and, from a public policy perspective, unacknowledged. Change comes slowly, however, and while there is a much greater qualitative appreciation of the mixed, subsistence-based economy in public policy, the understanding of how it actually works remains low. The initiatives of northern aboriginal organizations in promoting this change should not go unmentioned. These include their struggle for and participation in various commissions of inquiry and environmental impact assessments in the 1970s,[8] legal proceedings lodged in respect of adverse effects of industrial developments on their lands, and the documentation, negotiation, and implementation of land claims agreements across the Canadian Arctic.

In the 1970s, DIAND constructed a set of territorial accounts of Gross Domestic Product (GDP) that attempted to include subsistence production. Palmer (1973, 1974) outlined the theoretical basis for including subsistence, and Pavitch (n.d.a, b) constructed accounts of household income using generally established national accounting principles.

These sought to incorporate, at a regional level, the value of subsistence or non-market production as a component of household income. Whereas the Area Economic Surveys (see note 7) estimated total community income based on household surveys, the territorial accounts estimated aggregate household income from administrative and monitoring data on harvesting (see Usher and Wenzel, 1987), similar to the system for constructing national accounts that came into common use in the 1950s (Canada, 1962).[9]

These early attempts to incorporate subsistence income into regional economic accounts focused on technical issues of measurement, rather than comprehending the fundamental nature of community and regional economies in the North. There was no serious attempt to describe or model these economies so as to provide a rationale for using any specific measurement technique.

Yet, by the 1980s, this effort had ceased. DIAND's regular statistical publication, *Northern Indicators* (Canada, 2000), no longer included non-market income, and relied increasingly on a combination of census data from Statistics Canada, and taxfiler data from Revenue Canada. Neither of these sources measured non-market income, and both probably measured income from commodity production inaccurately.[10] Territorial labour force measures likewise do not address time spent harvesting, or other non-market activities. Yet it is virtually impossible to construct adequate community economic profiles based on existing registry data such as the census, taxfiler records, unemployment insurance records, or social assistance records.

The current model of the mixed, subsistence-based economy developed mainly in the 1980s, due to a growing appreciation of the social as well as economic value of subsistence (along with rising awareness of threats to its viability), and of the inability of earlier models and measures to adequately capture the reality of northern aboriginal communities.

From a policy perspective, the need for a better understanding of the mixed, subsistence-based economy was coupled with several developments, including:

1. The requirement to assess the social and economic impact of major development projects, following the widespread enactment of environmental assessment legislation in the 1970s.
2. The need for retrospective assessment of adverse social and economic effects of harvest disruption, including such notable cases as mercury contamination of fisheries in Ontario, Quebec, and Manitoba, and the *Exxon Valdez* oil spill in Alaska (Usher et al., 1995), as well as the collapse of the seal hunt in the Canadian Arctic due to animal rights inspired boycotts (Wenzel, 1991).
3. The development of wildlife harvesting support programs in several jurisdictions in the Canadian North (La Rusic, 1982; Ames et al., 1989; Scott and Feit, 1992).
4. The need for appropriate social and economic information for the development and delivery of appropriate and effective health and welfare programs in northern jurisdictions.

The way of life of northern aboriginal communities is often said to be under great pressure of change. More precise characterization and modelling of the mixed, subsistence-based economy helps us to understand how (and whether) this might be so, and what the consequences might be. Measuring the sensitivity of subsistence-based economies to change is problematic, however, precisely because subsistence is a flexible and resilient system. Its participants can and do adapt to change, whether adverse or beneficial. Yet clearly there are limits beyond which they cannot, and there are cumulative adverse effects which impair the capacity to adapt and respond. The better subsistence is understood and modelled, the more precisely these limits can be specified. The first need is an accurate model of the mixed, subsistence-based economy, and the second is a reliable and measurable set of indicators.

4. MEASUREMENT ISSUES

There are two key measurement issues associated with our household model. One is obtaining quantitative data at the appropriate

level of aggregation (the household), and the other is valuing subsistence or non-market production (see note 9). We address only the first one here.

Case study data are normally obtained by a combination of ethnographic methods requiring long community residence time, and by the use of administrative and monitoring data obtained by public agencies. There are several problems with the use of such registry data. The data may not be distinguished by ethnic status, data may be insufficiently disaggregated or inappropriately organized geographically, data may be provided on an individual but not household basis, and the data registry and categories are designed for administrative rather than research purposes. Any one of these factors may be sufficient to reduce or eliminate the use of the particular data set as a source of information about the household economy as modelled here.

