

## CHAPTER 3

# FOOD NETWORKS IN THE NORTH AMERICAN ARCTIC

*Gérard DUHAIME, Alexandre MORIN,<sup>1</sup> Heather MYERS,<sup>2</sup> Richard A. CAULFIELD,<sup>3</sup> Pierre FRÉCHETTE and Dominique ST-PIERRE<sup>1</sup>*

<sup>1</sup> *Groupe d'études inuit et circumpolaires (GÉTIC), Laval University, Québec City, CANADA*

<sup>2</sup> *International Studies, University of Northern British Columbia, Prince George, BC, CANADA*

<sup>3</sup> *Department of Alaska Native and Rural Development, University of Alaska Fairbanks, USA*

**Abstract:** This chapter presents the state of our knowledge about the formal economy of food security in the Arctic. It explains the main characteristics of food markets in different Arctic regions, and addresses such questions as: what businesses are involved (private, public, local, national, international, etc.)? What is the structure of the supply chain (import/export, links from the producers to retail stores)? Is local food sold in the formal market (products of renewable resource exploitation and local manufacture, when available)? Are the food chains well established and reliable, or new and fragile? etc. This is the first time an effort is made to synthesize such issues, usually considered under the single angle of the hunting and fishing production in the Arctic. This work provides solid basis for evaluating this key component of food supply and consumption, even if it concludes that more research has to be done to have a complete picture.

### 1. SUSTAINABLE FOOD SECURITY AND STUDYING FOOD NETWORKS

A basic element required for studying sustainable food security in the Arctic, as well as anywhere else, is a clear description of food supply networks, upon which could be performed an assessment of their strengths and weaknesses. What social actors are involved? What is the nature of their relationship? Are they efficient at creating the conditions from which appropriate foodstuff will be available and accessible? If not, why aren't they? And are they stable by virtue of public policy and as experienced entrepreneurs, or are they subjected to changes following circumstances, such as economic variations and political instability? Answers to this sort of questions are crucial elements in order to come to a complete diagnosis of the situation of food security in the regions studied. This paper is devoted to that. Its objective is to describe these networks, and to analyse their general characteristics and regional specificities. This text endeavours to answer the following question: through which networks do these food supplies flow? Moreover, this publication highlights the main determining factors that affect the efficiency of these networks in relation to food security.

Northern food networks comprise two types of transactions: 'commercial' and 'customary.' Transactions are said to be 'commercial' when legal currencies serve as a method of payment at the time of the exchanges.

'Customary' transactions do not involve money; donations and bartering are cases in point. This dichotomy constitutes the analytical division of the same reality. For example, currency is used in commercial transactions, but also for the purchase of equipment needed for harvesting operations associated with customary transactions. Both types of transactions are found side-by-side, complement one another and become mixed, forming a single economic system. For analysis purposes, this dichotomy is useful in that it makes it possible to identify behaviors, the purposes and terms of which are different.

In the scientific literature on the Arctic, customary transactions are better documented than are other transactions, and they will be described here. However, a chapter of this volume is devoted to this aspect, which is more exhaustive to what can be achieved here. In fact, the study of commercial transactions occupies a much larger part of this text in order to fill the vacuum identified in the study on the conditions of food security.

Commercial transactions may be 'formal' or 'informal.' Occasionally, these terms are used as synonyms of 'commercial' and 'customary,' respectively. However, within the perspective adopted in this article, an economic activity is formal when it is recorded for tax purposes and when it is included in the calculation of national accounts; formal income is taxed by the State and formal sales are subject to tax (Fréchette & Vézina

1990:535). Sales in official retail stores represent a sort of formal activity. Informal economic activities designate these activities that fall outside the realm of taxation and of national accounts. Such activities are practiced in the 'family,' 'community' and 'underground' spheres. The concept of a family economy refers to the goods and services exchanged within a family. The community economy is the application of a family economy at a community level. An example of informal economic activity in the family or in the community sphere is paid childcare. The underground economy refers to economic activities prohibited by the State, such as the illicit sale of alcohol; only this type of activity is excluded from the analyses in this text, owing to a lack of available information on the subject. The 'formal-informal' categories are also fertile from an analytical standpoint; not only do they make it possible to identify economic behaviors (the purposes and terms of which are different), they also allow us to draw a comprehensive portrait of the networks and transactions at work.

In the following sections, the steps taken within the context of this study are described and a general model proposed for the main food networks that can be observed in the North American Arctic, and certain regional specificities identified. Finally, the various factors determining the efficiency of food networks are presented and the differences in supply from region to region and within regions are explained from a food security perspective.

## 2. METHODS

The first steps consisted of identifying the main economic agents involved in northern food networks. These agents are rather mixed by their nature (individuals and associations of individuals, businesses and other organizations) and their ownership structure (private or governmental, aboriginal or non-aboriginal, individual, family, or community), and range in size, from self-employed fishers to multinational corporations with several thousand employees. They are active in the primary, secondary, and tertiary sectors of the economies of Greenland, Labrador, Nunavik, Nunavut, and Northern Alaska.

Through field research, these agents were interviewed about the supply, processing and sale of foodstuff: where food is obtained, and under what conditions (suppliers, prices, negotiations, delays, etc.)? Who handles the foodstuff and how (individuals involved, production chains, methods of sale, clientele,

etc.)? Which agents are ensuring transportation? In the case of government organizations, the interviews addressed their involvement in networks (State programs, services, subsidies, etc.). Several dozen interviews were conducted in the Arctic—in both small communities and urban centres—and outside Arctic regions where the head offices of certain northern companies, as well as wholesalers and retailers forming the first major links in the commercial food chains are located.

