

Exchange among Native Americans and Europeans before 1800

Strategies and Interactions

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## 1. Introduction

North American aboriginals are not often included among those who had capitalist economies.<sup>1</sup> Most were hunter-gatherers, moving 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. These features left little scope for market exchange, while their nomadic lifestyle made significant capital accumulation virtually impossible. Also inhibiting complex market activity was the fact that, until the nineteenth century, native peoples had no written language. Nevertheless, anthropologists and archaeologists are discovering that, throughout North America, natives were engaging in trade, including long-distance trade; and in areas with high population densities, trade was an important feature of their economies.

In this paper we consider the record of economic exchange among aboriginals, a record that pre-dates European contact. We also discuss the later and much more extensive exchange that took place between natives and Europeans. Although natives have not been viewed as market oriented, evidence has been accumulating that some groups engaged in sophisticated trade. Their exchange mechanisms included reciprocity and redistribution, which played a much greater role than in western societies.<sup>2</sup> Indeed, universal among the aboriginals of North America was an ethic of generosity. Marcel Mauss defines gift-giving as equal exchange between symmetrically placed individuals or groups.<sup>3</sup> Gifts received in one year are expected to be returned in another. Thus, gifts were a form of saving for the giver and borrowing for the receiver. Since the 1920s publication of 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. We will be exploring some of the factors that contributed to gift-giving among North

American aboriginals.

Trade was not introduced to native America with the arrival of Europeans, but it was greatly expanded, both in terms of the number of goods and the complexity of the trading arrangements. Both sides faced enormous challenges. The Europeans had to establish operations on both sides of the Atlantic and both parties had to develop mechanisms for dealing with peoples unfamiliar with their goods, their means of trading, and their language. Our focus will be on the fur trade and on the main player in the north-central part of the continent, the Hudson's Bay Company. How the English company was able to establish a successful trade of European goods for furs in the interior of North America is one of the great stories of business history.<sup>4</sup> Equally remarkable was the response of the natives. They traveled hundreds of miles by canoe to Hudson's Bay Company posts on a schedule that was limited by the navigable season and their need for game. They acquired trade goods that helped them trap beaver, which was the cornerstone of the trade, and firearms that improved their ability to hunt.<sup>5</sup> As the price of beaver pelts in Europe rose, due to greater demand for felt hats, and French competition in the region increased, the native traders through their bargaining ability were able to extract higher prices for their furs. They used the additional income to raise their living standards by purchasing more luxury goods. So, even though market exchange had been a limited part of aboriginal society, they quickly exploited the mechanisms and responded to the incentives of European trade.

## *2. Exchange among Native Americans in the Early and Pre-Contact Periods*

Trade was an element of aboriginal societies, but, from the time preceding European contact until well into the nineteenth century, Native Americans were mainly subsistence producers. In the northern part of the continent they were hunters, with a diet based on big game;

although, depending on the region, fish was eaten during the summer and, once firearms were introduced, waterfowl. As well, the flesh of small game, such as rabbit and beaver, was a source of energy, especially during periods of scarcity. In a typical year, though, large ungulates, whether deer, moose, or woodland caribou, in the boreal forest, or bison on the plains, made up eighty percent or more of the native diet. Along parts of the Pacific coast, fish and marine mammals were the main food source. As was true of pre-nineteenth century Europe, Native Americans had an economy where food was the dominant output. Even clothing and shelter were based on hunting, being produced mainly with animal skins. In such an environment the opportunity and motivation for trade among natives peoples was limited. Nevertheless, in some parts of North America, especially in California and the Pacific Northwest, natives engaged in significant levels of market exchange prior to European contact, and there was trade in the interior of the continent.

As archaeologists have shown, some native activities mirrored the trade that was taking place in Europe, and included long-distance movements of goods over routes that may have been used for thousands of years. In large parts of the northern half of North America evidence has been found of trade in, for example, silver, silica, copper and obsidian.<sup>6</sup> Obsidian, a dark glass-like volcanic rock, valued for cutting, has been discovered at widely dispersed sites. These scarce, high value, goods speak of interconnected trading that took place over great distances. Although their trade was more confined geographically, the Chumash of Southern California and neighboring tribes specialized in a variety of activities including the ‘minting’ of money from the shells of sea snails.<sup>7</sup> In other parts of the continent, wampum, a form of money made with beads, was used after European trade was introduced.

There is also 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.<sup>8</sup> The game met the food requirements of the individual groups, 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, intensive hunting and processing of bison took place. The area likely contains “over a million projectile points, hundreds of thousands of potsherds, and millions of kilograms of rocks” that were carried several kilometers and “used in stone boiling to render bone grease.”<sup>9</sup> The bone grease was used to produce pemmican.<sup>10</sup> This level of activity was far beyond what was needed to satisfy local demand. An industrial level of production coincided with the expansion of exchange networks on the Plains. There is also evidence of trade in pottery that extended from the Rocky Mountains into the upper Midwest, and as far east as Illinois and Ohio.<sup>11</sup>

#### *A. The Chumash of Southern California*

The Chumash of southern California, who lived in what is now Santa Barbara county, had perhaps the most elaborate trading relationships of all Native Americans.<sup>12</sup> Some tribes occupied the Channel Islands, some were near the coast, and others lived inland. As a result the various groups making up the Chumash had access to quite different resources.<sup>13</sup> The first Spanish settlement was established in the late eighteenth century, when it is estimated that the Chumash numbered between 15,000 and 25,000, and lived in an area no more than 20,000 km<sup>2</sup>.<sup>14</sup> In fact nearly all the population occupied less than 7,500 km<sup>2</sup> on the mainland, while the three Channel Islands totaled just 500 km<sup>2</sup>. With the possible exception of some native groups along the coast of the Pacific Northwest, the Chumash had by far the highest population density north of central

Mexico.<sup>15</sup> The wide variation in the environments and close proximity of the groups encouraged trade. And because of its complexity, this trade was underpinned with currency that took the form of beads strung on threads of different lengths. These beads strings not only acted as a medium of exchange, they were also a luxury good, and a symbol and store of wealth.

Those Chumash who lived on the Channel Islands had access to the fewest resources. They relied mainly on fish, while sea otters were hunted for their skins, both for personal use and for trade. There was a much greater variety of resources and goods on the mainland. The currency was supplied largely by the Island Chumash, who fashioned the bead strings from shells.<sup>16</sup> The value of the string was determined by its length and the degree of fineness of the beads, which reflected the labor involved in shaving and polishing. In addition to beads, the islanders traded otter skins and other goods, including stone rings (also called digging stick weights), stone tools, and fish.<sup>17</sup> In exchange they received, among other items, acorns, seeds, skins, and bows and arrows. Importantly, the island Indians were net importers of goods, and they made up the difference by, in effect, purchasing goods with the money that they produced. The inland and coastal Chumash also traded with each other, and facilitating that trade were the bead strings.

Although the Island Chumash traded mammal skins, primarily sea otters and seals, and possibly some fish, they mainly sold manufactured goods.<sup>18</sup> Figure 1 illustrates the impact of the trade on the island and mainland economies. Resource based goods,  $f$  (food), are produced with labor and resources, while manufactured goods,  $b$  (beads), are produced with labor alone. The production possibilities curves of the two economies are represented by  $PP^I$  and  $PP^M$ , where  $I$  refers to the islands and  $M$  to the mainland. Even if island and mainland natives had equal

ability, the comparative lack of resources meant that they could not produce as much food as mainlanders. Trade equalizes the relative price of food and manufactured goods at the slope of the line segments,  $\rho P^I$  and  $\rho P^M$ . The Island Chumash produce at  $P^I$  and consume at  $C^I$ , while the mainland Chumash produce at  $P^M$  and consume at  $C^M$ . Thus the Island Chumash trade manufactured items to the mainland Chumash for food. The exchange allows both groups to consume beyond the limits of their own productive potential, and improves their living standards from  $I_A^I$  and  $I_A^M$ , which are the indifference curves corresponding to the autarky or no-trade levels, to indifference curves,  $I^I$  and  $I^M$ .

According to this analysis, the island natives traded manufactured goods, not because of a greater innate ability at fashioning beads and stone tools, but rather because of their comparative lack of resources. This lack of resources also leads to lower living standards ( $I^I$  versus  $I^M$ ). The accounts of the Spanish do in fact indicate that the Island Chumash were the poorest of the three groups. Another feature of the trade may also have been determined in part by the distribution of resources. Nearly all trade took place on the mainland. Thus, it was mainly the islanders who provided the transportation. Just as in the case of beads and other manufactured goods, the smaller resource base gave the Island Chumash a comparative advantage in this labor-intensive service.

