

On the Brink of Starvation:
Native Americans Responses to Food Uncertainty

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Introduction

Before the advent of modern economic growth, many populations lived on the brink of starvation. Too much water or too little water reduced harvests; while severe flooding and drought could decimate crops. Blights, rusts, midges were other threats. And if the harvest failed in consecutive years, people might starve. In fact, there were typically at least some periods over their lifetime when an individual went hungry. Nevertheless, actual famine appears to have been rare. Agriculture was inherently uncertain, but producers found ways of attenuating the risk. Grain and other foods were stored; in some areas agricultural plots were scattered as in the open field system of Europe; and the borrowing and lending associated with improved capital markets led to trade between surplus and deficit areas.

More generalized harvest failures could have serious consequences despite these mitigation efforts. In his account of a harvest failure in Beauvais in 1693, Laslett (pp.118-119) describes what happened to the Cocu's, a relatively affluent family. The father was a weaver and the mother and three daughters spun wool for him. By the end of 1694, "all that remained of a particularly fortunate family, fortunate because everyone in it worked, was a widow and an orphan. Because of the price of bread." Thus one can wonder how landless laborers or the poor managed in the face of a bad harvest, with its associated grain shortages and high prices. For many the answer was private, public or religious philanthropy; but if the situation was dire enough, even these institutions could be overwhelmed. In *Famine*, O Gráda argues that, although back-to-back harvest failures are often the proximate cause of famine, there can be contributing factors: war, government

policy; poor infrastructure; and an adverse disease environment due to poor hygiene and sanitation. Thus manmade conditions can exacerbate the impact the harvest failure, turning a difficult situation into a catastrophe.

Famine, starvation and the mechanisms that both contributed to and attenuated their impact have been studied by historians and economists largely in the Eurasian context. In this paper, we ask how the aboriginals in sub-arctic Canada managed in their often hostile environment. Most were hunter-gatherers, who moved across the landscape in keeping with the seasonal availability of game, wild grains, and other food sources. The groups tended to be small and reliant on similar resources; while their nomadic lifestyle made significant capital accumulation virtually impossible. As a result, they are not often included in stories of economic development. Yet, these hunter-gatherer societies faced an this environment in which the food supply was variable, and for which mechanisms including a type of capital market were needed to deal with risk. In this paper we explores how the hunter-gatherer communities managed risk prior to the arrival of European arrival and then after European contact, especially in sub-arctic Canada, where a commercial fur trade became an important part of native economic life.

I

Our focus is on the aboriginal groups north of central Mexico. Their societies had limited means of communication and no written language, but anthropologists and archaeologists have found evidence of long distance exchange, as well as sophisticated trade mechanisms, including reciprocity and redistribution. We first discuss these mechanisms, which were widely used in North America as a means, at least in part, of

attenuating the risk of starvation. Then we examine the impact of the commercial trade in the Hudson Bay region as revealed by the extensive records of the Hudson's Bay Company.

Native societies were primarily subsistence producers. In the northern part of the continent they were hunters, with a diet based on big game. In some regions fresh-water fish was a key supplement to the diet, and in others waterfowl was important, especially after firearms were introduced. The flesh of small game, such as rabbit and beaver, also provided energy, especially during periods of scarcity. But in a typical year, large ungulates, whether deer, moose, or woodland caribou in the boreal forest, or bison on the plains, comprised the bulk of the native diet. Along parts of the Pacific coast, fish and marine mammals were the main food sources; while along the Mississippi River and in other regions, natives grew corn, beans and other foods. As was true of pre-nineteenth-century Europe, Native Americans had an economy based on the land. Not only food, but clothing and often shelter were derived from hunting, being produced mainly with animal skins.

The harsh nature of the environment in was such that, in sub-arctic Canada, adult males required an extraordinary daily caloric intake of 3,500-4,000 kcal, requiring about four pounds of flesh food. Thus, the threat of starvation came not from failure of a crop but from an unsuccessful hunting season, especially in winter, when too much or too little snow could mean little game. Even summer would be a difficult time if the bison or caribou strayed from their traditional migration paths.

Although natives have not been viewed as market oriented, evidence has been accumulating that some groups engaged in sophisticated exchange. Some exchange was designed to attenuate the risk of hunger or starvation. The mechanisms included trade, reciprocity and redistribution; the latter two playing a much greater role than in western societies. Indeed, universal among the aboriginals of North America was an ethic of generosity. Since the 1920s publication of Marcel Mauss's seminal, *The Gift: The Form and Reason for Exchange in Archaic Societies*, the place of gifts in aboriginal societies has received increasing attention. Mauss defines gift-giving as equal exchange between symmetrically placed individuals or groups (Gamble 2008, 234). Gifts received one year are expected to be returned in another, and thus are a form of saving for the giver and borrowing for the receiver.

Whether called the 'good Samaritan' rule or an ethic of generosity, gift-giving appears to have been universal among North American aboriginals. There is a large literature on gift-giving, generosity, cooperation, and related behavior, where the emphasis is on individual motivation.¹ But underlying the societal imperatives of such behavior, as Karl Polanyi (1957) points out, was uncertainty about the environment. Anthropologist Bruce Winterhalder (1997) also explores the potential gains from societal norms based on generosity. He characterizes two explanations for gift-giving in pre-modern societies as "tolerated theft" or "scrounging," and risk minimization.