The food networks and transactions are of varying scale and importance. To make a rough evaluation of this relative importance, the interviews included questions on the amount of money involved, where applicable. However, the data collected remain incomplete. As a result, they have been considered in conjunction with information in the available literature dealing with commercial and customary transactions. The determined order of magnitude is presented in the following results.

Figure 1 illustrates the main dimensions of the networks between economic agents. 'Harvest' refers to the extraction of food resources in the wild. 'Transformation' is the initial processing of raw material that may involve little added value, or the creation of products that are ready for consumption. Consequently, transformation may include the work of a hunter butchering animals just caught, as well as industrial activities, such as packaging. 'Distribution' includes the activities of intermediaries, wholesalers, grocery stores, individuals and others, from whom the economic agents are able to procure supplies. Finally, the food finds its way into the hands of Arctic residents, representing the final step.

Food products are imported from and exported to the 'rest of the world,' which is also a major dimension. Transportation is ever-present in the realities examined and is taken into account in the analysis; however, it is not explicitly illustrated in the diagram, since it would have created unnecessary confusion.

The diagram features arrows of varying sizes and forms; the size refers to the relative scope of the networks and to the magnitude of size mentioned above. A given network (exported manufactured goods, non-manufactured goods consumed locally, imported goods, etc.) corresponds to each numbered network.

The diagram does not illustrate all possible food networks, only the main ones. The many ways in which the networks are used are presented in the text; if not in the diagram. The latter provides a general illustration of the path taken by foodstuff—from producer to

consumer—by way of intermediaries, and includes the various components of the process.

### 3. THREE MAIN NETWORKS

Food flow in Arctic regions comprises three main networks: imports, internal circulation of regional products, and export of regional products. These distinct networks are not always made up of the same economic agents and generally do not involve the same types of foodstuffs. They all contribute, directly or indirectly, to supplying residents of the North.

#### 3.1 Import Networks

In the case of import networks (Fig. 1, arrows 1, 2 and 3), agents in the Arctic order food from southern suppliers on a regular, often daily, basis, but more often a weekly basis. Sometimes, agents deal directly with food retailers; at others, they deal with wholesalers or firms specializing in importing and exporting goods. These suppliers form a complex network: they frequently do business with one another, exchanging goods to meet demand. It is not unusual for some northern businesses or organizations to have their own suppliers by vertical integration or with whom they are associated by commercial agreements. The foodstuff ordered are from various food categories found in typical grocery stores in the South (dairy products, meat, fruits and vegetables, dry goods, etc.). Normally, on receipt of orders, the suppliers assemble the products for each agent.

The supplier send the foodstuff, *via* land networks, to air or sea carriers. This step of the delivery is coordinated by companies under contract with, or owned by, a southern supplier or by an agent in the Arctic. Depending on the route, delivery times and costs, the goods will be sent to the nearest point of departure. Otherwise, maximum use will be made of less expensive surface transportation, generally in the direction of other shipping sites located in the Near North. In southern regions, unlike in the North, a large number of companies actively use road or rail transportation.

Once supplies have reached ports and airports, they may be stored for short periods in warehouses (refrigerated, if required). The rest of shipping will be by one of two main means: airplane or ship. Airfreight is the method of choice (deliveries are made several times per week) as the short shipping times are well suited to transport of perishable goods. In smaller communities or those without adequate airport infrastructure,

shipments may need to be transferred to smaller planes, which adds to handling and time costs. The distribution of goods by airplane to the various communities takes periods ranging from forty-eight to seventy-two hours.

Maritime shipping is only possible when waters are ice-free; for some destinations, this option is available only during a few weeks of the year. However, because this form of transportation is less expensive, the portion of goods transported by boat is substantial. It may represent a year's supply of some goods (e.g., dry non-perishable foodstuff). Once the shipment has reached ARCTIC communities, the food may be stored again, until the owner claims his portion.

As a general rule, transportation activity in the Arctic is characterized by a small oligopoly of two or three businesses; however, monopolies are not uncommon. The closer to the North Pole, the less the competition, which may potentially affect prices and the quality of food supplies, as explained further on.

For the most part, imported foodstuffs are found on the shelves of retail merchants (Fig. 1, arrow 1). All the northern regions of the North American Arctic have grocery store chains. Independent businesses also occupy a significant segment of this sector. Northern residents find a multitude of products in the grocery section. Moreover, food imports are intended for certain organizations that offer supply programs to their employees (e.g., allowances for the transportation of goods by parcel post offered to civil servants employed by public administration) or that require major stocks for their operations (e.g., hospitals). In addition, food imports allow individuals, albeit at a much smaller scale, to receive goods directly from southern suppliers *via* the postal service (Fig. 1, arrow 2). Finally, businesses in the manufacturing sector import products used in their production chain (e.g., soft drink components for bottling) (Fig. 1, arrow 3).

It is via the import network that Inuit purchase most of their food. Indeed, 85% of the food consumed by Inuit from Nunavik—in terms of 'edible weight'<sup>1</sup>—is of the market foods and is almost exclusively imported (Duhaime *et al.* 2001). These goods are mainly acquired by way of a monetary transaction, usually in stores.