Beads, the main trade item of the Island Chumash, acted as currency, facilitating exchange not just between those on the island and the mainland, but also among the various mainland groups. Anthropologists have suggested that, as the quantity of beads increased, the price of beads relative to food and other trade goods would fall, ultimately undermining beads as a medium of exchange as well as its other money-related functions.<sup>19</sup> This did not happen, likely

because beads had multiple uses. If  $B$  is the stock of beads and  $b$  annual production, then over time the stock will approach  $b/\delta$ , where  $\delta$  is the annual (physical) depreciation rate. The greater the depreciation rate,  $\delta$ , the smaller will be the ultimate stock and the higher the price of the beads relative to goods. In other words, as long as the decline in the stock of beads, due to depreciation, equaled the production of beads, the value of beads would be maintained. The nature of the beads, their use beyond the Chumash community, and aspects of Chumash culture apparently led to a high enough depreciation rate to maintain their value. Beads circulated as currency, but they also served other functions. Bead strings, often worn around the head or as belts, were ornamental and a symbol of wealth or status. These additional uses magnified the effect of depreciation on the “money supply;” that is, they kept the money supply from growing as fast.<sup>20</sup> There were other forms of leakage. It was usual practice at mortuary related events to bury the deceased with their possessions, including their beads. As well, beads became part of a secondary trade with non-Chumash peoples. The wide variety of uses of the beads, along with native custom, seemed to provide for a stable system.<sup>21</sup>

The overall composition of trade among the Chumash is captured in Figure 1 in the sense that island natives traded mainly manufactured (non-resource based) goods and received in return mainly food (resource-based goods), but striking was the natives’ demand for variety within these broad categories. Santa Rosa Island was rich in otter. The skins were brought to the mainland and exchanged for acorns and other resource-based goods. Meanwhile, the islanders purchased fox and other types of skins and furs from the mainland Chumash. The islanders made baskets that they sold to mainland villages, but they also purchased larger baskets from the mainland. Stone tools, a manufactured good, was exported from the islands, while bows and arrows, another

manufactured good, were imported. Food was the most important import to the islands, but there is evidence that they exported fish, likely to the inland natives. The Chumash's desire for variety and how they met it through trade is an early illustration of what has become a central feature of the international trade literature.<sup>22</sup>

### *B. Trading on the Northern Plains*

There is little information on the overall dimension of 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*.<sup>23</sup> 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) have been found in burial mounds. These include stone and mineral tools as well as ceramics and other artifacts.<sup>24</sup> 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.<sup>25</sup> Stewart infers from the sites in the Middle Atlantic region that there were two systems of exchange.<sup>26</sup> Broad-based exchange involved goods indigenous to the area and took place among or within local groups or bands. Such items were not produced primarily for trade and are generally found at sites close to their source. Focused exchange involved in goods produced for trade, typically 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 agricultural villages.<sup>27</sup> Although Stewart finds the decline puzzling, it may be that the range of goods provided by subsistence agriculture, and the comparative stability of output, mitigated the need for exchange.

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 there are artifacts from Florida, the Gulf coast, and both the Atlantic and Pacific coasts.<sup>28</sup> But more revealing of the nature and extent of trading on the Northern Plains are the journals of Lewis and Clark, and later explorers. They describe the trade in non-durable goods of the sort not seen in 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 2).

The mutual benefit of exchange is illustrated in Figure 3. In the absence of trade (autarky), the horticulturalists, H, produce and consume output,  $h$ , leading to the utility level illustrated by indifference curve,  $I_H^a$ . The hunters, G, produce and consume output,  $g$ , and are on indifference curve,  $I_G^a$ . Trade can take place on line segment  $ab$ , where both groups are better off. At point  $c$ , the horticulturalists' utility increases to  $I_H^t$ , and the hunters' to  $I_G^t$ . Figure 3 does not allow for trading costs, which may have been substantial and appear to have been shared. It was the hunting groups that transported the goods, hardly surprising in that they were nomadic, while the horticulturalists, provided the trading centers and acted as middlemen.

In the Pacific Northwest the trading structure was similar. The main center, the Dalles Rendezvous, was located 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. Rather than trade garden produce, the coastal natives exchanged mainly dried fish in return for the products of the hunting economy.<sup>29</sup> The long-distance trade was facilitated by an intermediate trading center, the Shoshone Rendezvous, which was likely in southwestern Wyoming (see Figure 2). The Crows brought goods there from the Northern Plains and the Utes came from the Southwest. It was the Shoshone, Nez Percés, and Flatheads who were among the groups that completed the trading network to the West Coast. Traded goods were a small part of the overall native economy. Still, the long and elaborate trade routes are indicate that the sharing of technology and the greater variety in consumer items raised living standards.

### *C. Explaining Gift-Giving Among Native Americans*

Native groups traded; nevertheless, far more important than the exchange of one item for another, was the institutional arrangement for the transfer of goods, usually food, with no explicit compensation. Whether called the good Samaritan rule or an ethic of generosity, gift-giving appears to have been a universal practice among North American aboriginals. There is a large literature on gift-giving, generosity, cooperation and related behavior, where the emphasis is on individual motivation.<sup>30</sup> While not ignoring this aspect, anthropologist Bruce Winterhalder explores, in a wide-ranging article, the potential gains to the economy of societal norms based on generosity.<sup>31</sup> He characterizes two explanations for gift-giving in pre-modern societies as tolerated theft or scrounging, and risk minimization.

“Tolerated theft,” which in aboriginal society was seen as giving rather than theft, has been viewed 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 giver is 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 in that each keeps only a portion of the output that they produce. Figure 4 shows 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 25 percent less productive than person 1, yet in equilibrium his output is 60 percent less. The output gap is larger than the productivity gap because person 1's effort is greater. Since their consumption is the same, however, 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, and Figure 4 illustrates the implausibility of such an outcome. But might partial sharing have been a way of raising total utility? Figure 5 describes the range of outcomes, from no sharing to full sharing. As the sharing rate increases, the high and low productivity persons both produce less because of the disincentive effect (see Figure 5a). It is only when the sharing rate increases beyond .4 (close to full sharing) that person 1's output goes up. Over this range the income effect of the implicit tax, which leads to increased effort, dominates the substitution effect. Note that, throughout, total output falls and the consumption even of the person receiving the transfer declines (see Figure 5b). Their utility does go up because effort is less, but this is at the expense of the giver (see Figure 5c). Total utility also falls, with the exception of a range where sharing rates are very low. Thus, even if one takes a utilitarian approach, gift-giving cannot be justified on the basis only of

equalizing income.<sup>32</sup>

Another form of sharing was the good Samaritan principle, which 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, which were depletable, because it increased the Indians' incentive to cooperate.<sup>33</sup> Since the game were migratory, 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, with 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]."<sup>34</sup>

Even where native groups had exclusive hunting grounds, gift-giving may have played a role in conservation. Suppose each person's productivity depends positively on the resource stock available. 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. Figure 6 compares the change in labor input as the resource declines for the cases of sharing and not sharing. For the selected parameters, the labor input increases roughly 50 percent more if there is no sharing than if 25 percent of the output differential between the two groups is redistributed. In effect, the sharing rule shifts hunting to the region where the resource stock has remained high and reduces the overall labor input.

Winterhalder calls another explanation for sharing, "risk minimization." In an area where even a given level of effort leads to considerable variation in output, 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, adult males needed between 4,500 and 5,000 calories per day. The extraordinary energy demands made starvation a recurring threat, especially because of uncertainty about the weather and the movements of game.<sup>35</sup> Gift-giving greatly reduced this risk by allowing natives, in effect, to diversify over territories that varied over time in productivity. In other words, the insurance implicit in reciprocal sharing did not just raise utility, it was a 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 Pidocke 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.”<sup>36</sup> And Asen Balikci 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.”<sup>37</sup>

The Southern Kwakiutl Indians of British Columbia have received particular attention mainly because of their elaborate potlatches, which greatly expanded after European contact. The contribution of potlatches toward reducing risk and preserving resources is certainly an element of the discussion, but another raised by anthropologists was their role in reducing warfare.<sup>38</sup> Bruce Johansen discusses risk and resource preservation in his analysis of property rights among the Kwakiutl, but his emphasis is on conflict.<sup>39</sup> 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.<sup>40</sup> The problem was that 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. The problem Johansen emphasizes, however, 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 he points to evidence that, in earlier times, war was common. The transfer of wealth through the potlatch acted as a safety-valve. It helped preserve the salmon, mitigated risk, and most importantly in

Johansen's view, greatly reduced conflict.

The institutional arrangements of gift-giving and sharing thus played a key role in mitigating the extremes of native life in a world with few other mechanisms.

#### D. *Gift-Giving Mechanisms*

In the hunter-gatherer world of North America, gift-giving and other forms of generosity were mechanisms for raising long-run welfare, perhaps even ensuring 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. The father of theories of gift-giving is undoubtedly Marcel Mauss. Drawing on Mauss, anthropologist Chris Gregory explains the difference between commodity and gift exchange as follows: "commodity exchange establishes a relationship between the objects exchanged, whereas gift exchange establishes a relationship between the subjects."<sup>41</sup> In contrast to commodity exchange where no further interaction between the parties is implied, a gift creates a debt to be repaid. The reciprocal nature of gift-giving is fundamental. Another aspect of giving involves rank and prestige. Gift-giving is 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 North American native groups in regard to gift-giving lived in the Pacific Northwest. Anthropologists have written extensively on the Kwakiutl, as well as on the Tlingit, who occupied parts of southern Alaska and northern British Columbia, the Haida, who lived in the area of the Queen Charlotte Islands, and the Coast Salish, who lived near Puget Sound.<sup>42</sup> Their mechanism for gift-giving was the potlatch, about which there is a large literature. In fact, anthropologist H.G. Barnett begins his 1938 article with: "So much has been written about

the potlatch of the Northwest Coast that almost everyone has some ideas about it.”<sup>43</sup> Potlatches varied in form depending on the tribe, but some features were common. Barnett defines the potlatch as: “a congregation of people ceremoniously and often individually invited to witness a demonstration of family prerogative.”<sup>44</sup> 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.”<sup>45</sup>

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.”<sup>46</sup> 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.”<sup>47</sup> 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.”<sup>48</sup> Thus, even though there was no explicit commitment to reciprocate, the societal norms provided enough of an incentive. Over time the potlatches became more elaborate and prestige became associated with

the volume of gifts. It appears, though, that this was a post-contact phenomenon. Earlier the amounts distributed stayed roughly the same.