This is a very significant problem in both Canada and the United States,[11] and perhaps for this reason it is in those countries that the most notable developments in quantifying subsistence production by the use of systematic surveys has occurred. These "harvest surveys" have been conducted on a frequent or continuous basis since the mid-1970s, usually in association with land claims documentation or implementation (in Canada), or the management of subsistence harvesting rights (in Alaska).[12]

In combination, harvest survey data and appropriate valuation methods for non-marketed products provide reliable data for the inclusion of subsistence production in regional macro-economic accounts. But they do not alone provide data that can be linked directly to the household model at the micro-economic level.

There has never been a comprehensive survey designed specifically to document the characteristics, activities and flows of the household in an integrated fashion, that would measure the prevalence of the model at regional or national scales, and possible variations under different circumstances, or the relationship between this particular form of socio-economic organization and other significant socio-economic indicators. Measuring the key elements and indicators of the mixed, subsistence-based economy would enable a better understanding of how this economic form, and its basic unit, the household, change in form and mix over time.

5. THE SLiCA/APS SURVEY

The Survey of Living Conditions in the Circumpolar Arctic (SLiCA) is the first attempt to conduct a standardized and near synchronous survey of living conditions among indigenous peoples living in the Circumpolar North. It is intended to cover the Inuit and Saami areas of seven circumpolar nations (Canada, United States, Greenland, Norway, Sweden, Finland, and Russia). The survey is modeled to some extent on standard living conditions surveys (OECD, 1986) but modified to take account of the specific circumstances of Arctic peoples (Poppel, Anderson, and Lyster 2000, see also www.iser.uaa.alaska.edu/projects/Living_Conditions/). The core survey will include sections on aboriginal identity, health, aboriginal language use, education, access to information technology, labour activity, housing, mobility, and income.

In Canada, the SLiCA has been integrated with the second post-censal Aboriginal Peoples Survey (APS), which was administered by Statistics Canada in fall 2001.[13] The SLiCA/APS included 11 sections, one of which, the "household activity and harvesting" section (hereafter referred to as Section I), was designed to capture basic data on the operation of the household economy as modeled above. The entire SLiCA/APS survey was designed to be administered in about 60 minutes, with Section I requiring about five minutes. Given this limit, the challenge of designing Section I was to capture the maximum amount of information on the household in relation to the mixed, subsistence-based economy as briefly and simply as possible. The questionnaire focuses on the resources available to the household as an economic unit, and on its outputs. The strategy was to ascertain the *activities* of household members, particularly wage employment, commodity production, subsistence harvesting, and unpaid work, and on the *flows* of income by source, of investment, and of goods and services among households. *Characteristics* of household members that can be related to *activities*, were ascertained in other modules of the SLiCA/APS survey.

The basic content of the SLiCA sections was decided and approved by the steering committee in April 2000. The SLiCA team and Statistics Canada then conducted two rounds of qualitative testing in four Inuit communities, and after further revision

TABLE I

Activities (functions)	
1) wage employment–full-time	Section I: Q1
2) wage employment–part-time	Section I: Q2
3) seasonal employment	Section I: Q3
4) other paid work (self-employment, small business, compensation for other activities)	Section I: Q4
5) unpaid work necessary for household maintenance	Section I: Q6a–Q6c
6) unpaid work necessary for subsistence production	Section I: Q6d–Q6g, Q7, Q8

of the survey instrument, conducted a final pilot test in two additional communities. The final content was considered by the steering committee in February 2001, and minor revisions were then negotiated with and approved by Statistics Canada.[14] To our knowledge, few other large-scale surveys, whether administered by a public or a private agency, have been as cooperatively developed and carefully pretested as this one, although the practice is becoming more common.

Section I (see Appendix 1) asked the respondent to provide proxy responses for other members of the household, in addition to his or her own responses, unlike the rest of the SLiCA/APS, which sought information about the individual respondent only (pretesting indicated that proxy responses would provide sufficiently reliable information). Section I began by identifying the name, sex, and year of birth for each member of the household aged 15 and over. The respondent was then asked to identify the activities (functions) of each member of the household, using a household grid format. These activities include wage employment (full-time, part-time, or seasonal), self employment, commodity production, subsistence harvesting, and various categories of unpaid household work (Table I).