<sup>1</sup> The concept of "edible weight" of food used in this text is the one that have been used by the James Bay and Northern Québec Harvesting Research Committee to establish the levels of harvesting of Inuit in Nunavik, between 1976 and 1980. The edible weight was calculated for different harvested species (in kg), representing about 94% of the total harvest in the two villages selected for these investigations. To obtain more details concerning that concept, see NHRC (in Juniper 1989) as well as Duhaime *et al.* (1998:74-80).

Moreover, on average, food accounts for more than half of spending by Inuit households of Nunavik; 44% of the household budget goes to grocery purchases, and 11% goes to local food production costs (e.g., hunting and fishing), according to the study by Duhaime *et al.* (1998:105). These authors also point out that a large majority of the respondents in the Lawn and Langner (1994) study stated that they did not always have enough money to buy food, with the high price of food products being the main reason cited. For these reasons, a typical resident of the North cannot do without money if he wants to maintain his current dietary habits, in which imported food occupies an important place.

### 3.2 Internal Regional Production Networks

Most of the Arctic's resources intended for consumption by northern residents are harvested by single hunters and fishers. Marine and land mammals, as well as various species of birds and fish, are the main focus of harvesting activities. Harvesting is carried out using manufactured equipment purchased in stores (e.g., firearms, motorized vehicles) and requiring substantial capital investments (Duhaime *et al.* 1998:22-23). In addition to the monetary factor, the feasibility of the harvest depends on weather conditions, as well as fluctuations in animal populations and their accessibility. Generally, northern residents go hunting sporadically. A small number of individuals devote most of their time to this activity and consider it their livelihood. Internal regional production networks (Fig. 1, arrow 4) use commercial and customary channels, which are highly complex, with many branches.

Internal commercial networks represent 13%<sup>2</sup> of the food production consumed, in a region like Nunavik for instance. They are subdivided into two forms of transactions: the formal channel made up of harvesting and manufacturing in-plant for sale in local stores, and informal marketing. In the case of the formal channel, the manufacturing sector is generally of small-scale. Few economic agents are active in the market associated with locally manufactured foodstuffs. However, there are a few businesses that purchase the catches of hunters and fishers to do limited processing (cutting, packaging and freezing) and to sell the products on a formal basis at the local and regional levels, more often than not through retail stores (there are also some medium-scale plants that produce muskox, caribou and char for

export out of the North). When compared to imported products, regional production represents a small portion of the food available in stores, and is generally more expensive than comparable items. Meanwhile, informal marketing may occur in venues provided for this purpose. Despite the fact that this type of marketing partly escapes fiscal controls and is not necessarily included in national accounts, certain rules govern supply systems and transactions. The structure of these networks varies according to the regions. For example, Greenland has developed sales counters where individual hunters and fishers sell their recent catches to consumers, at prices that are determined by local authorities and the association of hunters and fishers. In Nunavut, hunters' and trappers' organizations or other local associations may be involved in the processing or sale of locally or regionally-produced country food, but in general this tends to be a small part of their activities. Other informal sales of country foods in Nunavut take place between harvesters and local purchasers. These networks facilitate the marketing of harvesting proceeds by offering the necessary infrastructures as well as a flexible operation adapted to food production practices.

As for the products of internal networks that take the customary channel, they are consumed by the harvester (hunter/fisher) or distributed in social relation networks (households, families, neighbors, friends, etc.), and represent some 14% of the harvest—in terms of edible weight—in a region like Nunavik for instance. No datum in the documentation consulted allowed us to estimate precise 'harvester-consumed' quantities in relation to those distributed in social relation networks. The latter take on several forms such as, among others, sharing among hunters who took part in the hunt, among the close family, and the extended family, neighbors and friends (Condon *et al.* 1995 taken from Duhaime *et al.* 1998:35). Examples of social relation networks can also be a visit by a relative bringing food as a gift, a call to the community radio station to find someone who is willing to share surplus meat, a food gift brought by plane to a relative of a neighboring village, and so on.

Generally, although internal networks seem less important than import networks from a quantitative standpoint, they do provide a considerable share of the meat consumed by populations living in the Arctic. Moreover, most of the time, imported meat is frozen, whereas country food provides a supply of fresh product. In Nunavik, country food represents, on average, 15% of the food consumed by the Inuit—in terms of edible weight (Duhaime *et al.* 2001). In Baffin Island, market food contributes significantly more

