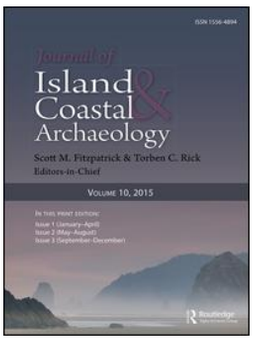

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Reports

Settlements and Seafaring: Reflections on the Integration of Boats and Settlements Among Marine Foragers in Early Mesolithic Norway and the Yámana of Tierra del Fuego

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ABSTRACT

The abundant Early Mesolithic (11,500–10,000 cal. BP) settlements at the raised shorelines in Norway and Sweden represent the earliest documented marine foragers in northern Europe. In the Scandinavian seascapes, both traveling and subsistence depended on seaworthy vessels. However, this highly mobile lifestyle was likewise dependent on settlements on firm ground. Departing from actor-network theory and symmetrical archaeology, I explore the structural relations between extensive use of boats, basic co-residing units, and activity patterns at settlements. The empiric basis for my study is the excavated Early Mesolithic coastal sites in the Ormen Lange project in Central Norway, dated to ca. 11,000–10,800 cal. BP. I suggest that the structural uniformity that is observed in the settlements may be related to the dependency on boats for subsistence activities as well as transport and settlements, creating human-thing dynamics that interlocked co-residents and boat crews, logistics, and activity patterns. This dynamic regime is also explored with ethnohistorical and archaeological references to the Yámana in the Beagle Channel, Tierra del Fuego, Argentina.

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Color versions of one or more figures in this article are available online at www.tandfonline.com/uica.

Keywords boats and logistics, coastal settlements, colonization, Ormen Lange project, symmetrical archaeology

The departure for this study is the uniform appearance of the abundant Early Mesolithic settlements in coastal Scandinavia (Figure 1). This is the pioneer settlement of the region, appearing on the raised shorelines from ca. 11,500 cal. BP (Bjerck 2010). Artifact assemblages demonstrate that the first settlers, the Fosna and Hensbacka traditions, are rooted in the Late Pleistocene Ahrensburg tradition in the northern part of the European plains. The extreme coastal location of Early Mesolithic sites in Norway and Sweden points to a definite marine adaptation (Bjerck 2009; Breivik 2014; Kindgren 1996; Svendsen 2007:68; Wikell and Pettersson 2009) (Figure 2). In fact, negative evidence from Scandinavian shorelines that are older than ca. 11,500 cal. BP may indicate that marine foraging in open sea were peripheral in Late Pleistocene subsistence strategies in northwestern Europe and that the initial development of seaworthy boats and off shore marine foraging happened in parallel with the colonization of the Scandinavian seascapes (see Bjerck 2009; Bjerck et al. 2016).

Poor organic preservation has eliminated all direct evidence of food remains, but there are ample indirect sources that illuminate the Fosna/Hensbacka lifestyle. Very likely, the marine subsistence pattern that is evident in the Early Holocene Scandinavian seascapes had its origin in the glacio-marine Doggerland-Skagerrak basin that existed throughout the Late Pleistocene period, from ca. 18,000 cal. BP (Hughes et al. 2016; Van de Noort 2011:4). This marine regime was similar to modern North Atlantic Arctic waters (i.e., very different from the Holocene marine regime in coastal Scandinavia). Both these bio-regimes are highly productive, but embrace different composition of fauna. In general, glacio-marine waters are ideal for marine mammals, in particular the ice-dependent pinnipeds: ringed seal (*Pusa hispida*), harp seal (*Phoca groenlandica*), bearded seal (*Erignathus barbatus*), and walrus (*Odobenus rosmarus*) (Aaris-Sørensen 2009; Hufthammer 2001; Jonsson 1995). The adaptation of the different pagophilic pinnipeds ranges from generalists to specialists, feeding on fish, cephalopods, crustaceans, and bivalves, and to a certain extent zooplankton, seabirds, and pinnipeds (see Riedman 1990; Wilson and Mittermeier 2014). However, the vast resource base that the Late Pleistocene ice-seals thrived on may have been of less value for direct human consumption. Most of the benthic and pelagic fauna were out of human reach. Fish species like polar cod (*Boreogadus saida*) and carpelin (*Mallotus villosis*) are abundant and provide a key link between zooplankton and marine mammals, but their main habitats are in the pelagic and ice edge environments (Riedel 2014:25) that was difficult to access for the Late Pleistocene hunter-gatherers. On the other hand, they probably could exploit seals on the nearshore winter-spring sea-ice, and on beaches during summer and fall without the benefit of seaworthy boats.

