Inland Waterways in the Northeast.
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INLAND WATERWAYS IN THE NORTHEAST

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ABSTRACT

Seventeenth- and eighteenth-century reports give canoe travel times on waterways in the Northeast. These data show that places as far apart as Cahokia, Illinois, and much of proto-Iroquoia lie within the limits of economic transport as defined by Drennan (1984a, 1984b). Archaeological finds from Southern Ontario as well as historical reports indicate substantial long-distance exchange systems operated from 1000 B.C.–A.D. 400 and again from A.D. 1500–1700. Therefore, the paucity of durable exotic goods at Ontario Iroquois sites during the Mississippian florescence (A.D. 1000–1400) requires explanation.

Introduction

In order to address the possibility of core/periphery relations (Gibbon 1974; Paynter 1982; Schneider 1977) between the urban center at Cahokia, Illinois (Fowler 1975), and Proto-Iroquoia, during the period A.D. 900–1500, I have studied the historical rates of travel for two men and 1000 pounds of freight in a birchbark canoe along water trails between Montreal, Canada, and St. Louis, Missouri. Early European explorers quickly learned from the Indians how to enjoy travel by canoe on Northeastern waterways (Champlain 1922–1936:1:152; O'Callaghan 1853–1887:5:725), and, according to Cadwallader Colden of New York State in 1724, inland navigation in North America was without parallel in the world (O'Callaghan 1853–1887:5:726). Documentary evidence presented here will show that in the seventeenth and eighteenth centuries, southern Ontario was near the limit but within the range of practical freight carrying by canoe into Cahokia (Drennan 1984a, 1984b). Potential archaeological implications of such easy long-distance travel will be compared with archaeological evidence from Ontario Iroquois sites in southern Ontario for long-distance exchange in the Woodland period.

A descriptive guide for a canoe trip down the Little Miami with a picnic

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at Fort Ancient (Callen 1970), a journal of a voyage on the Fox and Wisconsin rivers in 1887 (Thwaites 1888), and reports of North American canoe trips by seventeenth- and eighteenth-century Jesuits and other explorers (Kellogg 1917; Thwaites 1896–1901, 1904), while not the field experience which I would recommend for a study such as this, are rich fare indeed (also Illinois Department of Conservation 1966; Ohio Department of Natural Resources 1968; Pittsburgh Council, AHY 1971; Sevareid 1968). Dams and pollution have encroached on the waterways during the past 400 years, but a canoe trip on inland water trails can give you, according to Thwaites (1888:26), "something to think about all your life."

Early Historic Travel on Inland Waterways in the Northeast

Birchbark Canoe Travel

The Sulpician father Galinée in 1669 recorded that

> immediately above Montreal one is confronted with a rapid or waterfall amidst numerous large rocks, that will not allow a boat to go through, so that canoes only can be used. These are little birch-bark canoes, about twenty feet long and two feet wide, strengthened inside with cedar floors and gunwales, very thin, so that one man carries it with ease, although the boat is capable of carrying four men and eight or nine hundred pounds' weight of baggage. . . . The convenience of these canoes is great in these streams, full of cataracts or waterfalls, and rapids through which it is impossible to take any boat. When you reach them you load canoe and baggage upon your shoulders and go overland until the navigation is good; and then you put your canoe back into the water, and embark again. . . . I have found nothing here more beautiful or more convenient. (Galinée 1917:172–173; also Champlian 1922–1936:1:104–105)

For his trip Montreal to Detroit, Galinée took two men, one canoe, and goods suitable to barter for provisions with the peoples through whose territory he was to pass. At their first stop, an Indian village in New York State, they collected from the women some Indian corn for the voyage. "The ordinary diet is Indian corn . . . which is ground between two stones and boiled in water; the seasoning is with meat or fish, when you have any. . . . Not one of us was exempt from some illness before we were a hundred leagues from Montreal" (Galinée 1917:170–186).

Routes and Travel Times

Although one could profitably explore the many local reports dealing with inland waterways (Roberts and Shackleton 1983), I have selected six reports for their regional coverage and quantitative details: Dollier and Galinée, Montreal to Lake Huron 1669–1670 (Galinée 1917); Marquette and

Joliet on the Mississippi River 1673 (Marquette 1900); LaSalle on the Mississippi River 1678–1690 (Tonti 1917); Colden on the Mohawk River 1724 (O'Callaghan 1853–1887); Celoron, Montreal to the Ohio River 1749 (Bonnécamps 1900); Croghan on the Ohio and Wabash Rivers 1761, 1765 (Croghan 1904). Using these primary sources, I examine several major water routes between Montreal, Albany, and St. Louis for method of travel, difficulty, and travel time (in days), as summarized in Table 1.