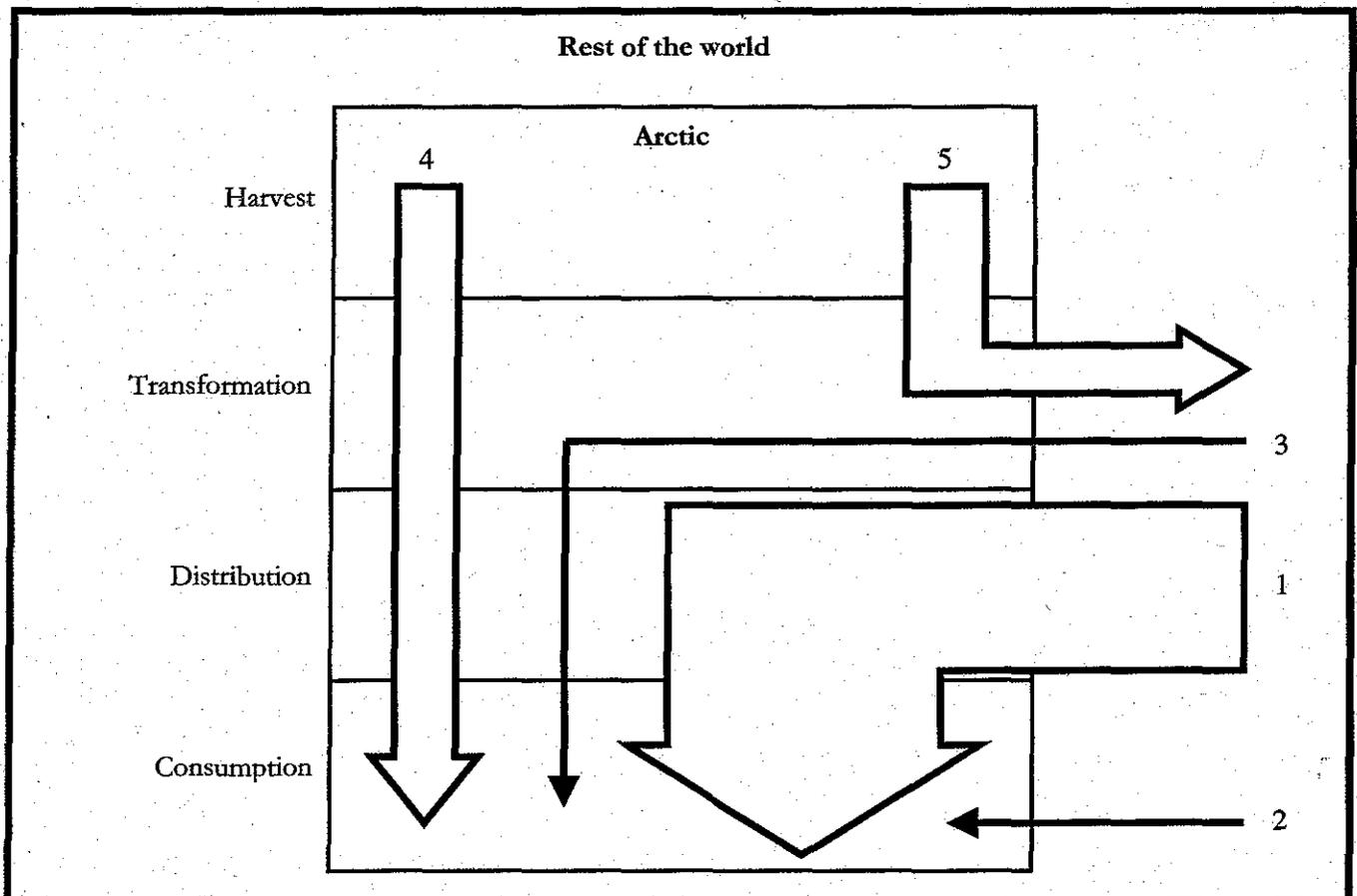
<sup>2</sup> The results presented here exclude the portion of food production not intended for human consumption, which is estimated at 73% of the edible weight of food in Nunavik (Duhaime *et al.* 1998: 97).

carbohydrate, saturated and polyunsaturated fat, calcium and sodium, while for all age classes except children and teenagers, traditional food contributes significantly more protein, iron, vitamin A, copper, phosphorus, magnesium and zinc (Kuhnlein *et al.* 1996). The average energy intake, for women over 20 years of age, in all seasons, was 66% from imported food and 34% from traditional food (this varied by season); the pattern was similar in adult men. Kuhnlein *et al.* (1996) found that traditional foods contain a greater density of most analyzed nutrients, and make a "vitally important contribution to total nutrient intake." Internal food production, which circulates by way of both commercial and customary transactions (13% and 14% of the harvest consumed, respectively, in terms of edible weight), does not confine individuals, in particular the least well off, to commercial networks, provided that

these individuals are part of social relation networks, where the practice of offering gifts and sharing food continues today. Finally, country food possesses a symbolic value for the Inuit, associated with their way of life of the past, and contributes to the vigor of internal networks (Poirier & Brooke 2000).

### 3.3 Export Networks

For the most part, regional industrial production is intended for exports (Fig. 1, arrow 5). Whether it involves the fisheries in Greenland, the commercial harvest of caribou in Nunavik, or the commercial harvest of caribou, muskox and char in Nunavut, for example, almost all these resources are sold outside Inuit territories.



**Figure 1:** Food networks of the North American Arctic (1—Import networks coming through retail stores; 2—Imported food ordered directly by individuals and specific organizations from southern suppliers; 3—Imported inputs used by specific organizations and manufacturing businesses; 4—Internal regional production networks; 5—Export networks.

Most of the time, production geared to exports is created by businesses. In this case, resources are harvested on a large scale; this may involve fishing by factory vessels or caribou hunts organized on behalf of a company. Individual hunters and fishers may also supply manufacturing businesses with raw material. This raw material then may undergo complete processing, in which case the product is ready for retail sale upon leaving the factory. Otherwise, the raw material will undergo partial processing, which may then be completed by other outside firms. Once the manufacturing process is completed in the North, the products will be shipped by the same means of transportation as used for imports: boats and airplanes mainly.