In aboriginal society, tolerated theft, which was regarded as giving rather than theft, has been viewed by anthropologists as a mechanism that raised welfare by equalizing the distribution of income. The notion is that, with diminishing marginal utility

of consumption, the loss in utility of the (higher income) giver was less than the gain in utility of the receiver. This essentially utilitarian view takes utility across individuals as additive. As Winterhalder points out, there is the question of what motivates the giver; but, even if that is resolved, a more general issue is how giving affects work effort, with its implications for output and consumption. The problem is that sharing acts as a tax on both the giver and receiver since each keeps only a portion of any additional output that they produce. Figure 1 depicts the reaction functions of two persons who share equally. Each function shows the optimal (utility-maximizing) output of each person for a given level of output of the other. In the illustrated case, person 2 is assumed to be only 25 percent less productive than person 1, yet in equilibrium his output is 60 percent less (.4 as compared to 1). The gap is larger because person 1's effort is greater. Since their consumption is the same, it follows that, ignoring prestige or other utility effects of sharing, the lower productivity person is better off.

The literature on generosity does not claim that gift-giving led to full income equality, but might partial sharing have been a way of raising total utility? Figure 2 describes the range of outcomes, from no sharing to full sharing, for output, consumption, and utility. As the sharing rate increases, the high and low productivity persons both produce less because of the disincentive effects (see Figure 2a). It is only when there is almost full sharing that person 1's output goes up.² Throughout all sharing ranges, total output falls and the consumption even of the person receiving the transfer declines (see Figure 2b). The utility of person 2 does go up because their effort is less, but this is at the expense of the giver (see Figure 2c). Total utility does not increase, with the exception of

a range where sharing rates are very low. Thus, even if one takes a utilitarian approach, gift-giving is hard to justify on the sole basis of equalizing income.³ It should be emphasized, however, that this conclusion applies only to transfers that are always in the same direction. As outlined below, where gift-giving is reciprocal the benefits can be very great.

Another form of sharing was the ‘good Samaritan’ principle. This required that even if a native group had nominal hunting rights to a territory, outsiders were permitted to kill any potential food-source animal for personal use. In *Commerce by a Frozen Sea* we argued that this rule benefitted a native economy based on large game (such as moose or caribou), because it increased the Indians’ incentive to cooperate over a resource that was depletable.⁴ Since large game migrated, and various native groups had access to the herds, it was in their common interest to behave as a single monopoly exploiter of the resource, rather than compete. Where two groups compete for a depletable resource, each maximizing their own long-run harvest given the harvest of the other, their harvest is smaller and their level of hunting effort much greater than if they cooperate. The ‘good Samaritan’ rule was, therefore, a mechanism that encouraged conservation and more efficient hunting.

In the eastern part of the continent, property rights to game were stricter than those in the interior. Native groups even to the level of the family had exclusive rights to specific areas. Chrétien Le Clercq, a Franciscan missionary, gives the following seventeenth-century description of property rights among a group of Algonquians: “It is the right of the head of the nation ... to distribute the places of hunting to each individual.

It is not permitted to any Indian to overstep the bounds and limits of the region which shall have been assigned to him in the assemblies of the elders. These are held in autumn and in spring expressly to make this assignment.” And fur trader Joseph Chadwick described in 1764 how Maine Indians divided their land into heritable family hunting territories: “Their hunting ground and streams were parceled out to certain families, time out of mind [into the distant past]” (Carlos and Lewis 2010,156).

Even where native groups had exclusive hunting grounds, sharing/gift-giving may have played a role in conservation. Suppose each person’s productivity depends positively on the resource stock. In the absence of sharing, a decline in the animal stock will lead to increased hunting effort as each native tries to maintain their consumption. If the increase in effort is large enough the animal population will decline further. The advantage of a sharing rule is that it moderates the overall rate of exploitation. In effect, the sharing rule shifts hunting to the region where the resource stock has remained high and reduces the overall labor input.

Another explanation for sharing is what Winterhalder calls “risk minimization.” In regions where output is highly variable, sharing has been shown to result in improved nutritional outcomes. The key is that health is determined less by average consumption over time than by the periods when consumption falls below a threshold. In the subarctic winter, the extraordinary energy demands made starvation a particular threat, especially given the uncertainty about weather and the movements of game.⁵ Gift-giving or sharing greatly reduced the risk by allowing natives to diversify over territories that varied over time in productivity. In fact, because of the precarious nature of their environment, the

insurance role, implicit in reciprocal sharing, did not just raise the utility of natives, it was an essential survival mechanism.