The most significant attribute of the geography of the divide between the upper Mississippi and the Great Lakes drainage (Fig. 1) is that instead of mountains at the heads of the streams there are numerous "short" (Hosmer 1901:32), easily traversed portages by which one could carry a canoe and its freight, or, during high water in the spring, pull, push, or even paddle a canoe across the divide. Most of the possible portages shown on Figure 1 have been used as portages, as were additional ones shown on local maps. Most water trails were seasonal, that is, easier in the high water of spring and early summer than in fall or winter. Although water routes were preferred by most travelers, some land routes were relatively easy and generally took no more than twice the time of a water route between the same endpoints (Croghan 1904).

The availability of alternate routes between the same endpoints (Fig. 1) raises the question of why different routes were used at different times. The early French route from Montreal by the Ottawa River and Lake Michigan to Chicago, instead of the shorter and easier Lake Erie route to the Mississippi, was chosen because of enmity between the French and the Iroquois of New York (Thwaites 1896–1901:8:75, 33:65). That is, political considerations could outweigh substantial variations in the length and difficulty of routes of travel.

Hazards of Canoe Travel

Among the difficulties described in explorers' accounts are rapids (rapid currents, small falls, and white water), sharp rocks, shoals (inadequate water to float the canoe), waterfalls, mosquitoes, heat, poor diet, and the physical labor of portaging the canoe and baggage or pulling the canoe upstream (Thwaites 1896–1901:59:99, 107, 147; Tonti 1917:288). On the other hand, the Europeans learned from the Indians certain highly skilled techniques for working a canoe upstream, such as "tracking," which resembles flying a kite more than hauling (Morse 1962:15; Roberts and Shackleton 1983; Urban 1965).

Particular problems arise quickly on the Great Lakes, such as high winds, great waves, and "set-up" and seiche, which are waves not necessarily associated with local winds (Bonnécamps 1900; Croghan 1904; Galinée

1917; O'Callaghan 1853–1887:5:730; Phillips and McCulloch 1972:36; Tonti 1917). Because of these dangers, canoeists on big lakes must keep close to the shore and safety (Morse 1962:28–29), and historic lake travel times were more variable than travel times on rivers (Bonnécamps 1900).

Navigation

Seventeenth- and eighteenth-century explorers could determine their latitude fairly accurately by measurement of the altitude of the pole star or the noon sun (Morison 1971:154, 513). In western New York in 1669 Galinée (1917:177–178) used a Jacob's-staff to measure the noon sun's altitude. A Jacob's-staff or cross staff, a predecessor of the quadrant, consists of a wooden rod with a movable cross piece. With the cross piece, as seen from one end of the rod, adjusted to span the sky between the horizon and a star, trigonometry provides the altitude of the star in degrees, In contrast, as the chronometer had yet to be perfected, longitudes were estimated by dead reckoning and many east-west distance measurements are unreliable (Morison 1971:34, 141, 174). Persistent attempts to determine longitude by measurements of variation in magnetic deviation would interest the historian of science (Bonnécamps 1900:157–198; Champlain 1922–1936:2:222–230).

Days of Travel

Figure 2 shows travel time in days between points, which includes portages, effects of upstream or downstream currents, and stops for such necessities as canoe repair, food collecting, and waiting out storms. I have subtracted a few multiday stopovers for preaching and the like, and, given a choice, chosen the minimum number of recorded days for a travel segment. The numbers shown on Figure 2 represent the times of actual exploring voyages and not a fastest possible rate of travel. Speed is not the only measure of goodness (Sahlins 1972), and these voyages were full of adventures.

Rate of Travel

Fortunately, my analyses do not require knowledge of travel rates, which are difficult to determine because of poorly reported distance measurements, changes in absolute length of the league at this period (Morison 1971:387), and the striking dependence of measured distances on the map scale. I use an opisometer with the maps shown in this paper to measure distances for the estimation of rates and times of a few missing segments in Figure 2. My estimated rates may only be accurate within a factor of two, but seem to be fairly robust numbers over long distances.