Climatic change during the first centuries of the Holocene transformed this glacio-marine biotope to a sub-arctic, open water marine environment more similar to present conditions, including harbour seal (*Phoca vitulina*) and gray seal (*Halichoerus grypus*), and a range of new fish species that offered a sustainable resource base for human subsistence (see Breivik 2014; Skjoldal 2004). Thus, it is reasonable that the initial phase of Early Mesolithic marine foraging was more focused on seals and less on fish compared to the later part of the Mesolithic. In fact, it may be pinnipeds that motivated late glacial peoples to explore hunting in open seas and, subsequently, end up as specialized marine foragers in the coastal margins of Scandinavia (Bjerck et al. 2016).

The archaeological record seems to reflect this early Holocene environmental shift. The abundance of outer coastal site locations in the Early Mesolithic Scandinavian seascapes points to seal hunting. There are also indications that blubber was used to heat dwellings. A study of the Mesolithic settlement location and optimal fishing places

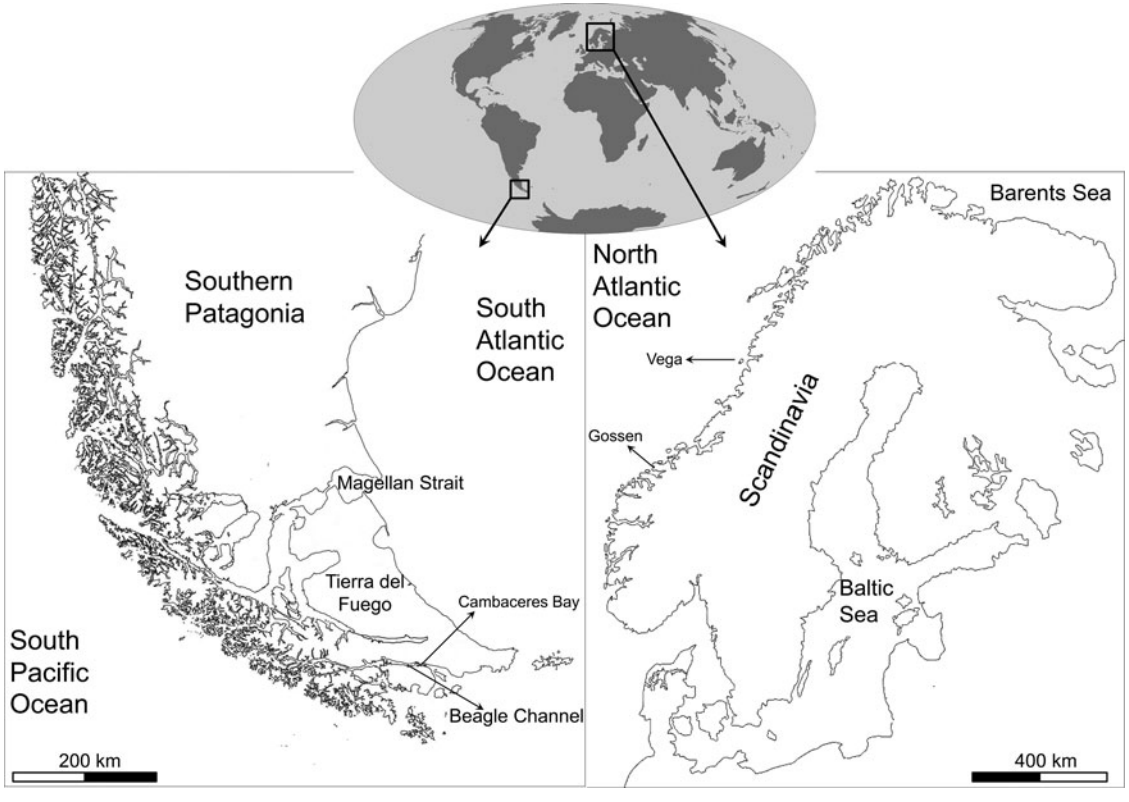

Figure 1. *Scandinavia and southern South America. Map: A. F. Zangrando.*

Figure 2. *Early Mesolithic sites in Norway, complied by Breivik (2014:fig. 3). Of the 747 sites, 96% are coastal sites, only 4% are located in the mountain plateaus. Coastal areas without sites are heavily inflicted by the mid-Holocene transgression that has eroded/inundated Early Mesolithic coastal sites. The seemingly inland sites in the far southeast are located at elevated shorelines of Early Mesolithic age.*

in the form of tidal currents in western Norway (Bergsvik 2001) indicates that stable fish resources were not primary targets in the initial, Early Mesolithic phase of marine foraging. The complete absence of Early Mesolithic fish weights are perhaps a hint in the same direction. I will not argue that fish, birds, reindeer, berries, or other available resources were overlooked, however. The main point is that pinnipeds probably were a cornerstone in the economic basis of the first settlers in coastal Scandinavia, and hence most decisive in their adaptive strategies, material culture, logistics, and settlements (Bang-Andersen 2012; Bjerck 2009; Breivik 2014; Kindgren 1996; Schmitt et al. 2009; Skar et al. 2016; Wikell and Pettersson 2009).