The natives of the Pacific Northwest had perhaps the highest incomes in North America, but they too faced periods of scarcity. Gift-giving through the potlatch was an important feature of their society. As Stuart Piddocke (1965, 244) describes it: “the potlatch had a very real pro-survival or subsistence function, serving to counter the effects of varying resource productivity by promoting exchanges of food from those groups enjoying a temporary surplus to those groups suffering a temporary deficit.” And Asen Balikci (1970, 17) points to the vital role of sharing among the Netsilik Eskimos [Inuit] of Nunavut [eastern Northwest Territories]: “Whenever game was abundant, sharing among non-relatives was avoided, since every family was supposedly capable of obtaining the necessary catch. In situations of scarcity, however, caribou meat was more evenly distributed throughout the camp.”

The Southern Kwakiutl Indians of British Columbia have received particular attention because of their elaborate potlatches, which greatly expanded after European contact. Potlatches not only lowered risk and helped preserve resources, they also reduced conflict, a role highlighted by Bruce Johnsen (1986) - see also Allen (1956). The Kwakiutl occupied the salmon-rich inland waterways of Queen Charlotte Sound. Each kinship unit, or *numaym*, had exclusive ancestral rights to specific streams, an arrangement that helped preserve the salmon stocks, since it encouraged each group to fish at a sustainable rate.⁶ However, salmon runs varied, and in years when the run was low there could be privation and an incentive to overharvest, with serious implications for

future salmon populations. But the problem emphasized by Johnsen was the close proximity of the groups, which made it tempting to those having a bad fishing year to encroach on their neighbors' streams. If this happened, conflict was likely, and Johnsen points to evidence that, in earlier times, warfare was common. Variability in salmon runs aside, the differential productivity of streams in typical years was also a potential source of conflict. The transfer of wealth through the potlatch acted as a safety-valve, mitigating the threat of conflict as well as ensuring a redistribution of food resources.

In the hunter-gatherer world of North America, gift-giving and other forms of generosity raised long-run welfare, perhaps even ensuring native survival. Yet to be sustained as a societal norm, gift-giving had to be in the interest of individuals. In the language of game theory, it had to be incentive compatible. Drawing on Marcel Mauss, the father of gift-giving theory, anthropologist Chris Gregory (1982, 19) explains the difference between commodity and gift exchange this way: "commodity exchange establishes a relationship between the objects exchanged, whereas gift exchange establishes a relationship between the subjects." In contrast to commodity exchange where no further interaction between the parties is implied, a gift creates a debt to be repaid. Rank and prestige are other important features of gift-giving. Gifts are seen as a way of maintaining or gaining rank and enhancing prestige, features absent from commodity exchange. Prestige and status are recurring themes in the anthropological literature.

The most studied groups in regard to gift-giving were those living in the Pacific Northwest. Gift-giving which often took the form of a potlatch varied depending on the

tribe, but some features were common.⁷ The chief of a clan or kinship group, or someone of lower rank, would invite the guests and assume the role of host. There would be a feast, but the main purpose was to distribute goods. In the case of large potlatches called by a chief, other members of the clan would also provide the gifts. But whatever the exact makeup of the donor group: “participation [was] direct and the return in prestige [was] immediate” (Barnett 1938, 350).

With European contact, the volume and types of gifts expanded. Gilbert Sprout, a colonial magistrate on Vancouver Island in the mid-nineteenth century, described gift-giving by the Aht, who lived on the west coast of the island: “the principal use made by the Aht of an accumulation of personal chattels is to distribute them periodically among invited guests...the giver does not now consider that he has parted with his property...he regards it as well invested, for the present recipients of his largess will strive to return to him at their own feasts more than he has bestowed” (Bracken 1997, 33-34). Israel Powell, the first Indian superintendent of British Columbia, saw potlatches in much the same way: “The gifts are dealt out with profusion, but it is attended with a strange feature; for an equivalent in return at a future gathering is expected to be presented” (Bracken 1997, 36).⁸ Another motivating factor was the prestige and status associated with the ceremonies. Sprout did not see this as unusual: “The habit of the ‘Patlach’ is based on the common human desire for distinction which appears to be as strong among uncivilised as among civilised people” (Bracken 1997, 44). Thus, even though there was no legal commitment to reciprocate, societal norms provided enough of an incentive. Over time the potlatches became more elaborate and prestige became associated with the volume of gifts, but this

was a post-contact phenomenon. In earlier years the amounts distributed remained roughly the same.

The variants of gift giving such as sharing, potlatches, and the ‘good Samaritan’ rule reduced the threat of starvation, and were sustained by the knowledge that all groups could be faced with food shortages, and so mutual exchange over time benefitted everyone.