When Indians near the Arkansas River estimated 10 days to the Gulf,

Marquette noted the French could have done it in 5 or even 2 days. Because this river distance is approximately 500 km, he was estimating a rate of 100 to 250 km per day, or 4–10 km/hr nonstop, which is fast but not impossible with the river current. Champlain also stated that 12–15 leagues per day (approximately 40-55 km/d [Morison 1971:387]) upstream, and 25–30 leagues per day (90–110 km/d) downstream (Champlain 1922–1936:1:123, 2:105) were easily accomplished. On the other hand, for Marquette and Joliet and LaSalle on the Mississippi; Colden on the Mohawk; and Celoron on the Ohio, I obtain somewhat more relaxed rates of 16–32 km/d round-trip, 45 km/d downstream, and 16–32 km/d upstream. High rates again were reported by George Croghan in 1765, with a downstream average of 60 km/d, a peak of 145 km/d, and his estimated downstream rate of 113 km/d.

Summary of Travel Time Data

In general, canoeing upstream takes about twice as long as downstream travel and most voyages are round-trip. If we define Ta (in days) as the average of the upstream and downstream travel time or half the roundtrip time between points on Figure 2, and assume that upstream travel takes twice as long as downstream travel, then round trip time is twice Ta, upstream time is 4/3 Ta, and downstream time is 2/3 Ta. We can now plot average travel time (Ta) from and to Cahokia along the Mississippi, Wisconsin, Wabash, Ohio, and other rivers of the Northeast. By determining the linear relation between length of radius and Ta which best fits the modest data, I show in Figure 3 Cahokia at the center of concentric circles of equal average travel days. The low radial travel rate (20 km/d) of Figure 3 results from the small scale of the map.

Maximum Economic Transport Distance for Basic Foodstuffs

Drennan (1984a, 1984b) has calculated for Mesoamerica a maximum travel time for which long-distance transport of basic foodstuffs can be considered economic. He assumes that a transporter will carry his own food as part of his load, make a round-trip, and justify the transport by delivering at least half his load to his destination. If a bearer can carry a 30 kg load of maize and requires 3456 calories per day (maize: 361 cal per 100 g), then he is limited by these constraints to destinations less than 7.8 days away. For an assumed walking speed of 36 km/d, beyond a range of 275 km the amount of food required by the bearer will exceed half of the food he is able to carry.

For transport by a 10 m long dugout canoe in Mexico, Drennan (1984b)

assumed that with four men and a 780 kg cargo, each man can account for transport of 195 kg, of which at least half will be delivered at any destination less than 51 days (average travel time) away. If the speed upstream is 20 km/d and downstream is 40 km/d (no map scale specified), then the maximum freighting distance is 1360 km. With these assumptions, transport by canoe is five times more economical than foot transport, because four men can carry more freight in a canoe than four men can carry walking. However, Drennan (1984a, 1984b) found few regions of Mexico where long distance canoe transport would be feasible.

We can compare these findings with historical canoe travel times and loads in the Northeast where long distance canoe travel is feasible. A birchbark canoe 20 feet long could carry four men and 800–900 pounds (Galinée 1917), or two people and 1000 pounds (454 kg) (Champlain [1603] 1922–1936:1:104–105). These numbers are comparable to Drennan's figures for Mexican dugouts. Two people in a bark canoe, each accounting for 227 kg of freight and each man using half or 114 kg as food for the trip, would allow an economically feasible travel time (Ta) of 59 days (a roundtrip of 118 days). With the given assumptions, it follows that Cahokia and Southern Ontario with a Ta of 40–60 days (Fig. 3), were potentially connected by profitable canoe transport of bulk freight.

Evidence for Long Distance Travel or Exchange in the Northeast

We have found that historic travel by canoe in the Northeast could be relatively fast. We also know that the North American inland waterways provided for a considerable movement of people, ideas, styles, finished goods, and raw materials in prehistoric as well as historic times. Here, I confine the question of long-distance exchange to the Woodland period and focus on the Ontario Iroquois near the west end of Lake Ontario (J. V. Wright 1972: Map 6) and the Mississippian center at Cahokia, Illinois.