The Arctic is a vast zone on the periphery of the centre of the 'world-economy,' namely local products are quickly shipped from cold latitudes without necessarily having been processed and without fully benefiting the regional economy through value-added activities (Duhaime 1991:114, Rasmussen 1997a:3, Rasmussen 1997b:61, Lyck 1999). Nevertheless, the few economic spin-offs of these activities, such as paid employment, improve the purchasing power of those persons employed in these activities. Food exports contribute to the access that northern populations have to marketable foodstuff.

## 4. REGIONAL SPECIFICITIES

Beyond these three common networks in the North American Arctic, regional analyses reveal certain peculiarities concerning the structure and scope of networks, as well as the types of economic agents involved.

### 4.1 Greenland

The fishing industry occupies a major place in Greenland's economic structure. This situation results in commercial food networks that differ from what is observed elsewhere in the North. First, the industrial food harvest is much greater; several businesses of all sizes work in the fisheries (shrimp and halibut, mainly). Indeed, one of the world's largest shrimp harvesting companies is based in Greenland. The scope of these activities is reflected in a substantial manufacturing sector, promoted by the legal system; Greenlandic law stipulates that a part of offshore catches must be processed on Greenland's territory. The result is massive exports of seafood products, to Japan and Europe in particular. To illustrate the reality in

Greenland, arrow 5 (Fig. 1), which represents food exports, should be larger. The important flow of food leaving Greenland is comparable to that of the food entering the country, and provides considerable revenue to the region's economic agents.

In addition, the presence of the regional State in the economy, which owns, in whole or in part, most of the businesses, represents the most marked peculiarity of Greenland. The direct manifestation of this phenomenon is a system of subsidized and almost uniform prices offered by a few government enterprises throughout the region. One of these enterprises has a monopoly over maritime shipping and offers identical rates for cargo, irrespective of the distances involved. The same is true for the supply of consumer goods in small communities, enjoying a similar rate system and provided by another State-owned business. The latter is active in about 53 small communities, and each year receives a budget from the government to help it maintain its prices, regardless of the high selling cost. For example, these businesses allow residents of Illoqqortoormiut, a small remote community (fewer than 600 inhabitants) to pay roughly the same prices as paid by residents of the urban centre of Ilulissat (more than 4 000 inhabitants) for most of their store purchases<sup>3</sup>. Frequently, communities that are disadvantaged from a geographical, climate and demographic standpoint exhibit a higher monetary cost of living. This economic reality is counteracted by the government services. In short, whether it is by way of various forms of subsidies intended for businesses or directly by way of its service enterprises, the State plays a major role in securing the imported food supply.

Finally, internal marketing of regional production benefits from an efficient informal sales system in Greenland: the "local markets" (*Kalaaliminermiarfik*). These markets are found in most communities as covered sales counters, where anyone can sell the proceeds of their hunting and fishing directly to consumers. These infrastructures are maintained by local governments: the association of hunters and fishers negotiates and sets the price of transactions (Marquardt & Caulfield 1996:113, Caulfield 1993:148). Rasmussen (1998:17) estimates that roughly 10% of the harvest made by individuals is sold in these markets. The commercialization of Greenland's food production is one of the most prolific of the northern territories.

<sup>3</sup> The demographic statistics of these towns and villages come from Statistics Greenland (1999:432-433).

## 4.2 Labrador

In Labrador, privatisation recently took place in food distribution. Stores that were formerly owned and operated by government have been sold to the private sector. When it comes to food security, such a transition creates advantages and inconveniences, because the regularity of food supply depends on a businesses' capacity to gain financial benefits, as explained further on.

This situation is especially severe in Labrador, due to a difficult socioeconomic context. Labrador did not experienced the "catch up" phase that occurred elsewhere in the Canadian Arctic as a result of land claim settlements. The Labradorian standard of living is likely to be lower than what is observed in the rest of the North American Arctic. Even though this is a visible phenomenon, it remains hard to measure due to the chronic under-developed state of statistics in Labrador.

As is generally the case in the rest of the Canadian North, there is no harbour infrastructure in Labrador. In terms of airport infrastructure, Labrador would need improvement to attain the level found in many other North American Arctic villages. Such conditions represent an additional risk to food security.

Despite these obstacles, the food economy is relatively important in the region. In the formal economy, there are extraction activities in the commercial fishing sector, mainly oriented toward outside markets. Despite its relatively low production volume, compared to Greenland for example, it is a substantial economic activity in Labrador. Informal and customary networks are also very lively; the difficult socioeconomic context could be encouraging local individual food production practices.

## 4.3 Nunavik

In Nunavik, retail sales are carried out by, among others, a group of cooperatives present in each community. A particularity of these businesses is to offer the same prices from one village to the next regardless of variations in selling costs associated with geographical remoteness. Moreover, it is estimated that a very small portion of the harvest of individual hunters and fishers is purchased by these cooperatives for resale (Chabot 2001:193). The federation to which these cooperatives belong, located in the South, is in charge of purchasing the goods for all cooperatives, thereby providing significant purchasing power and economies of scale. These cooperatives, which account for roughly 75% of retailing in Nunavik (Turcotte 2000), are the largest employers of full-time manpower in the private sector

(Lefebvre 1996:119). Nunavik cooperatives represent one of the most important economic agents of the imported goods supply network, and their uniform rates ensure equal access for all consumers. Established in the larger villages, the Northern stores are competing with local coops, and few other (mostly convenience) stores. Northern stores are owned and operated by the North West Company, the former "Northern Stores Division" of the Hudson's Bay Company, bought in 1987 by a group of investors, including some 415 employees. It must be stated that the North West Company stores are not only in Nunavik, but in other Canadian Arctic locations (in Labrador, Nunavut, the Northwest Territories and Yukon for instance), as well as in Alaska where they acquired the Alaska Commercial Company in 1992.