The second part of Section I measured the flow of resources into and out of the household. These flows track the production,

consumption and exchange of the household as a unit. The indicators selected to measure the flows of production and consumption included: (1) income from wages; (2) income from other activities (i.e. self-employment and small business); (3) income from commodity sales; (4) income from transfer payments; (6) country food (income in kind) exchanged with other households for goods and services; (7) country food given freely to other households; (8) country food sold to other households; (9) country food received for free from other households or community organizations; (10) country food received in exchange for other goods and services; (11) country food purchased; and (12) investment in capital equipment used for harvesting. An additional indicator is an estimate of the quantity of subsistence food consumed in the household as a proportion of the total meat and fish consumption of the household. This indicator can be used to approximate the economic value of in kind income to the household. These indicators will provide a portrait of the flows of country food between households, which itself is a feature of kinship-based subsistence modes of production. Table II identifies how the indicators were translated into specific questions.

Other characteristics of household members relevant to the model, including their capacity to participate in various types of economic activities, were ascertained in other sections of the SLiCA/APS, particularly those on education and labour force activity.

There are two key differences between Section I and the labour force surveys routinely administered by both federal and territorial governments. One is that the reference period was one year instead of the previous week. This is because labour force activity is often highly seasonal, and the previous week's activity may not be typical of the entire year. The other is that the respondent was asked to identify all types of economic activities that he or she engaged in, not just those producing cash earnings. Income was similarly broken down by the streams identified in the model, including both cash and in-kind income. The capital expenditure question recognized the household as a producing unit, not merely a consuming one. The objective was to capture all economic activity, not just cash-earning activity.

TABLE II

Flows	
1) income from wages;	2001 Census*
2) income from self-employment and small business;	2001 Census
3) income from commodity sales;	Section I: Q13
4) income from transfer payments;	2001 Census
5) income in kind produced by household (not quantified);	Section I: Q7, Q8, Q10a
6) income in kind exchanged with other households for goods and services;	Section I: Q10c
7) income in kind given freely to other households;	Section I: Q10b
8) income in kind sold to other households;	Section I: Q10d
9) income in kind received for free from other households, community organizations;	Section I: Q12a
10) income in kind received in exchange for other goods and services;	Section I: Q12b
11) income in kind bought;	Section I: Q12c
12) investment in capital equipment used for harvesting;	Section I: Q9a–9c
13) proportion of total fish and meat consumption that are subsistence foods	Section I: Q11

*Income from wages, self-employment (other than commodity production), and transfer payments has already been ascertained by the 2001 Census of Canada. The census provides the sampling frame for the SLiCA/APS, based on responses to the aboriginal identity questions in the census, and the responses can be linked to the SLiCA/APS.

Given the time limitations of the questionnaire, the results are expected to be more exploratory than definitive. It will be possible for the first time to ascertain how prevalent the household as modeled really is in the Arctic, based on a mass synchronous survey rather than occasional case studies. However the only quantified information will be cash income by source. While the household grid section is an economical method of ascertaining whether or not each person engages in particular activities, it does not provide

even a ranking of the importance of those activities. A time-use survey was considered impossible to conduct within the limits of the SLiCA/APS. A possible improvement would be to ask, as a supplementary question for each activity, who in the household does most of it, but even this could not be done within the time limit, and was not tested.

The question on capital equipment does not measure investment directly. Questions on actual capital expenditures, and on certain operating costs, were tested but did not work well. Previous survey experience in the Arctic suggests that a reliable gear and expenditure census of an actively producing household takes considerably more time than is possible within the confines of the SLiCA/APS.

Similarly, the amount of country food harvested cannot be accurately ascertained by a single question. The question in Section I has, in both this case and others, tested well for comprehension but is known to yield unreliable estimates of actual quantities. In the present survey, the question is of value chiefly as an indicator of activity levels, and as a link to the questions on sharing among households.[15] Interhousehold exchange or sharing is only documented by this survey, not quantified. Quantitative measures of exchange and sharing in the Arctic are rare, however, even in ethnographic case studies, and have never been attempted by comprehensive survey.