Durable Exotic Goods Imported into Southern Ontario

Long-distance exchange systems operated in the Ontario Initial Woodland period (1000 B.C.–A.D. 400), bringing quantities of exotic goods such as copper and marine shells into Ontario (Fig. 4). In contrast, although a very small amount of copper, steatite, or Ohio chert from nearby sources (Fig. 4) and even a marginella (marine) shell, have been found at certain Ontario Iroquois sites dating A.D. 900–1450, "archaeological evidence of widespread trade relations is extremely limited" (J. V. Wright 1972:74; also Noble 1975b:48), especially in the interval A.D. 1100–1350 which includes the florescence of Cahokia (Fowler 1975; Fox 1976; Lennox 1982; Stoth-

ers 1977; Wintemberg 1928, 1948; J. V. Wright 1966:99, 1972:51). At A.D. 1350 the Middleport site had a few pieces of marine shell (Wintemberg 1948) and by A.D. 1460 a trade in Atlantic marine shell began to develop in southern Ontario (Jamieson 1981:24; Prevec and Noble 1983:49). After 1600 and European contact, the amount of exotic archaeological goods (Atlantic marine shell, thousands of shell beads, glass beads, catlinite beads, copper tubes, etc.) from long-distance sources again became substantial at southern Ontario sites (Fitzgerald 1982a, 1982b; Lennox 1981; Prevec and Noble 1983; Quimby 1966; Wintemberg 1939, 1948; J. V. Wright 1972, 1974; M. J. Wright 1981). See Figure 5. Pottery has not been considered in this study.

Evidence Suggesting Long Distance Travel and Exchange Patterns

With few durable exotic goods recovered from Ontario Iroquois sites between A.D. 1000 and A.D. 1450, even the trade relations which may have existed with Mississippian centers closer than Cahokia are archaeologically obscure. Some hypotheses derived from the seventeenth-century literature for long-distance exchange objects include perishables such as meat, hides, corn, and captives (Lauber 1913; Thwaites 1896–1901:59:121, 123, 145, 309, 69:301).

More than 50 females between the age of 18 and 23 appear to have been sacrificed at the burial of an elite Cahokian, A.D. 950–1050 (Fowler 1975: 98), and historic Indians on the lower Mississippi in 1678 sacrificed 100 men for the burial of a chief (Tonti 1917:299). Such practices would require a supply of expendable persons. Marquette reported that the Illinois "make themselves dreaded by the distant tribes to the south and west, whither they go to procure slaves; these they barter, selling them at a high price to other Nations, in exchange for other wares" (Thwaites 1896–1901:59:127). These same Illinois Indians thought "nothing of seeking their enemies at a distance of 500 or 600 leagues from their own country. This they constantly show in the country of the Iroquois, whom, at my instigation, they continually harass. Not a year passes in which they do not take a number of prisoners." (Tonti 1917:303). Bellicose expeditions proceeded in both directions on the waterways. "It is by [the Ohio] river that the Iroquois advance to make war against the nations of the south" (Tonti 1917:297). Finally, relating these activities to Ontario, the Neutral took 100 prisoners in 1641, 170 in 1642, and 800 in 1643 from the Mascoutins (Fire Nation) of Michigan (Noble 1978:161).

In his comprehensive account of Indian slavery in the United States, Lauber (1913:39) called attention to the connection between the institution of slavery and hereditary ranking and the development of castes in certain post contact North American Indian societies.

The ethnohistoric evidence of monopolies on trade goods such as tobacco (Heidenreich 1978:379) and on trade routes also is consistent with a suggestion of prehistoric exchange patterns (Hayden 1978; Noble 1978: 160; Ramsden 1978; Renfrew 1975; Sahlins 1972; Tuck 1978; J. V. Wright 1966:81). Over and over as they moved west on the inland waterways, Europeans were warned (see Fig. 2) not to proceed further for fear of cold, heat, wicked enemies, wars, river hazards, demons, or man-and canoe-eating monsters (Champlain 1922–36:2:288, 4:185; Galinée 1917:187; Marquette 1900:95, 97, 123, 155; Ramsden 1978:102; Roberts and Shackleton 1983:170).

These data document long-distance exchange patterns, but because European contact appears to have stimulated increases in trade, warfare, village size, and heterogeneity, hypotheses for prehistoric exchange patterns based on ethnohistoric data need testing (Ramsden 1978).

Core/Periphery Relations

In the literature on the growth of urban centers and central places, the growth of a core usually involves exchange relationships with a periphery (Gibbon 1974; Hayden 1978; Hirth 1978; Johnson 1975; Renfrew 1975; Schneider 1977; Steponaitis 1978). The evidence for limited amounts of durable exotic goods, from relatively near sources, between A.D. 900 and A.D. 1450, together with palisaded sites at locations often interpreted as defensive (J. V. Wright 1966), suggests that the Ontario Iroquois were not trading directly with Cahokia, but that they had contact with and may have exchanged goods with centers in Cahokia's periphery (Dincauze and Hasenstab 1987). If goods from Ontario reached Cahokia, as we have shown to have been possible, by means of gateway exchange centers (Hirth 1978), then Ontario sites' Ohio chert and piedmont steatite suggest gateways on tributaries to the Ohio River south of the east or west ends of Lake Erie (Fig. 4; Brose 1978).