### *3. Exchange between Native Americans and Europeans*

Trading with Europeans was a major advance from the more limited exchange that had been part of traditional native society. The Europeans too faced challenges in developing, along with the natives, a new commercial structure. The Dutch had some involvement in the fur trade in the early years, but the North American fur trade, indeed all trade with the Indians, was dominated by the English and French, with the French playing a much the larger role. In setting up a mechanism that would work, Europeans faced challenges of distance, time, language, and culture. The trade in furs took place thousands of miles from the markets where the furs were ultimately sold. Transport included not only ocean shipping from Europe to North America, but also the movement of furs and goods within the continent.

With the arrival of Europeans, trading by Native Americans increased by orders of magnitude both in volume and in the variety of goods traded. The French, operating through various monopoly companies, until the loss of New France in 1763, and the English, operating in part through the Hudson's Bay Company, met the challenges of the new commercial relationship. Meanwhile Native Americans also dealt with great challenges. Trade was not unknown to aboriginals. As we have described, the Chumash and a few other groups even used specie, but the Europeans introduced a complex trading regime and a vast array of new goods. Beaver pelts, which had been a minor part of the native economy, became the cornerstone of the trade. As fur trader Andrew Graham put it, Indians had seen the beaver as an: “ animal whose pelt made poor clothing and was too small to be used for tipi covers or other practical purposes.”<sup>49</sup> But once

Native Americans recognized that beaver pelts were a means of acquiring European goods, they dramatically increased their trapping, even transforming the way they hunted beaver, now using ice chisels, nets, and knives purchased from the Europeans.

In *Commerce by a Frozen Sea* our focus was on the region south and west of Hudson Bay, and on the trade between the Indians and the Hudson's Bay Company. This English company was chartered in 1670 and, during its first hundred years, operated from the coast of Hudson Bay. In the latter part of the eighteenth century, inland posts were also established. Although there is a large literature on the company, E.E. Rich's, *Hudson's Bay Company 1670-1870* remains the classic work. From 1718 to 1763, the Hudson's Bay Company faced competition from French traders operating from Montreal and Quebec under the umbrella of the Compagnie des Indes. After the conquest of New France by the British, the trade from Montreal was taken over by English and Scottish merchants, who in 1779 formed the North West Company. Nevertheless, the trading relationships within the Hudson Bay region remained much the same. The Hudson's Bay Company's long-term survival and its extraordinary records have allowed us to develop a comprehensive picture of how both parties, Europeans and natives, adapted to the commercial relationship.

#### *A. The Structure of the Trade*

The Hudson Bay Company's approach was one of centralized control. It established trading posts along the coast of Hudson Bay at the mouths of major rivers, and sent men to operate the posts and conduct the trading operations. Natives arrived during the summer to trade furs for European goods that had been delivered to the posts the previous year by the annual ship from London. The furs were transported to England on the next ship, which came to the posts

toward the end of the summer. In England, the company auctioned the pelts to furriers and hatters. The company's head office in London made the key decisions in terms of the number of men to send to the posts and the quality and types of trade goods to send, for which it relied on reports of native preferences. The head office also gave guidance to the post traders about the rates of exchange between trade goods and furs. Decisions on the conduct of the trade relied on correspondence between the post governors and the company officials in London. And since this communication was on an annual cycle, the company was effectively operating in a two-year futures market. The furs sold in London were exchanged in North America for trade goods that the company had purchased at least two years earlier.

The correspondence between each post and the head office in London included a daily journal kept by the chief factor. James Isham's journal for the 1740/41 trading year at York Factory provides a picture of life at the post and describes how the trade was conducted. York Factory and the other trading posts were set up to be self-sufficient. There was a doctor, armorer, tailor, carpenter, blacksmith, cooper, bricklayer, and other men, mainly laborers. The full complement was between thirty-six and fifty, although in 1740/41 there were fewer than thirty men. On August 1, 1740 the annual ship left York Factory for London with its cargo of furs and timber.<sup>50</sup> Few canoes arrived in August and September, none to trade furs. Those natives who came were the "home guard" Indians, who spent the year in the general vicinity of the post, supplying the men with meat and fish. Their presence helped make the post viable, but their direct contribution in terms of furs was limited. On September 29th, Isham reported the river "full of ice," and other than the occasional native who came on foot, there was no further contact with the natives until April.

Twenty-six families, numbering 130 individuals, came in April for the goose hunt. It was the end of May, however, that marked the start of the fur trading season, which was very short. It occupied less than a month; in fact, nearly all the trade was conducted during the week beginning June 12th. On a single day of that week, Monday, eighty-five canoes arrived, representing at least four different native groups. The natives stayed a just few days, often only one or two. The journey to the trading post was long, the rivers were navigable for a short period, and the natives needed to return to hunting. With trading effectively over by the end of June, company men spent the summer preparing for the arrival of the ship from England. The furs were sorted, counted, packed into bundles, and placed in casks. In late July, buoys were readied, and on August 2, the *Churchill* arrived along with a sloop. By August 6, the vessels were unloaded, and over the next three days the homeward cargo of furs and lumber were boarded. On August 12, having spent just ten days at the post, the vessels weighed anchor, and the next day set sail for London.

The annual cycle of trade at York Factory, which was developed over many years, required coordination between the head office in London and the post governor, who together made the key decisions on goods and prices. This was achieved entirely through the extensive and detailed correspondence that accompanied the annual ship. Even though communication was infrequent, the company was able to conduct a profitable business. Natives in the region also adapted, even specializing in activities related to the trade. Some groups, the “home guard” Indians remained in the general vicinity of the posts. They supplied food, mainly meat and fish, rather than furs. Other natives acted as middlemen. They traveled to the posts from far in the interior, bringing furs obtained by other hunters.

#### *B. Trading Mechanisms and the Nature of the Trade Goods*

The Hudson's Bay Company and the natives with whom they interacted developed mechanisms to deal with this complex barter trade. More than sixty types of European goods and as many as fifteen to twenty types of fur and skins were exchanged. An important element in the success of the trade was how the company adapted to native practice. The trade began with a gift-giving ceremony that mirrored the reciprocal exchange that, as we have described, was such an important element of native society. In one ceremony, the governor presented the native trading captain with a suit of clothes and other items, while all the natives in the group were given bread, prunes, tobacco, and brandy. The Indians also received other gifts that included the wide range of goods they obtained through trade. As part of the ceremony, the chief would present the governor some furs, but in contrast to gift-giving among natives, the transfers were nearly all one way. Importantly, the trade was conducted in the language of the natives, Cree in much of the region. The company gave language instruction to its personnel that included phrase books and a dictionary.

The trading stage highlights the Hudson's Bay Company's creativity. The company developed an ingenious system that allowed its post traders to make judgements about the quantities of European goods to be bartered for various types of furs. All furs and trade goods were denominated in a new unit account, the *made beaver*. The company also established an *official standard*, which set rates of exchange for all furs and goods in terms of the made beaver. Table 1, drawn from the accounts of company's largest post, York Factory, lists some of the more than sixty trade items that were sold to the Indians in the 1740 trading year, along with their prices.<sup>51</sup> The items have been grouped into a few broad categories: producer goods, household goods, alcohol and tobacco, and other luxuries.

The producer goods were those used mainly for hunting game, including waterfowl, but some items, such as twine and ice chisels were used to trap beaver. The household goods, kettles and blankets, were also functional. In the early years, natives purchased mainly producer and household goods, which were the sorts of goods that helped them reach subsistence. But over time, as fur prices rose, they increasingly traded for luxuries. These included various types of beads and high quality, brightly-colored, cloth, which they used to decorate clothing. They also purchased jewelry, vermillion, and a variety of other luxury items. The other important luxury goods were alcohol and tobacco.

The prices in Table 1 are given in the Hudson's Bay Company's unit of account, the made beaver (mb). The company's trade goods, as well as the furs and skins brought by the Indians, were assigned a price in this unit, where a prime beaver pelt had a price of 1mb. In 1740, for example, the natives traded for 250 guns, which at a price of 14mb, were worth 3,500mb. This means that, at the official rate, natives would have exchanged 3,500 prime beaver pelts, or the equivalent, for the guns. The actual rate varied according to market conditions, but still, the official price list guided the company's traders in their dealings with the Indians.<sup>52</sup>

The accounts allow us to determine how the natives were allocating their income from the fur trade across the different goods. The natives traded for a total of 27,500mb in trade goods of which 12,000mb or just over 40 percent were producer goods. These composed mainly firearms and related goods.<sup>53</sup> Blankets and kettles made up 10 percent of the trade goods, while the remaining 50 percent of income was spent on luxuries, divided about equally between tobacco and alcohol, and other luxuries, mostly cloth.