II

Little information exists on the overall dimension of the trade among aboriginal peoples, but archaeologists have found evidence of exchange over long distances and in a wide variety of goods. Prior to European contact, there was trading throughout the continent as Baugh and Ericson document in *Prehistoric Exchange Systems in North America*. In the Maritime Peninsula, comprising the Canadian Maritime provinces and parts of Quebec, New York, and New England, a wide range of exotics (non-local items) has been found in burial mounds. Stone and mineral tools have been unearthed as well as ceramics and other artifacts (Bourque 1994, 29-35). Along the St. Lawrence River basin and in the Great Lakes region, evidence from archaeological sites has been used to describe the major trade routes for varieties of silica, silver, copper, and marine shells (Wright 1994). Michael Stewart (1994) infers from the sites in the Middle Atlantic region that there were two systems of exchange. Broad-based exchange involved goods indigenous to the area and took place among or within local groups or bands and is generally found at sites close to their source. Focused exchange, on the other hand, involved goods produced for trade often over long-distances. It appears that both broad-

based trade and focused trade declined after 800/900 A.D., a shift that coincided with the emergence of sedentary agriculture (Stewart 1994, 92). Although Stewart finds the decline puzzling, it may be that the range of goods provided by subsistence agriculture, which would have included some hunting, and the comparative stability of output, mitigated the need for trade.

The Northern Plains were lightly populated, yet as in other regions, aboriginal peoples developed elaborate, long-distance, trading arrangements. In a prehistoric site in South Dakota, archaeologists have found artifacts from Florida, the Gulf coast, and both the Atlantic and Pacific coasts (Wood 1980, 99). More interesting for the discussion here is evidence of trade in food. Natives hunted bison on the Great Plains almost from their arrival in the Americas. Most hunting was on a limited scale, the killing of small numbers of animals at separate locations to meet the food requirements of the individual groups.⁹ But starting about two thousand years ago, there is evidence of production of meat for trade.

At Head-Squashed-In, an area in southern Alberta, there was intensive hunting and processing of bison. The site appears to have been used on an annual basis which required burning the rotting animal remains which would have spooked the following year's bison herd. Archaeologists have found at the site "over a million projectile points, hundreds of thousands of potsherds, and millions of kilograms of rocks." These rocks and the requisite water were carried several kilometers and "used in stone boiling to render bone grease" which is a very labor intensive process (Bamforth 2011, 8). The bone grease was used to produce pemmican, a nutritious mixture of powdered meat mixed with melted fat that was

light weight and easy to trade. It is evident that the output at Head-Squashed-In far exceeded what was required to meet local demand. Moreover, this industrial level of production coincided with the expansion of exchange networks on the Plains. Because food remains are rarely found in archaeological sites, it is hard to know the distance this pemmican travelled. However, what has been found in western sites is evidence of trade in pottery that extended from Illinois and Ohio to the Rocky Mountains and may represent the reciprocal trade for western pemmican (Bamforth 2011, 10).

Revealing of the nature and extent of trading on the Northern Plains are the journals of Lewis and Clark, and later explorers. They describe a trade in non-durable goods which cannot be revealed by burial sites. Trading in the Northern Plains appears to have come about mainly because of the coexistence of sedentary horticulturalists, including the Arikara, Mandan, and Hidasta, who lived in the Dakotas, and nomadic hunters, among them the Cheyennes, Arapahoes, and Comanches. The horticulturalists traded corn, beans and other garden produce, and in return received dried meat and such animal products as bison robes, sheep bows, and leather goods. Much of the trading activity took place in village centers, which for the Arikara, Mandan, and Hidatsa, were located along the Missouri River (see Figure 3).

In the Pacific Northwest the trading structure was similar. The main center, the Dalles Rendezvous, was located at major rapids on the Columbia River, and attracted native groups from the coastal region. But it was also part of an overall trading system that included the Plains. The coastal natives exchanged mainly dried fish in return for the products of the hunting economy. Other trade items included fish oil, feathers, shells, and

root and seed foods (Wood 1980, 102). The long-distance exchange was facilitated by an intermediate trading center, the Shoshone Rendezvous in southwestern Wyoming, which like the Dalles Rendezvous was located on an important water route, the Bear River. The Crows brought goods there from the Northern Plains and the Utes came from the Southwest. The Shoshone, Nez Percés, and Flatheads were among the groups that completed the trading network to the West Coast. Despite the high transport costs implied by the long and elaborate trade routes, the sharing of technology and the increased variety in consumer items was sufficient compensation. Most natives did not engage in long-distance trade directly, rather the involvement of middlemen allowed them to participate in the benefits.

III

The advent of a commercial fur trade not only provided native groups with access to the European technologies associated with metal and iron products, and a range items, such as pots, awls and knives, that reduced the difficulties of daily living, but the post records and diaries provide insight into the lifeways of the groups. European operations were superimposed on an already well-developed and complex Indian trading structure. For many years, Native goods from the Canadian shield - furs, native copper, dried berries, moose skins, antlers and fish - had been moving south to be exchanged for tobacco, corn, gourds, fishnets, wampum, raccoon and squirrel skins, which came north (Harris 1987, Plate 35). So, even though Native Americans had technologies primitive in comparison to those of the Europeans, long-distance trade was not new, and the notion of exchange was already well established. What the commercial trade did, however, was to

greatly expand the range of goods traded and increase the value of some of the indigenous goods. Most importantly, the return from beaver pelts and other furs increased dramatically.