After about A.D. 1300 Cahokia's decline and the growth of Ohio River centers may have occasioned extra stress or isolation on the margins of the Cahokian periphery (Dincauze and Hasenstab 1987). J. V. Wright (1966, 1972) and Noble (1975a) see a homogenization of culture in sites in southern Ontario between A.D. 1300 and A.D. 1400, and Gibbon (1972) found a related pattern in Wisconsin for the Oneota at about the same period. According to Braun (1980), regional uniformity reflects a lack of external contacts and an increase in internal social complexity and regional integration, in other words, the development of a strong, independent, political entity outside the periphery of the Mississippian core (Hirth 1978; Hirth and Villaseñor 1981; Jamieson 1981:25; Paynter 1982:125, 126). Indeed, that the historic Neutral Iroquois of southern Ontario had a chiefdom from

1620–1640 (Noble 1978, 1984, 1985), and that the Iroquois historically played a leading political role in the Northeast, challenges us to explore processes on the periphery of Cahokia.

Conclusions

These data on water trails provide a framework for studies of prehistoric American Indians in which we assume that their capability for canoeing equaled that of seventeenth-century Jesuits. Plotting the rivers and examining explorers' notes reveals a geography which provided easy water travel with alternative routes and few natural barriers. This feature of North America offered opportunities to travel as well as to exchange goods and ideas over long distances. Unless the complex society at Cahokia or its outposts erected social, religious, economic, or political barriers, prehistoric people in a bark canoe or a dugout could have traveled from the western end of Lake Ontario to Cahokia in 33 days and returned in 67 days (Ta = 50 days; Fig. 3). The data presented here together with their analysis (Drennan 1984a, 1984b) indicate that transport of goods by canoe, possibly in several stages, from southern Ontario to Cahokia could have been profitable.

While the archaeological evidence for a limited amount of durable exotic goods at Ontario Iroquois sites dating A.D. 1100–1300 does not confirm or disprove the validity of Drennan's economic transport limit, it does suggest that the economic transport limit around Cahokia (Fig. 3) included in the Northeast a region influenced, perhaps not always benignly, by the Cahokian exchange system. Comparisons of the amount and sources of durable trade goods through time for other regions of the Cahokian margin could test or refine this proposal.

Acknowledgments

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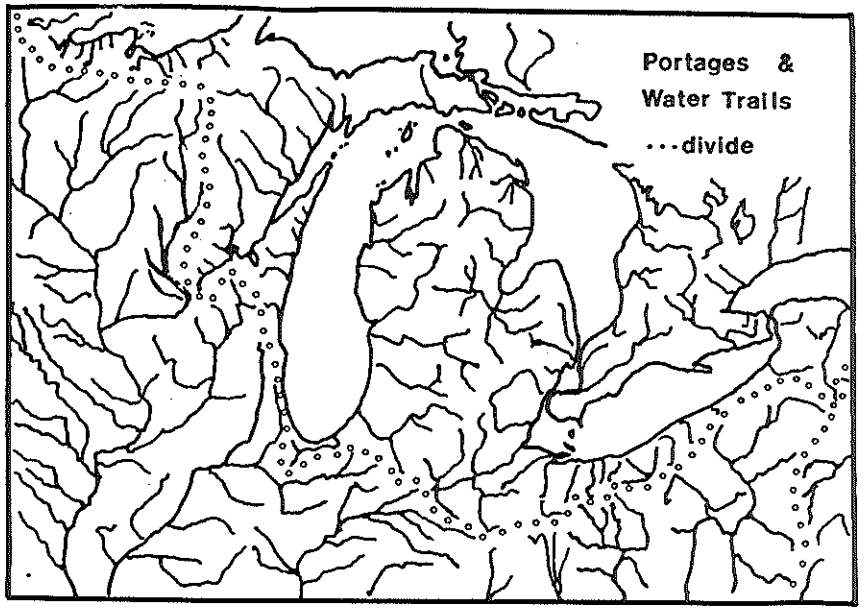

Fig. 1. Portages at the divide between the Great Lakes and the Mississippi Basin (after Hosmer 1901:33).