Given the emphasis that has been placed on it in the literature, surprisingly little was spent

on alcohol. The roughly 400 gallons accounted for less than 6 percent of total expenditure. Much more was spent on tobacco and cloth, and more on blankets and kettles. The mix of goods and the way the natives allocated their income presents a picture of producers, who used the goods they received from trade to better hunt and trap, and consumers, who acquired new luxury goods that raised their quality of life.

### *C. The French Fur Trade - A Comparison*

The French had begun participating in the fur trade in the sixteenth century, and during the first half of the eighteenth century they were the Hudson's Bay Company's main rivals, and the main rivals of the English merchants who operated out of Albany. In 1700 control of the French trade passed from the Northern Company, a joint French-Canadian venture, to the Colony Company, whose board of directors was exclusively Canadian. Perhaps through mismanagement, disruptions in the fur market, or lack of capital, the company was unsuccessful; and it was only in 1718 with the formation of the Compagnie des Indes that trade increased.<sup>54</sup> Like the Hudson's Bay Company, the Compagnie des Indes was given a monopoly.

The literature on the English fur trade is much more extensive, due in part to the superb historical records of the Hudson's Bay Company, but, in fact, the trade of the Compagnie des Indes far surpassed not only that of the Hudson's Bay Company, but of all the English traders. Over the period 1720 to 1760, while London was receiving on average 70 thousand beaver pelt per year of which 51 thousand pelts were brought in by the Hudson's Bay Company, beaver pelts received by the Compagnie des Indes in Paris averaged 166 thousand.<sup>55</sup> The greater trade of the Compagnie des Indes, twice that of the English and three times that of the Hudson's Bay Company, reflected its much larger trading area. The French operated not just in the Northeast

and Great Lakes region, but also in areas that extended down the Mississippi River basin. French traders even competed with the Hudson's Bay Company in its own trading hinterland, especially after 1730.

The Compagnie des Indes imported far more furs than the Hudson's Bay Company, but it was a much smaller presence in North America, employing just two or three receivers, a few clerks, and an agent in Quebec City.<sup>56</sup> The company was really little more than a wholesaler. It brought in European goods on hired merchants ships; sold the goods to independent French fur traders, called *voyageurs*; purchased the furs that the *voyageurs* obtained through trade with the Indians; and transported the furs to France, where it sold them at auction. The prices the company paid to *voyageurs* were based on a fixed scale that was periodically adjusted according to market conditions. Thus, the *voyageurs* knew in advance what they would be receiving for their furs and could determine the appropriate rates of exchange to offer the Indians. In contrast to the Hudson Bay Company, which conducted all its trading along the bay coast, at least until late in the eighteenth century, the *voyageurs* went to the Indians, locating their trading posts in the interior. The French, therefore, reduced the distance the Indians needed to travel, and this was reflected in the market. In hinterlands where the *voyageurs* and the Hudson's Bay Company competed, the company offered the Indians much more favorable rates of exchange.

The mix of trade goods also differed because of transport costs. The Hudson's Bay Company had a great advantage in that it brought supplies and trade items to the trading posts directly by ship. This allowed the company to trade European goods with a much lower value-to-weight ratio than the furs they were receiving in exchange, such as kettles. The ships also brought supplies for the men at the post. As a result, each ship arrived fully loaded, and left with furs

whose weight was far less the ship's tonnage. The difference was made up with lumber, which provided the company a small additional source of revenue. By contrast, the *voyageurs* canoed thousands of miles to the interior of the continent. It was therefore more profitable for the French to trade goods with a value-to-weight ratio that more closely matched the furs they were transporting back.

We have limited information on precisely what the French were exchanging, but an invoice of trade goods sent in 1742 to St. Joseph, a post on the southeast coast of Lake Michigan, reveals sharp contrasts with the accounts of York Factory. Producer goods, which include axes, ice chisels, and firearms, tended to be the most difficult to transport. At York Factory in 1740, the value of these goods made up 44 percent of the total, whereas at St. Joseph they composed just 10 percent.<sup>57</sup> The various types of cloth, including blankets, were much more important at the French post, accounting for more than 75 percent of the value of trade goods. At York Factory, the same types of goods made up less than 20 percent of the total of trade goods. The share of brandy, however, was similar at the two posts, about 6 percent, even though it was a low value-to-weight item.<sup>58</sup>

The structure of the *Compagnie des Indes* gave much more independence to the individual French traders. Nevertheless, the interactions of the *voyageurs* and the English with the Indians were not fundamentally different. Gift-giving was a key part of the initial phase of fur trading for the French as it was for the English, the bargaining that was so important at Hudson's Bay Company posts was also an element of the *voyageurs'* exchanges, and as was true at Hudson's Bay Company posts, trade was conducted in the language of the natives, which in much of the region was Cree.

Following the British conquest in the Seven Years' War of 1756-1763, control of the St Lawrence fur trade passed from the French to English and Scottish merchants operating out of Montreal. The structure of the interior trade, however, remained much the same, as the *voyageurs* continued to be the ones who dealt directly with the native fur traders. In 1779 the Montreal companies formed an association, the North West Company, and especially after that year built new posts and greatly extended their trading network, even reaching the Rocky Mountains. In response the Hudson's Bay Company, which previously had done all its trading along the bay coast, set up posts in the interior. In 1821, after forty years of competition, the Hudson's Bay Company and the North West Company merged.<sup>59</sup> With Jay's Treaty and the delineation of the border between the United States and Canada, the North West Company's Mississippi operation was sold to John Jacob Astor's American Fur Company, which became a major competitor.

#### *D. Gift-Giving in the Fur Trade*

Before the trading began, native and company traders participated in a gift-giving ceremony. These ceremonies had been adopted by the Europeans much earlier, when the fur trade was introduced to eastern North America. The Hudson Bay Company's early ceremonies were modest, but as the price of furs rose in Europe, and French competition in the region increased, gift-giving expanded. Table 2 shows the value in made beaver of the gifts distributed at York Factory in 1740. They amounted to 7 percent of value of goods received in trade, and, while the range of goods was similar, there were differences in their composition. Alcohol made up a much larger share, 16 percent rather than 6 percent, and more was received as powder and shot (but not as guns).

Gift-giving between natives and Europeans was similar in form to the exchanges among

natives. In substance, though, it was entirely different. Gift-giving in the aboriginal world, as Mauss pointed out, was reciprocal, involving status and prestige. It was understood that generosity would be compensated at a future time. There was no such understanding in the fur trade. Each year it was the Hudson's Bay Company providing the gifts, receiving virtually nothing in return. Moreover, the gifts increased over time. Meanwhile the natives made clear that their acceptance of the gifts entailed no commitment to return to the posts in the future. They based their decision entirely on what they expected to receive from the company, and, where there was French competition, on the gifts and rates of exchange offered by the French. In other words it was the promise of future gifts, along with the expected rates of exchange between goods and furs, that mattered.

Gift-giving also had little impact on the particular goods the Indians ultimately consumed. All goods received as gifts were also purchased in the trading phase. This meant that the relative prices of the goods in the trading phase determined consumption. Figure 7 illustrates the choice for alcohol. Where some alcohol is received as gifts, the budget line is truncated, but the optimal consumption point is not affected. At York Factory, gifts of alcohol varied over time, but, in years where gifts of alcohol increased, the natives correspondingly reduced what they purchased in trade. The gift-giving ceremonies were a necessary adaptation to native culture, but did not materially affect what was exchanged in the fur trade.

#### *E. Native Labor and Consumption Responses to the Fur Trade*

The unique response of Native Americans to economic incentives has been an important theme in the history and anthropology literature. As archaeologist Robert McGhee puts it: "Much of aboriginal history .... tends to treat indigenous societies as so distinctive that comparison with

western society is either impossible or at least unproductive.”<sup>60</sup> The works of E.E. Rich, preeminent historian of the Hudson’s Bay Company, and geographer, Arthur Ray have led to more nuanced interpretations of native behavior.<sup>61</sup> Natives faced a different physical environment than Europeans, but their bargaining and choice of trade goods reveal them as remarkably similar in terms of their fundamental motivations.

On the question of labor supply to the fur trade, however, views about native behavior have just recently started to change. In an influential 1960 publication, Rich laid out what would become the accepted view: “English economic rules did not apply to the Indian trade. On the contrary, all who had any knowledge of the trade were convinced that a rise in prices would lead the Indians bringing down fewer furs.”<sup>62</sup> The origin of Rich’s statement was a 1749 Parliamentary Commission report that investigated whether Hudson’s Bay Company should lose its exclusive charter. The felters and hatters of England supported increased competition as a way of raising fur prices to the Indians and increasing the supply of furs. Hudson’s Bay Company officials argued instead that raising the prices would have the opposite effect. According to these officials the Indians wanted only a given quantity of trade goods, and so higher prices would bring fewer furs. Whether the Parliamentary Committee accepted the argument or made their decision for other reasons, the company was allowed to keep its charter.