The income streams selected for quantification should capture virtually all income likely to be reported to a survey of this type. The main types of informal income are captured, and the amount of underground activity in the Arctic outside the conventional legal framework is thought to be insignificant. Investment and rental incomes, also not measured by this survey, are thought to be insignificant at this time, although their inclusion should be considered in future. A further unavoidable limitation is that the questionnaire does not capture the supra-household organization of labour, for example for large marine mammal hunting.

Even our relatively simple questionnaire, which sought to utilize English terms and wording that are common across the Arctic, depended heavily on accurate translation and interpretation to ensure high response quality, and the problem was compounded by the fact that there are several Inuktitut dialects.

Within these limits, however, the questionnaire fully meets two key tests: that it uses generally validated questions, and that it was administered to a probability sample of sufficient size for the intended geography.

The household and harvesting component of the SLiCA/APS survey is highly innovative in both a Canadian and international context. It was developed directly from an Arctic-specific model that explicitly includes the whole economy, not only the market sector. The degree of involvement of aboriginal representatives in the design and administration of the questionnaire specifically, and the SLiCA/APS generally, is unprecedented in the context of a national survey undertaken by Statistics Canada. The survey results will be comparable to those of the other circumpolar regions involved in the SLiCA.

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APPENDIX 1 – HOUSEHOLD AND HARVESTING ACTIVITIES QUESTIONNAIRE

This is a simplified version of section I of the SliCA/APS survey questionnaire. Most instructions to the respondent, and the household grid layout and skip patterns, are omitted. The full questionnaire is posted on

www.arcticlivingconditions.org/. The respondent is asked to provide proxy responses for each member of the household over age 15, for questions 1–8, and for the household as a whole for questions 9–13. The reference period is the year ending December 31st, 2000.

1. Did . . . have a paid full-time job (30 hourse a week or more)? Do not include self-employment.
2. Did . . . have a paid part-time job (less than 30 hours a week)? Do not include self-employment.
3. Were any of . . .'s jobs (or job) seasonal that is, lasting only part of the year?
4. Did . . . receive any income from self-employment, contract work or compensation for attending meetings or sitting on committees?
5. Did . . . sell fish, meat, carvings, skin clothing, furs, crafts, ivory or any similar goods?

Questions 6–8 are about activities that you and others in your household did without receiving pay.

6. Did . . .
   a) take care of children?
   b) take care of seniors or elders?
   c) clean your home?
   d) process or prepare animals for food or skins, or cook meals?
   e) sew?
   f) repair hunting equipment, machinery, appliances or do home repairs?
   g) prepare or pack for any hunting, fishing, trapping or camping trips?
7. Did . . . gather firewood?
8. Did . . . harvest country food?
9. Did you or other members of your household use the following items for harvesting country food, gathering firewood, or for unpaid household work?

   [list of equipment follows.]

   For each of the items used:

   Is it owned by you or a member of your household?
   Was it bought during the year ending December 31st, 2000?

10. What was done with the country food harvested by you and other members of this household? Was it . . .

    Eaten in this household?
    Shared with others or given away to persons outside the household?

Given away in exchange for gas, other supplies, or help?
Sold?

11. Of the total amount of meat and fish eaten in your household, how much of this total was country food?

None
Less than half
About half
More than half

12. Was any of this country food . . .

Received for free
Received in exchange for gas, other supplies, or help
Bought

13. What was the total amount earned by all members of your household from the sales of fish, meat, carvings, skin clothing, furs, crafts, ivory and other similar goods?

[income from employment, self-employment, and transfers is asked on the general 2001 Census of Canada, which may be viewed at www.statcan.ca/english/census96/list.htm#2001.]

NOTES

[1] For a brief review of the dual economy model, the mixed economy model, and other models of aboriginal communities in the Canadian north, see Elias (1997).

[2] There are at least 200 predominantly aboriginal communities in northern Canada, scattered throughout the territories (Yukon, NWT, Nunavut) and the northern parts of the provinces, beyond the settled industrial and agricultural zone of southern Canada. These communities typically number from a few hundred to, in a few cases, several thousand persons. Some are legally classed as Indian Reserves (especially in the provincial North), others are not, but residents are predominantly if not entirely of aboriginal status. These types of places have been in existence since at least the early 20th century, first as the seasonal and later as the more or less permanent residence of aboriginal northerners. A similar situation prevails in Alaska. Our description applies generally to these communities, hence widely over space, time, and cultures.