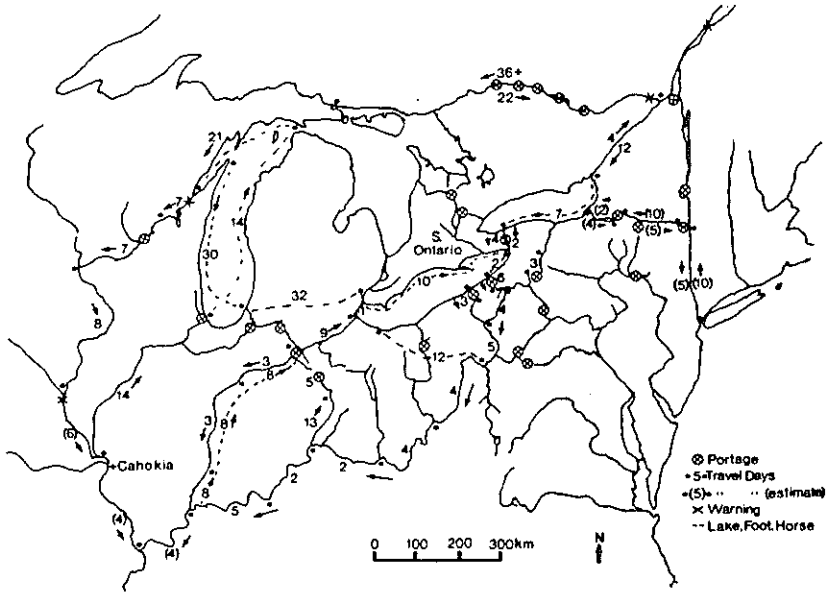

Fig. 2. Historic travel times by canoe upstream and downstream in days (d) in the Northeast (Table 1). Also shown are portages, places where warnings were given not to procede further, and some land routes.

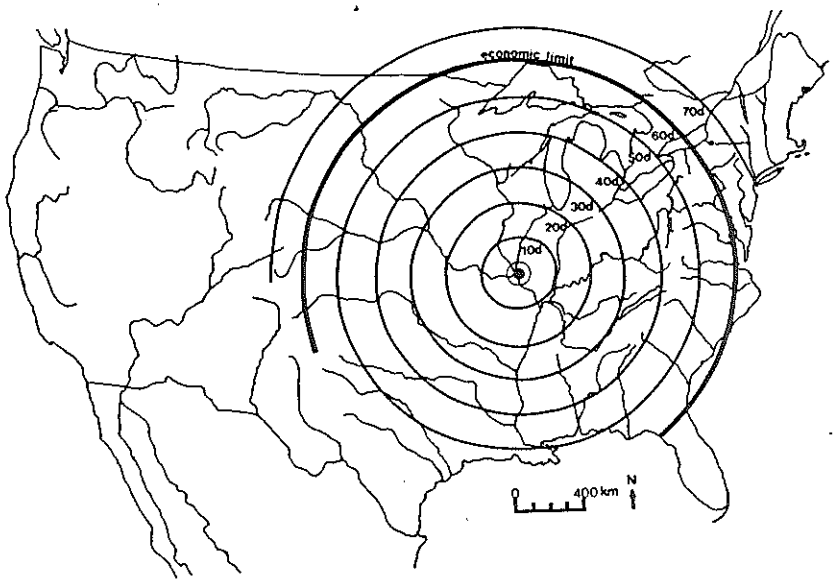

Fig. 3. Circles of Equal Average Travel Time (Ta) in days (d) from Cahokia. The upstream and downstream travel times of Fig. 2 have been averaged to give one number, Ta. To a good approximation, upstream time is twice downstream time, upstream time = 4/3 Ta, and downstream time = 2/3 Ta. The approximate linear relation between length of radius (R) and Ta is, R(km) = 20 × Ta(days). The economic limit (Drennan 1984 a, 1984b) for a round-trip of 118 days from Cahokia is also shown.