A review of the full committee report shows that those witnesses, who were currently associated with the Hudson’s Bay Company, claimed that higher prices would lead to fewer furs, but former employees, who had spent time at Hudson Bay, gave the opposite picture. They said that natives would bring more furs if prices at the posts were higher. During the eighteenth century the company was increasing fur prices at its trading posts, and the pattern of purchases by

the natives in terms of the types and quantities of goods are revealing of their response. Figure 8 compares the price of furs at York Factory and the share of native income that was allocated to luxury goods. Over the period 1737/41 to 1766/79, the 40 percent increase in fur prices corresponded to a roughly 50 percent increase in the share of income spent on luxuries. This relationship implies a positive, elastic, labor response. The view of the “lazy Indian” is contradicted by this evidence, and has also been rejected by John Lutz for the west coast natives.<sup>63</sup>

Much has been written about the influence of alcohol on native society. Peter Mancall’s *Deadly Medicine* has documented its destructive effects on natives in the more southerly trade, while Daniel Usner has addressed its use specifically among the Choctaw.<sup>64</sup> The trade accounts from York Factory, while involving different native groups, offers another perspective on the place of alcohol. In 1740, as shown in Tables 1 and 2, natives received 412 gallons of alcohol in trade and another 82 gallons in the gift-giving ceremonies. The total, 494 gallons, for the approximately 8,600 natives in the York Factory hinterland, translates to 0.06 gallons per person or four two-ounce drinks per year. Limiting the comparison to adult males, and even more restrictively to those who were directly involved with the fur trade, it is still clear that natives in the region of Hudson Bay drank far less than the English or the American colonists. Indeed by the standards of their contemporaries they were abstemious.<sup>65</sup> Alcohol may be a serious problem in many Native American communities today, but during the early days of the fur trade, alcohol had little impact on native society. The evidence on alcohol is of a piece with the overall composition of the trade and the response of natives to prices. The fur trade was a way to improve their condition.

#### F. *European Trade and Native Living Standards*<sup>66</sup>

Richard Steckel and Joseph Prince argue that the traditional native economy made possible a biological standard of living higher than in Europe.<sup>67</sup> The Indians of the Great Plains, including the Assiniboin, who lived much of the year in the boreal forest south of Hudson Bay, were among the “tallest in the world,” a clear indication that they were better nourished. Health-based measures are one approach to living standards, but a comprehensive method requires that we take account of all consumption. In the case of the natives of the Hudson Bay region this includes the variety of goods they obtained through trade.

The great advantage of Native Americans over Europeans in nutrition is illustrated in Table 3, which compares the diets of low-wage English workers in the mid-eighteenth century with the diets of natives of the boreal forest. Daily caloric intake was much greater, 3,500 kcal versus 2,500 kcal for adult males, but the gap is a reflection of different energy demands. More revealing is the composition of the diets. On account of the greater meat component, natives consumed much more protein, close to 500 grams per day versus 100 grams per day by the English. English workers derived just 5 percent of their calories from meat, 14 percent if dairy products are included. Their diet was mainly grain-based. By contrast, Native Americans obtained nearly all their calories from meat and fish, and most of that came from the flesh of large ungulates, the highest-priced type of food in Europe. This means that a measure of living standards based on food gives natives a decided advantage.

Native clothing, which was made from animal skins that were often decorated, was superior to the low-quality cloth worn by English workers. Budget studies reveal that the cost of English workers' clothing was far less than the value of the deer, caribou, beaver, and other skins that were used in native clothing. On the other hand, natives, because of their nomadic lifestyle,

had inferior housing; living in tipis or wigwams in the winter and communal log houses in the summer. And despite the volume of luxury goods they received from the fur trade, native purchases of luxuries, especially alcohol, was much less. Arriving at an overall comparison of living standards requires weighting the categories of consumption goods. Weights can be derived from the choices of these eighteenth-century consumers. Where weights corresponding to English budgets are used, natives in the Hudson Bay region are derived to have real incomes between 10 and 25 percent less than English workers. But if native weights are used, the positions are reversed. The real income of natives is 10 to 20 percent higher. The implication is that in the mid-eighteenth century Native Americans and low-wage English workers had similar standards of living. It was only later that the relative position of natives declined.

#### *4. Conclusion*

Modern economies are underpinned by markets, but trade and exchange were also central to pre-industrial Europe and they played an important role in the aboriginal societies of North America. Prior to contact or to significant involvement with Europeans, Native Americans had developed exchange mechanisms that allowed them to better deal with their environment and improve their living standards. In most of North America the options and advantages of trade were limited. Natives were mainly hunter-gatherers, possibly supplementing their food sources with small-scale farming. They produced similar goods in similar ways, and as a result there was little scope for the comparative advantage that is fundamental to trade. Nevertheless, in regions where hunters and horticulturalists coexisted, trade took place, and exchange, not of goods but over time, was a feature of nearly all native societies, perhaps allowing their survival. This exchange took the form of gift-giving. It was a system of lending and borrowing made possible

by the understanding, underpinned by custom, that giving was a reciprocal. In a world with fluctuating supplies of food and resources, gifts helped natives equalize consumption, preserve game and other food resources, and avoid conflict. The potlatch and other forms of gift-giving ceremonies helped formalize the arrangement.

There was little trade in most of North America, less for cultural reasons than because the gains from trade were limited. The archaeological evidence reveals, however, that there was long-distance trading among aboriginals in some goods, especially those used for hunting. But it was in the areas of high population density that trade was most fully developed. The Chumash of southern California lived in close proximity but included groups with access to very different resources. The result was a trade, complex enough to require the use of money. The Chumash, who lived on the Channel Islands, responded by producing bead strings which served that function. The Chumash exchanged a wide range of goods, and their trading extended to natives who lived far in the interior. Moreover, just as preference for variety is a feature of modern trade, so it was among the Chumash, who traded similar but not identical goods among themselves.

The arrival of Europeans led to conflict in some regions, but where beaver were present, trade offered the natives access to new hunting technologies and more consumption options. Meanwhile the Europeans, both English and French, had open to them a new source of furs. They responded with arrangements for transporting the trade goods and furs, and they established effective trading mechanisms that adapted to native practice. These included the introduction of gift-giving and the learning of native languages. The aboriginals also adapted, quickly becoming effective bargainers and traders.

Trade among aboriginal peoples and trade between aboriginals and Europeans were

responses to the potential for mutual gain. The goods were different, and the technologies and distances were different, but the nature of the exchanges and the ways the groups responded to their opportunities were, fundamentally, very much the same.

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## Endnotes

1. Our discussion will be limited to those groups who lived north of central Mexico and mainly concerns the years roughly from European contact to the beginning of the nineteenth century.
2. Karl Polanyi emphasises that the uncertainty of the environment was one of the factors that contributed to giving, and it played a role in encouraging trade as well. See for example, "Economy as Instituted Process."
3. Gamble, *Chumash World*, p.234.
4. The extensive literature on the Hudson's Bay Company of which E.E. Rich's two volume, *Hudson's Bay Company: 1670-1870*, is the classic, is due not just from the achievements of the company, but also the unparalleled historical records it has left.
5. In the northern fur trading regions guns were used mainly for waterfowl and small game. They were not instruments of warfare.
6. Carlson, "Prehistoric Trade."
7. King has written extensively on the Chumash. One of his early works, which effectively lays out the nature of their economy, is "Chumash Inter-Village Economic Exchange." Gamble, *Chumash World at European Contact*, is a wide-ranging study of Chumash society.
8. Bamforth, "Origin Stories," 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.
9. Bamforth, "Origin Stories, p. 8
10. Pemmican is the term given to a cake of dried and pounded meat mixed with melted fat. It is therefore high in fat and protein. It is light, very nutritious, and has a long shelf life.
11. Ibid., p. 10
12. Our discussion of Chumash trade is drawn mainly from King, "Chumash Inter-Village Economic Exchange," and Gamble, *Chumash World*.
13. The three main islands are San Miguel, Santa Rosa, and Santa Cruz.
14. Gamble, *Chumash World*, p. 9.
15. A density of more than one person per km<sup>2</sup> in the region occupied by the Chumash compares, for example, with a density of less than one person per 100 km<sup>2</sup> in Canada's boreal forest.

16. Many of the beads used *olivella biplicata*, a sea snail with a very hard shell composed of a high proportion of enamel.
17. It is not clear how important fish was as a trade item. There is an account of a group of Ventura Indians visiting the islands and returning with boatloads of fish, but these may have been caught by the Ventura rather than acquired through trade. King, "Chumash Inter-Village Economic Exchange," p. 34.
18. The chert on Santa Cruz Island was ideal for fashioning tools, and shells were needed to make the beads, but, despite the need for a raw material, the manufactured goods were essentially labor-produced. Ibid., p. 38.
19. Ibid., p. 36, and Gamble, *Chumash World*, pp. 247-48.
20. Suppose  $B^T$  is the total stock of beads,  $B^M$  are the beads used as money, and  $B^W$  are the beads used as jewellery and for displays of wealth. If  $\delta$  is the physical depreciation rate of beads, then assuming a constant level of non-money uses, the rate of depreciation of the money supply is:  $\delta (1 + \frac{B^W}{B^M})$ . For example, if half the beads are used as jewellery, the depreciation rate of the money supply is doubled. This simplified characterization treats beads as a single good. In fact there were many types of beads, some which were used almost exclusively as jewellery (the finer beads). See King. "Protohistoric and Historic Archaeology." .
21. In the ancient world of Greece and the Near East, the concern was less depreciation than appreciation of money due to greater demand. Rather than convert precious metal into jewellery and utensils, the process sometimes took place in reverse. Old jewellery and utensils made of silver were chopped up and sold for the precious metal content. Schaps, *Invention of Coinage*, pp. 42-51.
22. Krugman's seminal, "Increasing Returns," focusses on variety as a central feature of the gains from trade. Broda and Weinstein, "Globalization and the Gains from Variety," estimates that greater import variety increased the real income of U.S. consumers, over the period 1972 and 2001, by the equivalent of 2.6 percent of GDP. It seems safe to conclude that, if the alternative was no trade in similar goods, the Chumash gained much more. For an explanation of the gains from trade due to scale economies and imperfect competition, see Markusen, "Trade and the Gains from Trade."
23. Likely, the only aboriginal group who did not trade to a significant degree were the Inuit (Eskimos).
24. See Bourque, "Evidence for Prehistoric Exchange on the Maritime Peninsula," pp. 29-35.
25. Wright, "Prehistoric Transportation of Goods."
26. Stewart, ""Late Archaic Through Late Woodland Exchange."