Another characteristic of Nunavik's networks is government subsidized transportation costs for food. Canada's federal government pays all of the transportation costs to certain aviation and trucking companies for specific food categories, and then charges a portion of these costs to the economic agents of remote areas via the postal system. Southern suppliers or economic agents of the North send goods in the same way they send mail, by affixing the appropriate postage to parcels. This program is not exclusive to Nunavik; it operates throughout northern Canada and elsewhere in the country in areas where surface transportation is not available year-round. As a result, the transportation of foodstuffs eligible under this program is less costly both for businesses and for consumers<sup>4</sup>.

Another State program subsidizes hunting and fishing production costs (ammunition, fuel, etc.) of some Inuit in order to offer country food free of charge to those who are unable to procure it. This program may vary from one village to another, since municipal authorities decide how the grants are used (Duhaime 1990, Kishigami 2000). In some villages for instance, once harvested, the game is distributed first to widows and the elderly, and then made available to the aboriginal population in municipal freezers, in a quasi-unprocessed state. A little less than 15% of local individual food production passes through these networks (Chabot 2001:194). Here again, money and local resources support part of the procurement of supplies intended for the population.

<sup>4</sup> For a full description of this program—the Northern Air Stage Program—see, among other things, Canada Post and INAC—Indian and Northern Affairs Canada (1990; 2001).

#### 4.4 Nunavut

Like Nunavik, there are several kinds of enterprises involved in the food industry in Nunavut. Sales of imported foods are dominated by the Northern stores and community-based co-operatives, but in some communities independent merchants also sell groceries and restaurant fare. These stores generally focus on imported foods, but may sell some country foods as a convenience. Food accounts for a large portion of a stores' sales, but especially pop, cigarettes, and potato chips. Some store managers spoke of their interest in promoting healthier foods, and are pursuing a variety of approaches to this. One manager suggested that the store must sell what customers demand, which is largely 'junk food' and fast food—what is needed, he said, is healthier fast foods.

The Northern and Co-op stores are served by southern-based warehousing (North West Company or Arctic Cooperatives Limited, respectively), and product prices are often dictated by southern marketing offices as well. Because of the remoteness of most Nunavut communities, air freight is critical for the import of perishable goods, while sea-lift serves to transport non-perishables. In 2000–2001, for example, air freight rates to Pond Inlet were in the range of \$7.38/kg while food mail could take the cost as low as \$2.53<sup>5</sup> for nutritious staples. Air freight is becoming more commonly used for a variety of reasons, including the cost of northern warehousing, the demand for quick service, and the institution of 'expiry dates' which preclude the long-term warehousing of even heavy, non-perishable commodities like pop (Myers & Forrest 2000).

In Nunavut communities, country food harvesting for domestic purposes is still important. Of those households surveyed in three communities, an average of 70% participate in hunting or fishing, while an average of 60% of households consume country foods. Currently, it appears that the Hunter Support Program may have enhanced country food production by local harvesters, which is consumed by the harvesters' households, shared with family or others in the community, or sold in informal economic arrangements within the community.

The commercial harvest of country food is much less developed than in Greenland, though there have been periods of apparent government interest in enhancing this economic opportunity—e.g., when

freezer/processor infrastructure was established in numerous Nunavut communities. Several larger country food enterprises have been established with economic development program funding since the mid-1980s: in Cambridge Bay and Rankin Inlet, for example, and there is a private enterprise in Iqaluit processing and marketing country foods for northern and export customers. These enterprises have developed commercial caribou, muskox or char products and markets, most of which is sold in southern Canada, the US, or Europe, although northern restaurants and institutions buy country food from them as well. Two of the enterprises recently received EU-certification, which opens up the European market to their products<sup>6</sup>. Though much of the actual food is exported, these enterprises are important economic initiatives in their communities; one enterprise we interviewed employs perhaps 30 people seasonally and contributes \$400,000 in wages into the local economy.

Another outlet for internal circulation of locally harvested country foods, and a locus for small-scale community economic development, are the Hunters and Trappers Organizations (HTOs), some of which have operated food butchering, processing, and retail enterprises for over a decade. These seem to ebb and flow in terms of their size, scope, and success; several interviewed by Myers are no longer operating as actively as in the past—they may sell some produce, but do little product transformation. One manager suggested that the Hunter Support Program has encouraged hunting even by 'new' hunters, and that people in the community seem to prefer to buy meat or fish from the hunters rather than the HTO store. Most of the produce from his HTO is transported to boarding homes or institutions in Ontario.

#### 4.5 Arctic Alaska

This zone consists of three main regions: the Nome Census Area, the Northwest Arctic Borough and the North Slope Borough. As for many northern regions, the private sector plays a major role in Arctic Alaska's commercial and formal food networks. However, the State supports transportation of imported food. As in the Canadian Arctic, some foodstuffs are shipped via the postal service, usually at a subsidized rate and more frequently than market conditions would dictate (Caulfield 2000:6). Also, Arctic Alaska is the only North American circumpolar region that is connected by a

<sup>5</sup> Three freight rates apply to different types of goods—nutritious perishable foods, non-perishable food, and essential non-food items such as clothing and personal care products.