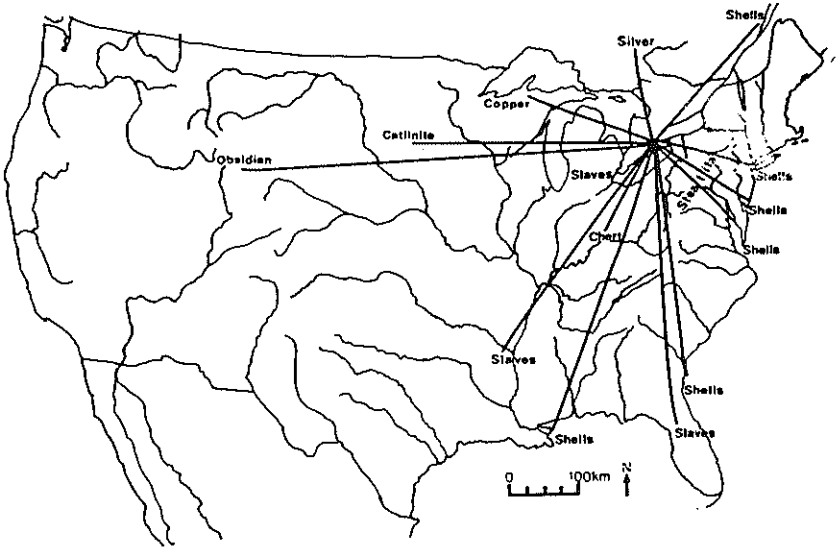

Fig. 4. Sources of exotic trade goods of the Initial Woodland period found in Ontario (J. V. Wright 1972, 1974; Granger 1978:118), sources of slaves captured in early historic time (Thwaites 1896–1901:21:195, 201, 59:127, 69:223; Tonti 1917:293, 303), and possible sources of marine shell.

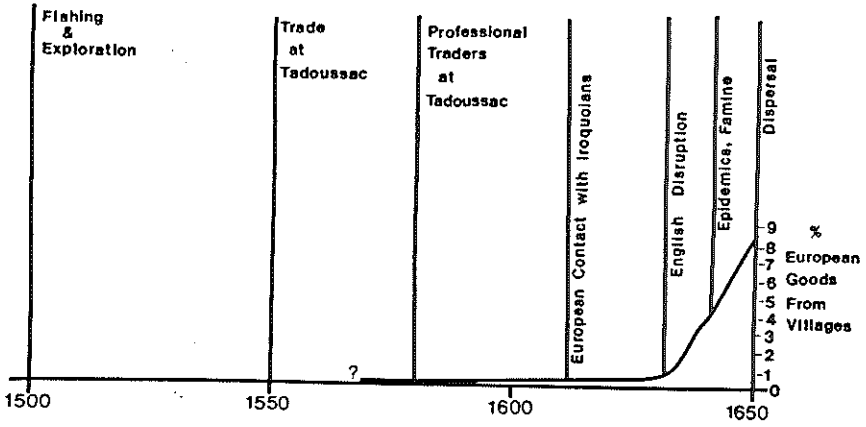

Fig. 5. The increasing presence of European goods on Neutral sites in southern Ontario (after Fitzgerald 1982b:43).

TABLE 1

Some Travel Times in Days (d), by Birchbark Canoe, Batteau, Pirogue, Foot, and Horseback, in the Seventeenth and Eighteenth Centuries, in the Northeastern Mississippi and Great Lakes

Maps: Fite and Freeman (1969:177, 224, 228); Thwaites (1896–1901:59:54, 86, 108)

Dollier and Galinée 1669–1670 (Galinée 1917):
Birchbark canoe:
Seneca Village NY to Allegheny R. (reported by Senecas): 6 d or 3 d
Portage: Lake Erie at Erie PA to French Creek (Allegheny R.): 3 d
Montreal to Lake Ontario via St. Lawrence (upstream): 27 d
Montreal to Sault Ste. Marie via Ottawa R. (upstream) (45–50 portages), Lake Nipissings, French R. (downstream) (4 or 5 waterfalls), and Lake Huron: more than 36 d
Sault Ste. Marie to Montreal via Lake Huron, French R. (upstream with portages), Lake Nipissings, and Ottawa R. (downstream with 27–32 portages): 22 d

Marquette and Joliet 1674 (Marquette 1900):
Birchbark canoe:
St. Ignace MI to Green Bay WI via Lake Michigan: 21 d
Green Bay WI to Maskoutens village, near Lake Winnebago (upstream): 7 d
Maskoutens village to Mississippi R. via Fox R. (upstream), portage of 2700 paces (no portage in high water), Wisconsin R. (downstream): 7 d
Wisconsin R. WI to DesMoines R. IA via Mississippi R. (downstream: 8 d
Des Moines R. IA to Arkansas R. AR via Mississippi R. (downstream): 22 d
Wisconsin R. WI to Arkansas R. AR via Mississippi R. (downstream): 30 d
St. Ignace MI to Arkansas R. AR (southerly): 58 d
Arkansas R. AR to Green Bay WI via Mississippi R. (upstream), Illinois R. (upstream), Chicago portage (easy 1½ mi in spring to early summer. In low water or ice, portage was more difficult [Tonti 1917]), and Lake Michigan: 75 d

LaSalle 1678–1690 (Tonti 1917):
Birchbark canoe:
Green Bay WI to Ft. Miami (mouth of St. Joseph R. MI), via west side Lake Michigan: 30 d
Portage: St. Joseph R. to Kankakee R. (Illinois R.) (at South Bend IN): 6 mi
Chicago IL to St. Ignace MI via Lake Michigan: ca. 14 d
New Orleans LA to Chicago IL via Mississippi and Illinois R. (upstream): 84 d
Missouri R. to Chicago Il via Illinois R. (upstream): 14 d.