27. Ibid., p. 92.
28. Wood, "Plains Trade," p. 99.
29. Other items included fish oil, feathers, shells, and root and seed foods. Ibid., p.102.
30. As we noted, Marcel Mauss's classic, *The Gift*, is the cornerstone of this literature.
31. Winterhalder, "Gifts Given, Gifts Taken."
32. Figures 2 and 3 are based on specific parameter values, but the main conclusion would apply with other plausible values.
33. The "good Samaritan" rule extended to beaver and other animals with value to the fur trade, but if a beaver was killed, the hunter was not allowed to sell the pelt. See Carlos and Lewis, *Commerce by a Frozen Sea*, chapter 6 and appendix C.
34. Ibid., p.156.
35. 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, *Commerce by a Frozen Sea*, p.163.
36. Piddocke, "Potlatch System of the Southern Kwakiutl," p. 244.
37. Balikci, *Netsilik Eskimos*, p. 17.
38. See, for example, Allen, "Potlatch and Social Equilibrium."
39. Johansen, "Formation and Protection of Property Rights."
40. A lack of formal knowledge of fish dynamics did not mean that natives were unaware of the effect of overfishing on future stocks.
41. Gregory, *Gifts and Commodities*, p. 19.
42. Other groups who have received attention are the Aht and Nootka of western Vancouver Island, and the Tsimshian who lived in southern Alaska, northwestern British Columbia.
43. Barnett, *Nature and Function of the Potlatch*, p. 349.
44. Ibid., p. 349.
45. Ibid., p. 350.
46. Bracken, *Potlatch Papers*, pp. 33-34.

47. Ibid., p. 36. 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.

48. Ibid., p. 44.

49. Glyndwr Williams, ed., *Andrew Graham's Observations*, p. 97.

50. Typically the main ship was accompanied by a smaller vessel. Furs were the central item, but because the ships would otherwise have returned largely in ballast, the men loaded timber as well. Timber was another, although minor, source of income for the company.

51. The *made beaver* accounting mechanism developed the Hudson's Bay Company was similar to the forms of money used in the African slave trade. In Senegambia a monetary unit based on cloth, the guinée, was first used to establish relative prices in the slave trade, but in the mid-seventeenth century the iron bar, a piece of wrought iron weighing about 13 kgs came to be the standard against which goods and slaves were priced. And just as was true of the Hudson's Bay Company's *official standard*, bar prices in the slave trade were nominally fixed. Actual prices in the fur trade deviated from the *official standard* in that company traders typically exchanged goods for furs at different rates depending on market conditions. In the slave trade the adjustment was made through the mix of goods offered for slaves. Not all the stipulated prices of goods reflected their true relative values. Thus by shifting the proportions of goods a trader could alter the value of the package. An important distinction between the bar iron measure and the *made beaver* is that, whereas the bar iron unit was also a physical currency, the *made beaver* was only a unit of account. See Curtin, *Economic Change in Precolonial Africa*, pp. 233-53 and Carlos and Lewis, *Commerce by a Frozen Sea*, pp. 51-62.

52. The Indians themselves did not see the price list, nor could they have interpreted it.

53. The firearms were for hunting not warfare. The Indians purchased 3-ft guns (essentially shot guns), which were particularly effective for geese and small game.

54. For a review that includes the French trade during the first half of the eighteenth century, see Miquelon, *New France, 1701-1744*.

55. Wien, *Selling Beaver Skins*, p.309. The English trade also included a small number of furs received in New York.

56. In addition to paying the salaries of the workers, the company hired guards to curtail smuggling and was required to pay a tax on its beaver receipts of about 4 percent. Ibid., p. 299. Each Hudson's Bay Company post, by contrast, had a complement of roughly thirty to fifty men. With four major posts in the first half of the eighteenth century, Hudson's Bay Company employed more than a hundred on the Canadian side of its operation. Carlos and Lewis, *Commerce by a Frozen Sea*, p. 47.

57. Carlos and Lewis, *Commerce by a Frozen Sea*, pp. 81-85; Miquelon, *New France*, pp.152-53.

58. It might be noted that five years later, the brandy's share was considerably higher at York Factory, 10 percent. Carlos and Lewis, *Commerce by a Frozen Sea*, pp. 81-85
59. See Carlos, *North American Fur Trade*, and Carlos and Hoffman, "Joint-Profit Maximization Contract."
60. McGhee, "Demythologizing the Fur Trade," p. 8.
61. Rich, *Hudson's Bay Company*; Ray, *Indians in the Fur Trade*; Ray and Freeman, "Give Us Good Measure."
62. Rich, "Trade Habits and Economic Motivation," p. 47.
63. Lutz, *Makúk: A New History of Aboriginal-White Relations*.
64. Usner, "Frontier Exchange Economy of the Lower Mississippi Valley," p. 178.
65. In the 1740s English per capita consumption was 1.4 gallons, and in 1770 North American colonists were consuming 4.2 gallons. Carlos and Lewis, *Commerce by a Frozen Sea*, p. 93.
66. Much of this section is based on Carlos and Lewis, *Commerce by a Frozen Sea*, chapter 7.
67. See for example, Steckel and Prince, "Tallest in the World."

Table 1. Quantities and Prices of European Trade Goods at York Factory, 1740

	Quantity	Price <i>mb/unit</i>		Quantity	Price <i>mb/unit</i>
Producer Goods			Other Luxuries		
Files	308	1	Bayonets	150	1
Flints	2313	1/12	Beads (lb)	159	2
Guns	250	14	Buttons	40	1/4
Gun worms	340	1/4	Cloth (yd)	987	3.5
Hatchets	762	1	Combs	346	1
Ice chisels	472	1	Egg boxes	142	1/3
Knives	3,312	1/4	Flannel (yd)	19	1.5
Net lines	218	1	Gartering (yd)	364	2/3
Powder horns	181	1	Handkerchiefs	12	1.5
Powder (lb.)	3,360	1	Hats	35	4
Scrapers	216	1/2	Lace (yd)	184	2/3
Shot (lb)	7,388	1/4	Needles	410	1/12
Twine (skein)	114	1	Pistols	26	7
Household Goods			Rings	471	1/8-1/3
Awls	840	1/8	Sashes	48	1.5
Blankets	189	7	Scissors	56	1/2
Fire steels	376	1/4	Shirts	90	2.5
Kettles	679	1.5	Spoons	24	1/2
Tobacco and Alcohol			Stockings	26	2.5
Alcohol (gal)	412	4	Trunks	37	4
Rundlets	350	1	Vermillion (lb)	19	16
Tobacco (lb)	2,272	2			
Tobacco boxes	162	1	Total Value ( <i>mb</i> )		27,457

*Note:* The *made beaver* (*mb*) was the unit of account used by the Hudson's Bay Company at its trading post. The official price of a prime beaver pelt was one *made beaver*.

*Source:* Carlos and Lewis, *Commerce by a Frozen Sea*, pp. 60-61.

Table 2. The Value of Gifts Received at York Factory (selected items), 1740

	<i>made beaver</i>		<i>made beaver</i>
Producer goods		Other luxuries	
Flints	51	Baize	12
Guns	70	Beads	24
Hatchets	11	Cloth	123
Knives	28	Gartering	20
Powder	439	Hats	28
Shot	379	Lace	100
Household goods	11	Rings	8
Alcohol	328	Sashes	12
Tobacco	198	Shirts	8
		Trunks	16
		Vermillion	32
		Total	2,024

Source: Carlos and Lewis, *Commerce by a Frozen Sea*, p. 85-86.

Table 3. Calorie and Protein Content of the Eighteenth-Century Diet of English Workers and Native American (Adult Males)

English Workers					Native Americans		
	Budget share	Price per	Calories	Protein		Calories	Protein
	percent	calorie		grams			grams
		meat =1					
Bread	22.2	0.34	555	22	Big Game	2,500	375
Wheat flour	30.0	0.33	775	32	Other meat and fish	750	100
Oatmeal	14.4	0.22	572	19	Vegetal products	250	
Potatoes	5.6	0.19	249	5			
Beef	3.3	1	29	4			
Mutton	3.3	1	29	4			
Pork	7.8	1	67	5			
Milk	5.6	0.43	110	6			
Butter	4.4	0.59	65	0			
Cheese	3.3	0.59	49	6			
Total	100	0.34	2,500	103		3,500	475

Source: Carlos and Lewis, *Commerce by a Frozen Sea*, p.172.