During the early years of contact, the area of central and southern Manitoba and Saskatchewan was inhabited by the Algonquian-speaking Western Woodland Cree and the Siouan-speaking Assiniboin. These were hunter-gatherers who migrated across the region with the seasons. From archeological remains, it seems that, just prior to contact, the Assiniboin occupied the boundary-waters area between Minnesota and Ontario as well as a large portion of south-central Manitoba, with the Cree living to the north and east; but by the end of the eighteenth century, the geographical distribution of these groups had shifted. The Western Woodland Cree occupied the full boreal forest west of Hudson and James Bays, including the northern portions of Ontario, Manitoba, Saskatchewan, and Alberta (Helm 1981, 256). As well, the Plains Cree had split off and were living in the parkland and plains in southern Saskatchewan.¹⁰ In essence, the territorial divisions of the latter eighteenth century were the outcome of movements of Cree and Assiniboin groups. This process was part of larger migration patterns occurring throughout the seventeenth and eighteenth century and perhaps even earlier.

The full boreal forest, which by the end of the eighteenth century, had become the home of the Western Woodland Cree is densely forested with white and black spruce, but also broad-leaved trees such as white birch and trembling aspen. To the north the boreal forest transitions into tundra and to the southwest into parkland and plains. In the forest, the main food animals are woodland caribou, moose, elk, wood bison and white-tailed

deer. Of these, moose and woodland caribou were the more important. Smaller mammals that could be a source of food included beaver, hare, muskrat, woodchuck, porcupine and squirrel.¹¹ The main fur-bearing animals were beaver, mink, marten, otter, lynx, fox and muskrat.¹² Also traded, but of much less importance, were squirrel, wolverine, grey wolf and fisher (Helm 1981, 257). Natives in the region also ate fish, waterfowl and berries when available. The grasslands of the Plains Cree were well-stocked with game; pronghorn antelope, mule deer, red deer and bison. Of these, the bison was the most important, with bison hunts taking place during the summer. In the autumn, for protection from the elements, groups moved into the parkland, which was rich in a variety of resources with the exception of big game animals.

Although information on the socio-territorial organization of the Cree is fragmentary, it appears consistent with what is known from the late contact-traditional period. The smallest unit was the nuclear or polygynous family. Local bands consisted of several families headed by a leader. In summer, local hunting bands would come together as a regional band and camp in the summer grounds. At the same time, families were free to leave one group and move to another on the basis of kinship (Helm 1981, p. 259). The biggest gathering occurred in the summer when food sources allowed for larger congregations of people. In the late summer, the bands broke up as each family group traveled to its wintering territory. Autumn was the season for hunting moose, elk and caribou. The main time for hunting beaver and other small mammals was late November and December, after the animals had grown winter pelts, and again in March when

temperatures rose. In the sub-arctic environment, activities were limited in January and February.

IV

The annual cycle of exploitation of food resources is evident also in the post journals which were kept by the chief trader or factor at each Hudson's Bay Company post. Here we use by way of example the post journal for York Factory in 1740.

Although York Factor had been established in 1684, it was not until the end of European hostilities between English and French with the Treaty of Utrecht in 1713, that the post returned to Hudson's Bay Company hands and the threat of a French presence removed. We report on the York Factory journal from August 2, 1740 to August 13, 1741. The post year was defined by the arrival usually in late July and departure in August of the annual ship from England. The ship transported trade goods, new men for the posts and food for the men stationed at the post. It returned with the furs traded from native groups, men returning to England, trade goods that would not sell, and lumber, which provided an additional small return to the company and reflected the high value of the furs and the fact that ships would otherwise have returned mainly in ballast.

Although the Hudson's Bay Company ship supplied the posts with provisions for the year, the men looked to the environment to supplement their diet, and especially to native groups for game. The post journals give a good sense of the role of natives, the so-called "homeguard Indians," in supplying food to the men at York Factory, who in 1740 numbered about thirty. Following is a chronological listing of food entries in Governor James Isham's post journal for August 1740:

Aug 3: Several families of Indians went upriver to hunt deer; I canoe brought Jack (pike) and deer tongues
 Aug 4: 1 canoe brought 21 geese
 Aug 6: 2 men sent for fish; 1 man brought four ducks
 Aug 10: 1 canoe came with 15 jackfish
 Aug 11: 1 canoe brought 1 buck deer; 2 Indian boys brought 4 ducks
 Aug 12: No fish to be got as yet
 Aug 14: 2 men brought 2 ducks and 4 plovers
 Aug 16: Netted 96 fish
 Aug 17: Netted 10 fish Several families of Indians came – killed many deer but cannot get them to the factory before they spoil. Two men at fort to salt deer flesh – hoping for a great quantity of meat.
 Aug 20: No fish; 2 families of Indians came to kill a few geese, there being no deer; 1 man and 2 lads brought 10 ducks
 Aug 21: Several flocks of geese seen; 2 families of Indians went to marsh to kill geese; 1 man and 2 lads brought 12 geese and 6 ducks; 20 fish in nets. Another 8 fish
 Aug 22: 2 men and 3 families in marsh for geese
 Aug 23: 7 geese from our hunters
 Aug 24: 6 geese from our hunters
 Aug 25: 40 fish from nets; 2 families of Indians came to hunt geese
 Aug 26: 20 geese from Indians; 40 fish from nets
 Aug 27: 20 fish from nets; 1 canoe brought fat, dry moose flesh. Tell us there are no deer; 3 Indians came to trade fat and dry meat
 Aug 29: 50 geese from Indians
 Aug 30: 100 geese from our hunters
 Aug 31: 36 geese from our hunters.