<sup>6</sup> An even more distant venue was opened to Cambridge Bay's muskox jerky when Canadian astronaut Chris Hadfield took it with him into space in 2001.

road, between south Alaska to Prudhoe Bay (North Slope Borough). In times of crisis, these facilities could be critical; if the air transport system, currently used for food transport, faced problems.

The private enterprise Alaska Commercial Company, owned by the North West Company, dominates the retail industry. The rest of this sector is occupied by privately owned or cooperative stores, for instance in smaller communities (Caulfield 2000:6). Another characteristic is the relatively developed catering industry, which is often operated by immigrants from South-East Asia.

Alaska is a region where substantial commercial fishing activities take place (Rasmussen 1997a:9), for example, commercial salmon fisheries. Arctic Alaska has one reindeer herder selling its production at the regional level (Caulfield 2000:3).

Whaling in Arctic Alaska is important both in economic and cultural terms (Freeman *et al.* 1998). Bowhead whale hunting takes place every year, in some coastal communities, which supports a vast distribution of the meat through customary networks.

As seen in the Canadian Arctic, there is a subsidized country food supply program. The Alaskan program is clearly aimed at providing country food to elders, whether they are living in Elders houses or their own homes.

## 5. DETERMINING FACTORS IN FOOD NETWORKS

Regarding the consumption of industrial food, the supply of basic foodstuffs is generally ensured by import networks in all circumpolar regions. However, there are significant disparities from the standpoint of the availability, accessibility, variety, and freshness of food between regions and within them.

The same products are not available to consumers from one region to the next. For example, Greenland stands out from the rest of the circumpolar world by reason of a supply of European products of exceptional variety. One has to be in Greenland's main towns, such as Nuuk, Sisimiut or Qaqortoq, to see the displays of fine pastries prepared on site each day, or the stocks of local products that are ready for consumption and that are manufactured entirely by Greenlanders and sold in stores (lamb, marine mammals, fish, etc.). Elsewhere in the Arctic, the choice that consumers have is generally more limited, the quality of the food—as in freshness—is not always as good, and the supply of locally manufactured products is of less consequence. Two

phenomena account for this situation. First, European markets offer products that are different from those manufactured elsewhere (distinct composition and production process). Moreover, the highly advanced nature of Greenlandic entrepreneurship improves the efficiency of food networks.

While it is possible to have easy access to fruits, vegetables and fresh meat in urban centres, this is not always the case in small communities. Geographical remoteness and the level of urbanization are linked to disparities in the food supply in the various northern regions.

These inter-regional and intra-regional disparities are mainly explained by the various forms and the degree of intervention of the government sector, as well as by the conditions and methods of operation of the private sector. In this section, the effects of these influences on transportation systems as well as on import, internal, and food export networks are presented.

### 5.1 Divergence

In the Arctic, transportation is a major component of food security. In Greenland, it is a State matter. Not only does the State ensure all maritime shipping by way of one of its enterprises, it also applies a policy of uniform and subsidized prices. This guarantees the availability of food and offers consumers equal access to these goods in terms of cost. In Northern Canada, improvements in the transportation subsidy program resulted in an increase in purchases of perishable goods. These examples show that State intervention can greatly improve food security.

The situation differs in the other regions of the Arctic where, despite some regulation of the transportation industry, the private sector benefits from significant leeway that can affect food networks. The private sector is governed by a concern for profits, particularly given the high production costs associated with the large distances that must be covered and the small transportation volumes. In the private sphere, prices are set according to the conditions of the free market and profitability, conditions that do not correspond necessarily to the interests of consumers. As a result, the private sector might be detrimental to food networks if businesses decide to modify their operations, for example by reducing the frequency of transportation, by interrupting service to certain communities, or by increasing prices. In Northern Canada, the management of air traffic was recently privatized. The new owner increased the costs of this service, resulting in a significant hike in transportation

costs. This type of behavior is less likely to emerge if the State owns the businesses and entrusts them with a social-democratic mission seeking to reduce inequalities in the procurement of supplies, as is the case in Greenland (Morin 2001), or if the State supports the industry through subsidies.

The private sector is more likely to be confronted with bankruptcy and insolvency situations, whereas government-owned companies can count on public funds, even though such situations might interfere with the public opinion. The private sector must cope with conditions that are already difficult in the North, which can be enough to force closure. The Arctic has witnessed its share of bankruptcies.

These after-effects of the methods and conditions of operation of the private sector will be felt even more in small communities that are already disadvantaged. What is more, nothing will improve in a monopoly situation, as competition seems to be a condition for lower prices and because local populations would run the risk of not finding supply alternatives should a tragic event occur.

These repercussions regarding transportation, associated with the private and government sectors, apply in a similar manner to import networks, whose distribution is basically ensured by retail businesses. Here again, Greenland stands out, benefiting from the services of a government enterprise engaging in retail sales. This enterprise sells imported foodstuffs at almost uniform prices thanks to a State subsidy. For the private sector in other northern regions, the destruction of stores (due to vandalism, fire, etc.) can be dramatic for businesses that did not enjoy sound financial health at the outset. What would happen to the availability of imported goods, especially if no economic agent is there to take up where the other business left off?