By Foot: Fort Miami (mouth of St Joseph R. MI) to Detroit MI: 32 d.

Colden 1724 (O'Callaghan 1853–1887:5:634, 725–730, 6:113, 10:675–679):
Birchbark canoe:
New York City to Albany via Hudson R.: an easy 140 mi
Albany to Lake Ontario via Mohawk R.:
Portage (Great Falls) to Schenectady: 16 mi
Schenectady to Carrying Place, Height of Land (includes portage around falls 80 mi above Albany) via Mohawk R.: 120–130 mi
Portage from Mohawk R. to Wood Creek (Vilcrick): 3 mi (5 mi dry)
Down Wood Creek (Vilcrick) across Lake Oneida, down Onondaga R. (45 paces at falls) to Lake Ontario: easy, fast (up or down)
Total Albany to Lake Ontario: 200 mi, much less than 20–40 d
Albany to Montreal via Hudson R., Lake Champlain, Richlieu R.: 200 mi
includes: portage Hudson to Wood Creek: 12 mi, portage Chambly to La Prairie: 16 mi.

TABLE 1 [Continued]

Celoron 1749 (Bonnécamps 1900):
Birchbark canoe:
Montreal to Lake Ontario (upsteam) via St. Lawrence: 12 d
St. Lawrence R. to Niagara R. via Lake Ontario: 7 d
Portage: Niagara R. (9 leagues) and Falls (upstream): 4 d
Niagara R to Chautauqua NY via Lake Erie: 2 d
Portage: Lake Erie to Lake Chautauqua (3 1/2 leagues): 6 d
Lake Chautauqua to Warren PA via Allegheny R. (downstream) (includes stop for canoe repairs and several portages due to low water): 7 d
Warren PA to Venango PA (Franklin) via Allegheny R. (downstream): 4 d
Venango PA to Logstown PA (Pittsburgh) via Allegheny R. (downstream): 5 d
Logstown PA to Great Miami R. OH via Ohio R. (downstream): 15 d
Ohio R. to Piqua OH via Great Miami R. (upstream): 13 d
Portage: Piqua OH to Ft. Wayne IN (35 leagues): 5 d
Detroit MI to Niagara R. via Lake Erie: 10 d
Portage: Niagara R. and Falls (downstream): 2 d
Niagara R. to St. Lawrence R. via south shore of Lake Ontario: 34 d (storms)
Lake Ontario to Montreal via St. Lawrence R. (downstream): 4 d
("I shot all the rapids ["The Gallops," "The Flat," "The Long Sault," "Les Cedres," "The Thicket," "Sault St. Louis"], the danger of which had been rather exaggerated to me" [Bonnécamps 1900:195–197])

By Pirogue (dugout canoe):
Ft. Wayne IN to Lake Erie via Maumee R. (downstream): 9 d
Maumee R. to Detroit MI via Lake Erie: 1 d.

Croghan 1760–1761, 1765 (1904):
Horseback: Sandusky OH to Pittsburgh PA: 12 d

Batteau:
Pittsburgh PA via Ohio R. to Muskingum R. OH: 4 d
Muskingum R. to Scioto R. OH: 4 d
Scioto R. to Great Miami R. OH: 2 d
Great Miami R. to Falls of Ohio IN: 2 d
Pittsburgh PA to Wabash R. IL (1090 mi [Croghan 1765]): 17 d

Birchbark canoe:
Portage Wabash R. to Maumee R. at Ft. Wayne IN: 9 mi at low water
4 1/2 mi at high water
Ft. Wayne IN to Detroit MI via Maumee R. (downstream) and Lake Erie: 10 d
Detroit MI to Niagara R. via Lake Erie north shore: 13 d
Ft. Wayne IN to Vergennes IN via Wabash R. (downstream) (reported): 6 d

By Foot:
Ohio River to Vergennes IN along Wabash R.: 8 d
Ohio R. to Ouiteron IN along Wabash R.: 16 d
Ohio R. to Ft. Wayne IN along Wabash R.: 24 d.

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