In September the post received 566 geese with the last one noted on September 18th. The journal lists a number of deer tongues and trout during the remainder of the month. In October the post began to get rabbits and partridges. Isham also remarked that he had the men cutting a path to the gully ‘to make it easier to bring back geese in the spring’ (Oct 6, 1720). Partridges continue to be brought to the post through December, although the journal also notes that on December 20th there were no partridges due to the cold. In February, the journal begins to comment on hunger among the Indians, being told about families in need by Indians who came to the post saying there are no deer or beaver. These Indians were given oatmeal and men were sent to help the families to the post.

Through February, Isham notes the number of families that arrive and are given oatmeal stating ‘once they are fed, they will be sent away to hunt.’ (Feb 18, 1720). The entry for March 1st notes that one Indian arrived, having left his family 30 miles away because they were too weak due to the unusually cold winter. On March 24th birds are reported to have been seen for the first time but no deer had been sighted. Deer and deer tongue begin to be mentioned in April, which is when and the spring goose hunt began.

Meat entries for the year document the seasonality of the various types of meat and the lean months in late winter. York Factory relied on this inflow of meat. The men at the post would probably not have starved; they could have survived on salted beef, and oatmeal, and other provisions, but fresh meat was still very important in helping them get through the winter and providing the energy to maintain the Factory. Also contained in the post records is evidence of the way the cultural arrangements of native society were embedded in the relationships between the natives and the Europeans, which in *Commerce by a Frozen Sea* we show helped both natives and European cope with the harsh environment. Natives brought meat to the posts, but also received food when they were in need. And they jointly participated in the goose hunt. Company men provided shot and powder, as well as the salt and barrels to store the birds, while the natives did the actual hunting.

V

In 1774, in response to competition from French traders from Montreal, the Hudson’s Bay Company opened Cumberland House, a post on the Nelson River, which was one of the two main routes to York Factory. The post journal begins Wednesday July

13th, 1774 the date Samuel Hearne left York Factory to build the new post. Again the journal gives insight into how Hearne and the other men survived in the interior. The traders brought European provisions, but they were also expected to obtain meat from the Indians or hunt themselves. Five days into the journey, Hearne notes the abundance of waterfowl, as well as a “great plenty of Moose [which] the Indians will not take time to hunt.”

The report of early August suggests that provisions were running low and that, while the men had gone hunting, their lack of success meant they were “in great want of Provisions, as have been for these four days past.” One week later, Hearne is still reporting that they had killed nothing and were eating large quantities of berries, but soon after they met some Indians and traded for dried meat. On August 13th, Hearne also traded for some moose skins for a tent to shelter the men while they built a permanent structure. The journal continues to report infrequent trading for dried meat until Friday September 9th, when Hearne reports: “early in the morning an Indian man came to the tent and informed me of his having killed a moose not far off for which I payed him and sent people with two canoes to fetch home the meat,” which arrived the next day. They spent the day drying the meat to prevent it from spoiling. In the next entries, geese and sturgeon are mentioned. The weather, however, was turning and by October 26th, the lake was frozen over.

In early November, Hearne reports his people bringing firewood, while hunting and fishing remained unsuccessful. Want seems to have affected the natives as well. Hearne reports that an Indian came to the post whose family was “starving” on the other

side of the lake. He gave him some meat “to carry home and they are to pitch this way as soon as possible,” which the Indian did some days later with sixteen people. On December 2nd, Hearne writes that “the Indian man who was sometime since mentioned as starving came with some of his family and brought four sledge load of Moose Flesh.” In the middle of the month, five Frenchmen arrived at the post having spent twenty days hunting but finding nothing. Hearne reports they were in great distress but given that provisions at the post were also scarce, he could give them little.

Strong gales and thick snow drifts in December did not improve the situation, and the post was getting short of provisions. Even the Indians were having little success hunting. The report from February 8th gives a good indication of the hardship:

The vary scanty allowance of provisions we have been put to for sometime past, has occasioned many grumblings among some of the men, but as from the first of the scarce times I stipulated myself to the very same allowance in every article, told them they had no right to complain, knowing it were not in my power to redress them. Finding provisions growing short we stinted ourselves to two scanty meals per day in December and by the middle of January were so short that we could not afford more than a small handful of dried meat called Thewhagan and about four ounces of other meat per man each day, but for some time past have been reduced to still shorter allowances. This scanty way of living, at times, being so different from the certain good allowance at the factory is so alarming to my men in general, that it is with greatest difficulty I can persuade them from thinking that entire Famine must ensue – partridges, rabbit, fish etc have entirely failed since the scarce times which makes them much worse, however, I am not without hopes of some relief before long as daily expect some Indians in.”

Four days later, an Indian arrived with news of three tens of Indians within five hours walk who had killed five moose and were coming with the meat.