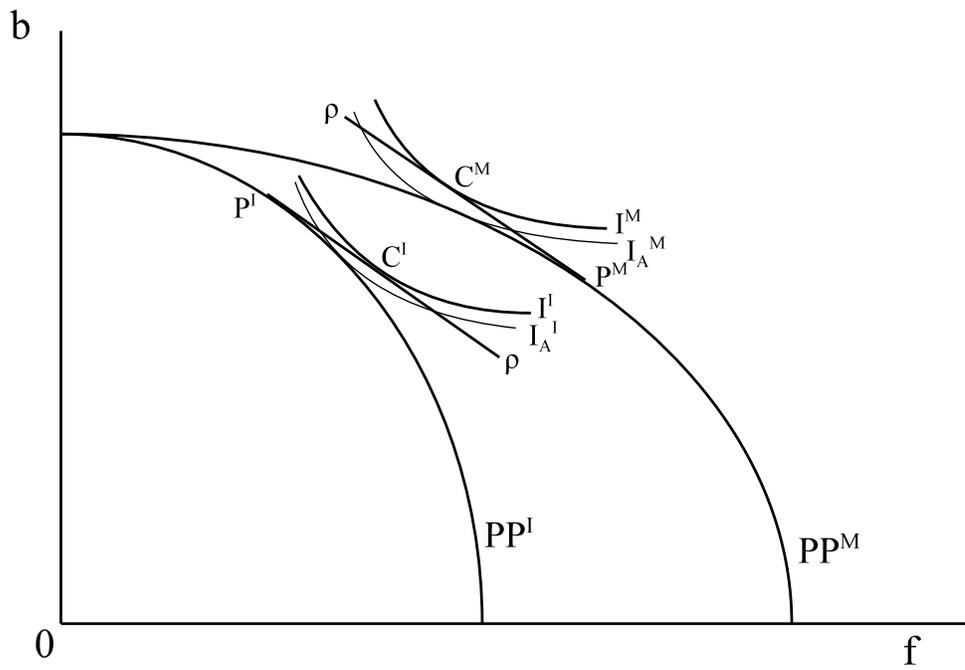


Figure 1. A Model of Trade between the Island and Mainland Chumash

*Note:* Line segments  $\rho P^I$  and  $\rho P^M$  have the same slope; and line segments  $C^I P^I$  and  $C^M P^M$  are of equal length.

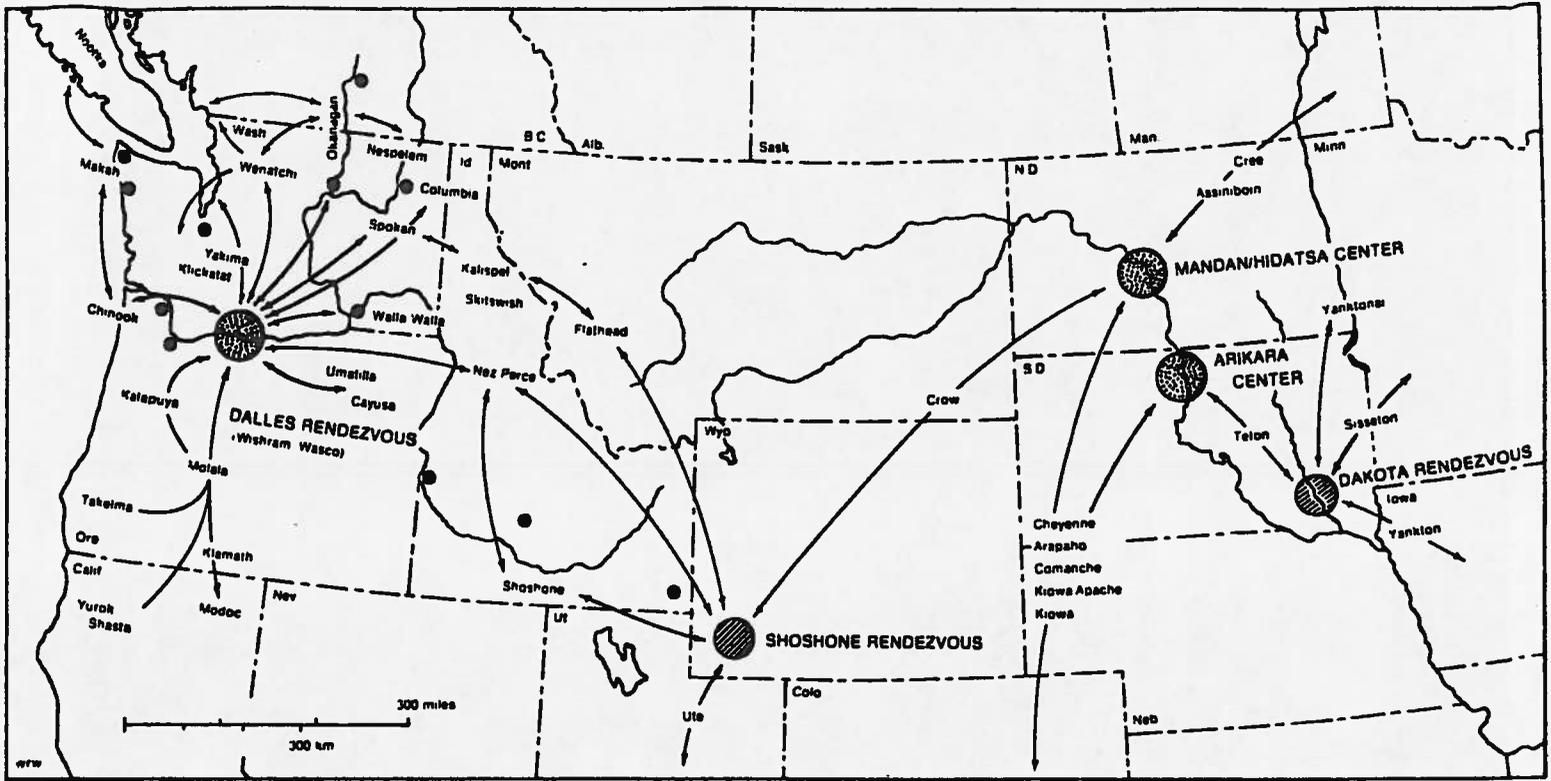


Figure 2. Selected aspects of the Middle Missouri and Pacific-Plateau trade systems

*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.

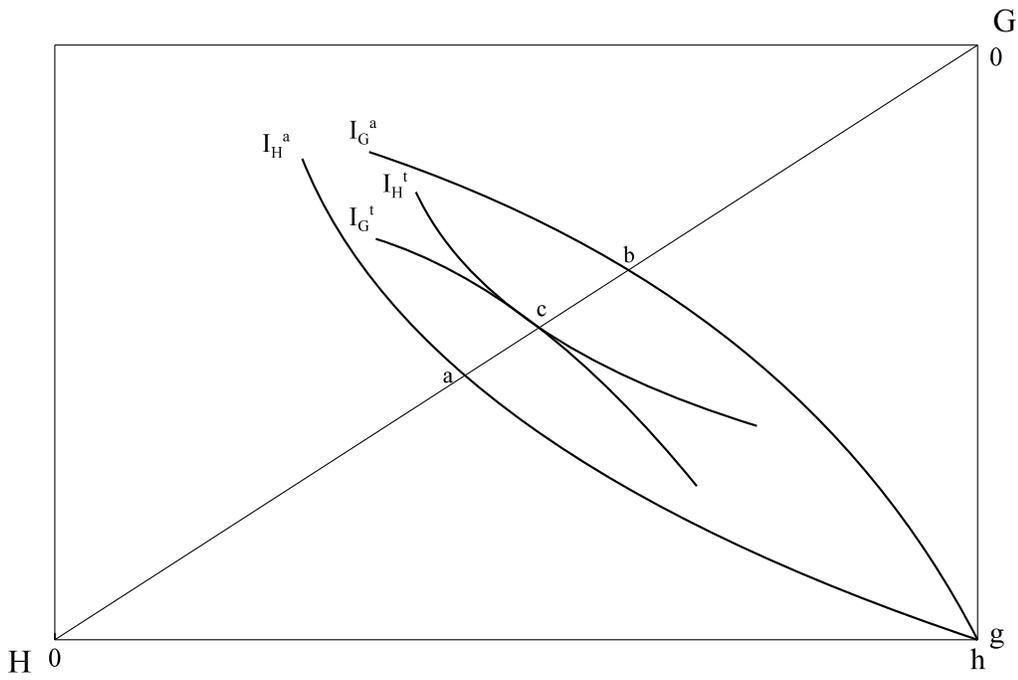


Figure 3. The benefit of trade between the horticulturalists and hunters of the Plains