[3] Most of this literature consists of contemporary case studies of one or a few communities (viz. Tanner, 1979: 48–72; Brody, 1981: 190–213; Wolfe et al., 1984; Langdon, 1986; Quigley and McBride, 1987; Smith, 1991; Usher and Weinstein, 1991; Wenzel, 1991; Stephen R. Braund, 1993) by anthropologists, geographers, or planners, or historical reconstruction (Tough, 1996), but there is

also some more general commentary and synthesis (viz. Berger, 1977; Lonner, 1986).

[4] While this successful integration was once thought to be limited to seasonal wage labour, full-time employment has also proven compatible (in at least some circumstances) with continued subsistence production (Kruse, 1986; Wolfe, 1986; Wenzel, 1991). The integration of market and subsistence is not in fact a recent development. For many decades in northern aboriginal communities, cash has been essential to the maintenance of subsistence. Before cash came into general circulation, credit obtained through commodity sales or wage labour was the link between subsistence and market.

[5] For example, it has been estimated that the annual per capita availability of country food (food obtained by hunting and fishing) in the western Canadian Arctic during the 1990s was 115.8 kg (Usher, 2002). In Alaska during the 1980s, the median level of subsistence production in 85 sampled communities was 112.9 kg (Wolfe and Walker, 1987).

[6] In principle, much of this model applies not only to aboriginal households, but also to small-holdings in agriculture and fisheries. However, in non-aboriginal communities, there normally was and is less interconnection among households due to individualization of land titles or fishing locations, and therefore of knowledge and equipment, and less pervasive kinship ties.

[7] Earlier attempts to capture other economic indicators were gradually abandoned, such as DIAND's "Area Economic Survey" program conducted across the Northwest Territories during the 1960s (Lotz, 1976), which still provide a baseline of socio-economic conditions from that era. These regional surveys, each of which occurred over a period of several months and involved interviews with virtually every household, covered a range of economic matters including harvesting activities and country food production.

[8] The Mackenzie Valley Pipeline Inquiry (Berger, 1977) being the best known and most innovative. Numerous subsequent environmental impact assessments in northern Canada have required the more accurate and appropriate characterization of community economies. In Alaska, state fish and game legislation providing for "subsistence preference" has also required better documentation and measurement of the mixed, subsistence-based economy (viz. Wolfe and Walker, 1987; Fall, 1990).

[9] This also required appropriate measures of the value of country food, for which there was seldom a legal or established market. The general rule used in Canada is replacement value, i.e. what it would cost a household to purchase what they would otherwise produce for themselves (less production costs). For relevant literature on the valuation of subsistence, see for example Usher, 1976; Chibnik, 1978; Brown and Burch, 1992.

[10] *Northern Indicators* also includes sections on demography, education, labour force, retail sales and prices, and social indices (chiefly offences and suicides).

[11] This may be less of a problem in Scandinavia (including Greenland) due to different traditions in record-keeping.

[12] For an account and assessment of these surveys, see Berkes, 1993; Usher and Wenzel, 1987; Wolfe and Walker, 1987; Fall, 1990; Fabijan and Usher, 2001.

[13] The SLiCA component of the survey, administered in the Inuit regions of Canada only, was designed by a team headed by Gérard Duhaime of Université Laval, in cooperation with a steering committee of Inuit representatives, and with advice and support from Statistics Canada. It consists of three sections: section I as described, a section on personal wellness and perceived social support, and a section on community wellness and social participation, including the level of satisfaction with and participation in various domains of community life. The 2001 APS (eight sections) was designed cooperatively between Statistics Canada and the national aboriginal organizations of Canada. The coverage objective for the combined SLiCA/APS survey was over 11,000 Inuit age 15 and over in the Northwest Territories, Nunavut, northern Quebec, and Labrador. Where more than one person per household was interviewed, only the "most knowledgeable person" in the household was asked to respond to Section I. The reference period for the survey was the calendar year 2000.

[14] The validity of the household model, and the appropriate design of a survey instrument, was also discussed at international management meetings of the SLiCA, and the design of the Canadian instrument was also modified on the basis of qualitative testing in Alaska. The equivalent of Section I will be included in the international core questionnaire.

[15] In many parts of the Canadian Arctic, current or recent harvest surveys already provide much more accurate quantitative estimates of harvest levels on a community and per capita basis than could be obtained by the SLiCA/APS (see note 12).

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