Hearne, his men and the natives in the region survived the winter; and sharing, reciprocity and the exchange of information about the limited resources helped make that possible. Telling perhaps was Hearne’s unwillingness to supply more to the French

traders. It may have been that supplies were too low; but the fact that the French were competitors may have influenced the decision.

The journal for the following year was kept by trader, Matthew Cocking, and shows that supplies for the subsequent winter were more adequate. On October 5th, Cocking writes that four canoes with dried moose flesh and ten more canoes with provisions came to trade. He also notes towards the end of the month that he had enough provisions for 100 days that could be supplemented with fish. It is unclear whether provisions were more abundant in the winter of 1775 relative to the prior years because of weather and animal movements or because the Indians were now aware that there was a new source of trade goods. Still the journals for the two years indicate that there was a shift from scarcity to relative abundance, and that the interactions between the Indians and the company helped make that possible.

VI

Over the next five decades, the commercial fur trade expanded and competition between Hudson's Bay Company traders and traders from Montreal became more intense. In 1821, the Hudson's Bay Company and the North West Company combined to form a single firm, retaining the name, Hudson's Bay Company. The merger led to significant change for native groups. In the years where there was competition, native traders had been able to extract higher prices for their furs. This led to increased labor supply to the beaver trade and serious depletion of the underlying resource base. Following the merger, not only did the prices paid for pelts decline, so too did the company's acceptance of lower quality pelts. Indeed, Governor Simpson closed fur trading posts in areas most

affected by depletion to allow the beaver stocks to recover.

With the merger of the Hudson's Bay Company and North West Company, native groups suffered a decline in income from the fur trade, represented by a reduced access to European goods. To the extent that these were the producer goods, such as firearms, knives, twine and other goods used for hunting, the change reduced the natives' ability to obtain food. Still the traditional native technologies had not disappeared with the gun; so the Indians maintained but perhaps at a diminished level their means of achieving subsistence. What would later have much more serious repercussions for native communities were the assaults of the late nineteenth century on the bison herds by both native and white hunters. No level of reciprocity or sharing could have done much to mitigate the impact of such a massive shock to the food supply. Fish, fowl and small game could not come close to taking up the slack. It was only in the more protected woodland regions that Native Americans continued to hunt and successfully live off the land.

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Endnotes

1. As we noted, Marcel Mauss's classic, *The Gift*, is the cornerstone of this literature.
2. Over this range the income effect of the implicit tax on person 1, which leads to increased effort, dominates the substitution effect.

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3. Figures 3 and 4 are based on specific parameter values, but the main conclusions would apply if other plausible values were assumed.
 4. The “good Samaritan” rule extended to beaver and other animals that had value in the fur trade, but if a beaver was killed, the hunter was not allowed to sell the pelt. See Carlos and Lewis (2010, chapter 6 and appendix C).
 5. The calorie estimates by anthropologists Edward Rogers and James Smith are for the Canadian shield west of Hudson Bay. Energy demands were less further south, but a daily requirement of three pounds of meat from large game per day was likely the minimum in northern part of the continent. See Carlos and Lewis (2010, 163).
 6. Although natives had no formal knowledge of fish dynamics, natives were aware of the effect of overfishing on future stocks.
 7. Anthropologists have written extensively on the Kwakiutl and other groups including the Tlingit, who occupied parts of southern Alaska and northern British Columbia, the Haida, who lived in the area of the has some ideas about it.”
 8. Some discussions of gift-giving suggest that reciprocity included the expectation of a greater return in the future. The larger amount could have reflected an implicit positive discount rate made higher by the possibility that the “loan” would not be repaid.
 9. Bamforth (2011) provides a detailed description of the various techniques used for hunting bison on the Great Plains. Contrary to a popular perception, natives rarely used the method of driving bison over steep arroyos.
 10. The boreal parkland border formed the dividing line between these two groups. For the Plains Cree, the western boundary, a consequence of the failure of the Blackfoot-Cree alliance, ran from Edmonton through the elbow of the South Saskatchewan River to the Yellowstone and Missouri rivers (Milloy 1991, p. 63). Assiniboine territory lay to the south, both north and south of what would become the US-Canada border.
 11. A sub-species of hare, the varying hare, also known as the snowshoe hare, was the most important of these smaller mammals. They ranged over much of the northern half of North America.
 12. Beaver was by far the most important pelt traded by number and value.