Internal networks are relatively varied from region to region, for the reasons already mentioned (State *versus* private sector), but also for sociological reasons in particular. It is in Greenland that one finds the most significant marketing of country food, a practice accepted by local custom. This region is equipped with a manufacturing sector and efficient formal and informal country food product distribution systems, supported by the State. The capitalist values that largely characterize the rationality of many leaders of Greenlandic businesses involved in the food industry (Morin 2001) also helps explain this development. In Alaska, the mere idea of marketing country food is somewhat of a taboo. Northern Canada is between these two extremes; the commercial harvesting of food resources has been in an experimental phase for over two decades. This project

has generated enthusiasm among entrepreneurs and political leaders, but appears to have left the bulk of the population rather cold. The dominant social norms governing State and civil society vary by region and are reflected in an uneven development of internal food networks.

## 5.2 Convergences

Yet beyond these disparities, there are common denominators in the marketing of local food production. First, there is commercial potential. There are abundant resources, there is no lack of knowledge about these resources, and industrial processing standards have been mastered. It may be judged that this is only a matter of time. Indeed, capitalism has been sufficiently embraced to generate more economic initiatives in the future. Secondly, customary harvesting activities take on cultural and economic importance throughout the circumpolar zone. Indeed, harvesting activities continue to be of fundamental importance for cohesion and social integration because they forge privileged ties between members of the family and within the community. Harvesting proceeds are generally less expensive than market goods and provide the majority of consumed meat. That explains why harvesting activities take on importance from an economic standpoint, even though they are not considered in the calculation of national accounts. The thinness of the line representing these networks in the diagram (Fig. 1) in no way reduces the importance of gifts and counter-gifts in modern-day Inuit society. This represents an indispensable foundation of food security at the individual, household, local, and regional levels.

With the exception of Greenland, the export networks of northern regions are relatively humble. This is just another manifestation of the previously described phenomena. Indeed, where the State is less involved, the economy is generally less developed. State involvement in fisheries seems to have made all the difference in Greenland, the only circumpolar region that massively exports its food resources. Economic policies that are favorable to the expansion of the food industry have given rise to considerable investments and the creation of numerous jobs. However, the question is whether the large-scale harvesting of resources such as Greenland shrimp, which are almost entirely exported, will deplete this natural resource that could instead be consumed by local populations. Is there over-harvesting? Is the industry sustainable? There are no satisfactory answers to these questions; more research needs to be done; and an integrative analysis of data from a wide range of

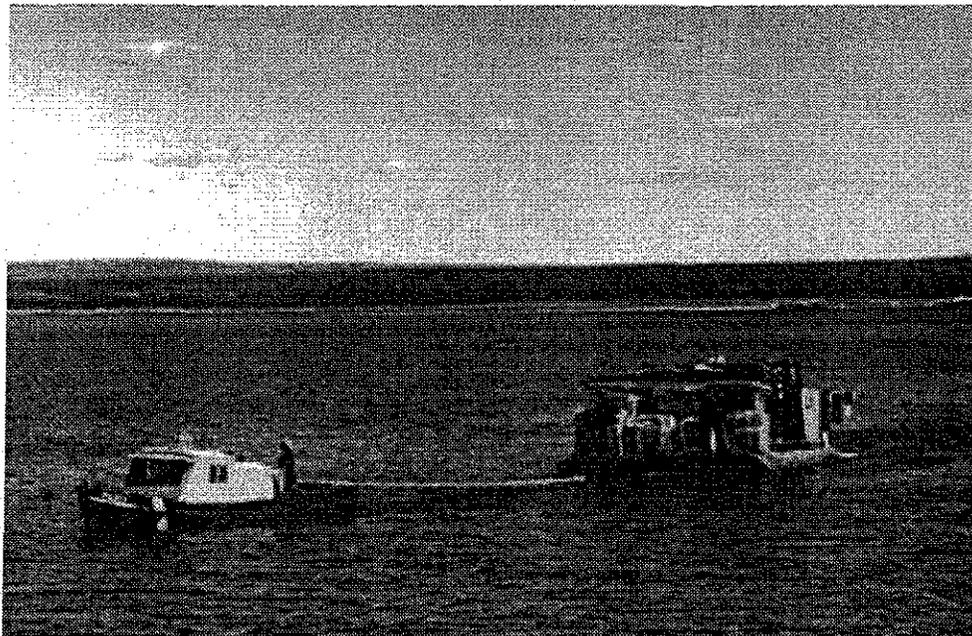
sectors must be performed in order to arrive at a comprehensive understanding.

In conclusion, it would seem that two debates have yet to be resolved. First, the promotion of local economic development still faces an aversion to marketing animals. However, economic development of this nature has the potential to increase the viability of Arctic communities, while creating jobs and activities that draw on Inuit skills and values regarding the importance of country food harvesting (Myers 2000). Secondly, State intervention in the economic sector still conflicts with the neo-liberal ideology advocating a *laissez faire* approach. In such debates, the case of Greenland clearly shows that the commercial harvesting of local products, coupled with State support of the economy, helps to secure food networks. However, discussions in Greenland are putting these practices into question, precisely to address the concerns of the neo-liberal dominant school of thought (Duhaimé *et al.* 2001). If neither resources nor the ecosystem carrying capacity are at risk, this could provide a model to determine the necessary—if not sufficient—conditions for sustainable food security.

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*The annual sealift: a tugboat tows a barge with supplies for the winter ahead.*