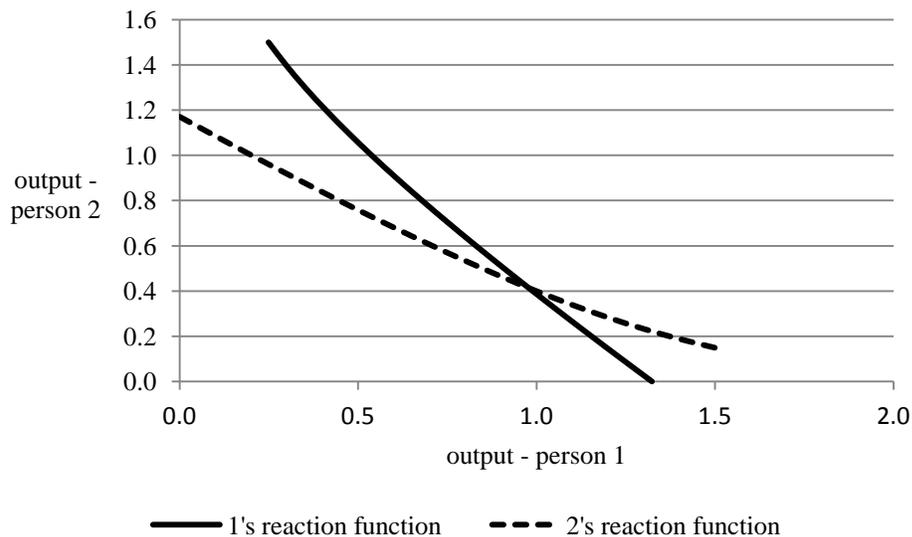
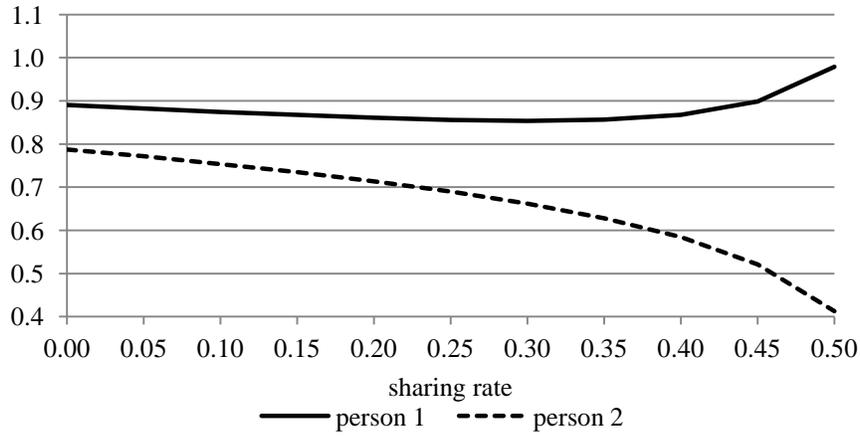


Figure 4. Reaction Functions with Full Sharing

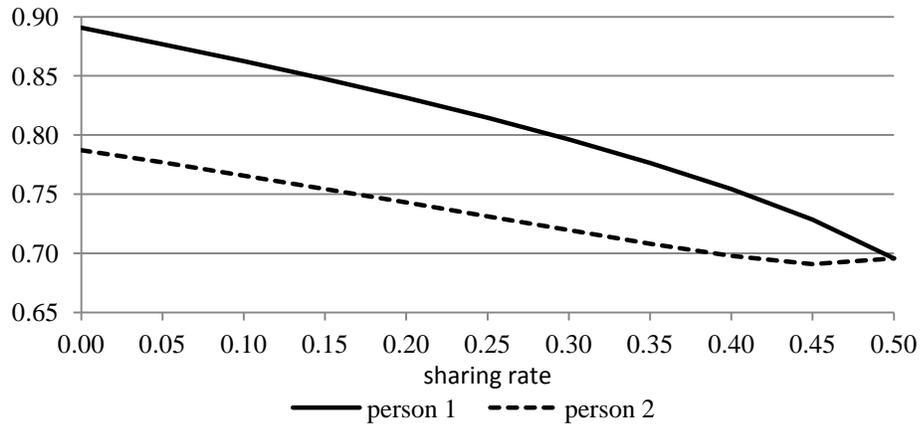
*Notes to Figure 4.* See appendix. The equations underlying the reaction functions are:

— , and , where  $U$  is utility,  $c$  is consumption,  $l$  is labor (effort),  $q$  is output,  $k$  is labor productivity,  $\delta$  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  $\delta = 3$ .

### 5a. Output



### 5b. Consumption



### 5c. Utility

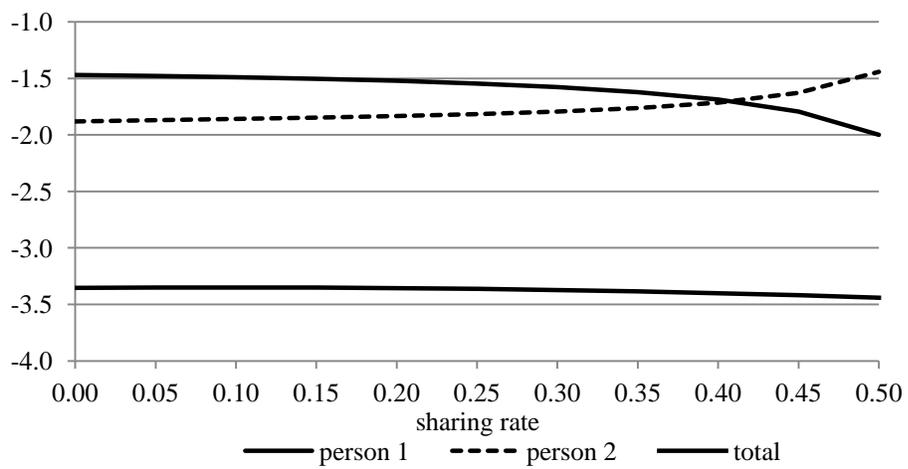


Figure 5. Output, Consumption, and Utility with Partial Sharing

Note to Figure 3. See appendix and Figure 2.

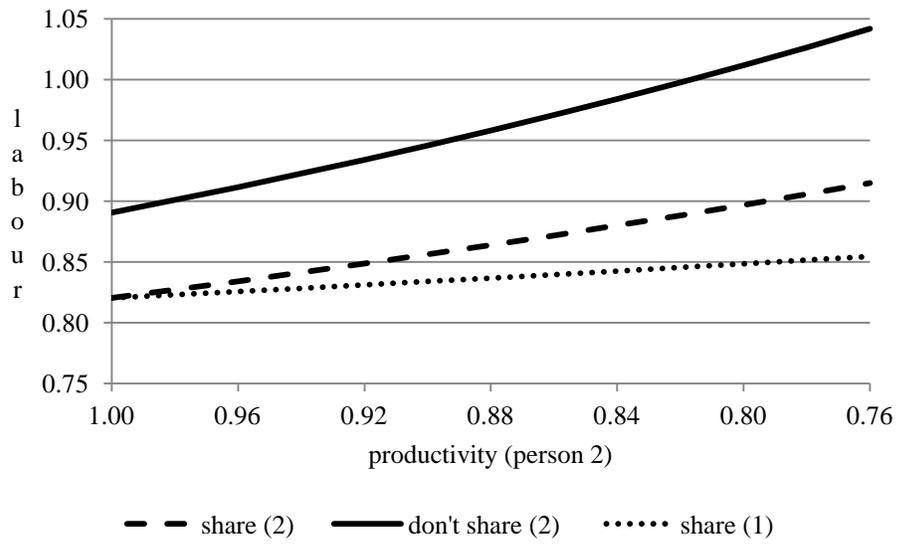


Figure 6. Effect of a Decline in the Animal Stock on Effort with and without Sharing (Sharing Rate =.25)

Source: See appendix.

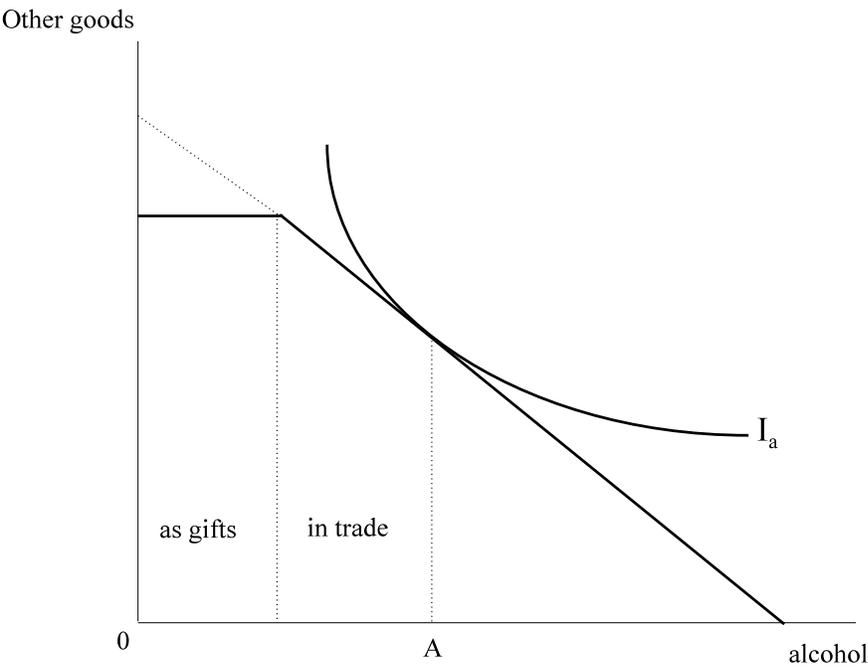


Figure 7. Gifts and Alcohol Consumption



Figure 8. The Price of Furs and the Share of Expenditures on Luxury Goods: York Factory, 1716-70.

Source: Carlos and Lewis, *Commerce by a Frozen Sea*, p.146.