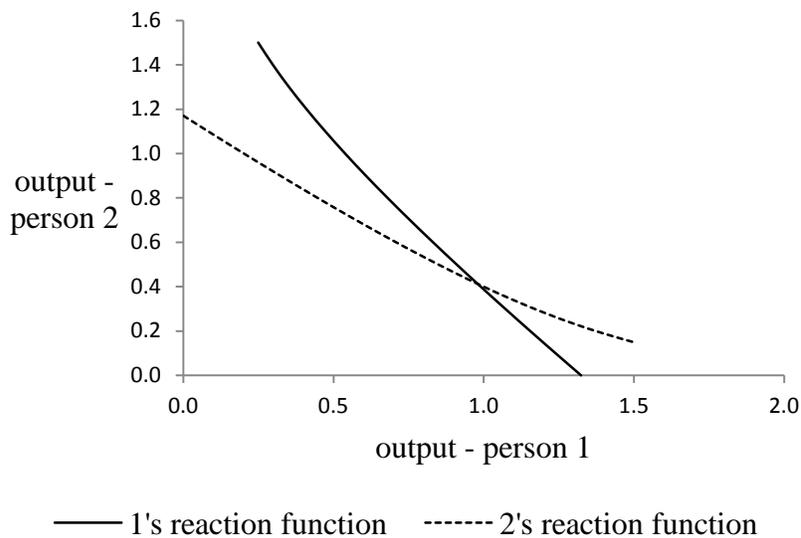
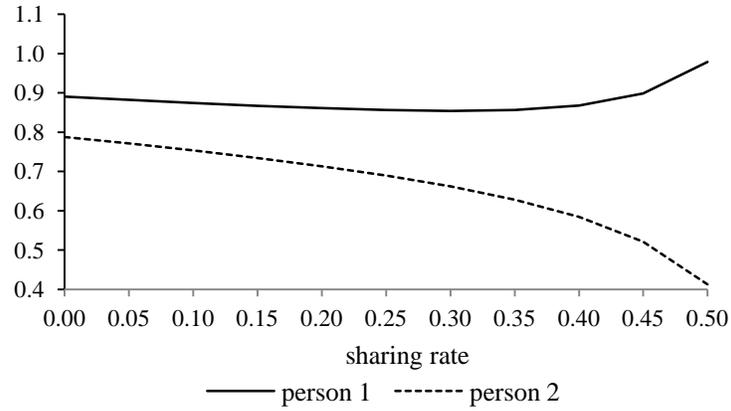


Figure 1. Reaction Functions with Full Sharing

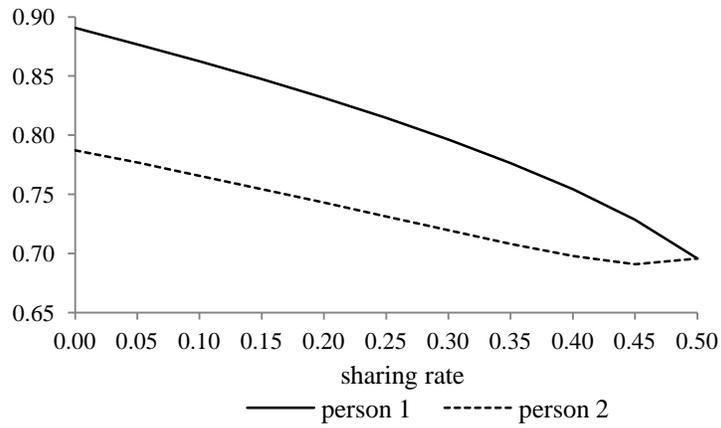
Notes to Figure 1. See appendix. The equations underlying the reaction functions are:

— , and , where U is utility, c is consumption, l is labor (effort), q is output, k is labor productivity, δ is relative risk aversion, and $\alpha - 1$ is the elasticity of the marginal disutility of labor. Output is normalized such that person 1 produces one unit of output with one unit of labor ($k_1 = 1$). Person 2 is assumed to produce .75 units of output with one unit of labor ($k_2 = .75$). The parameter values are: $\alpha = 1.5$ and $\delta = 3$.

2a. Output



2b. Consumption



2c. Utility

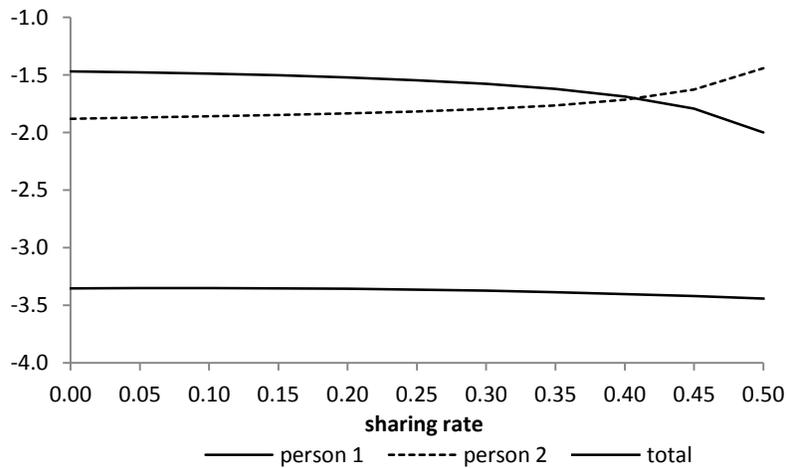


Figure 2. Output, Consumption, and Utility with Partial Sharing

Note to Figure 2. See Figure 1.

Figure 3. Selected aspects of the Middle Missouri and Pacific-Plateau trade systems

Note: Large stippled circles indicate major trade centers; large hatched circles indicate secondary trade centers; small black circles represent minor trading points.

Source: Wood, "Plains Trade," p.101.