The development and implementation of seaworthy vessels must have been a decisive factor in this process. Physical evidence of Early Mesolithic boats is nonexistant (Glørstad 2013; Van de Noort 2011:146). Most settlements are found on the outer coast, however, frequently on small islands, and normally adjacent to natural harbors (Bjerck 1994; Breivik 2014; Nyland 2012a; Svendsen 2007). The referred studies point out that ca. 90% of the settlements are located at what were islands at the time, demonstrating that the settlers arrived and departed by boat. These are all proxy data for the pivotal role of "missing" boats in the Early Mesolithic period. The lack of woods suggests that Early Mesolithic boats were skin canoes (Bang-Andersen 2013; Bjerck 2013; see also overview in Van de Noort 2011:149). Independent of their construction, the boats must have been a decisive instrument in subsistence strategies that also greatly influenced logistics and settlement patterns. Here, I highlight the interactive relations between boats and human strategies and explore how human-boat dynamics may have influenced the Early Mesolithic settlements and lifestyles.

THEORETICAL BACKDROP: THE "HUMAN-BOAT MACHINE"

Archaeological remains are more than things that have percolated from past peoples' actions. Things are also active players in the communication between humans and the infinity of materiality that people depend on in their lives. Recent theoretical perspectives highlight the active part of people's material surroundings and reveal the interesting dynamics of the interactive networks between humans and things. These perspectives depart from Bruno Latour's actor-network theory (ANT), and are made even more operational to archaeology under the label "symmetrical archaeology" by Olsen (2007, 2010), Shanks (2007), and Witmore (2007), among others. The concept of symmetrical archaeology underlines the importance of an unlimited array of relations between humans and their material surroundings, including the environmental and functional aspects that for years have been more or less omitted in our efforts to bleach the "stains" from processual archaeology.

In relation to the meager Early Mesolithic record, it is intriguing that symmetrical archaeology draws attention to the multitude of material components that have *not* survived as material remains. The notion of networks helps archaeologists to see beyond what is seen directly in the archaeological material. I believe advances in archaeology to a large extent depend on our abilities to follow the relations from visual material fragments in the archaeological record into visions of the lived lives of human beings. As noted by Anders Hesjedal (2011:97), boats are highly illustrative to what Latour labels a "machine"—a thing composed of many related parts, concerns, and functions, all with different abilities and characteristics, small and big, static and kinetic. All, however, are equally important for the outcome. Like a machine, even the simplest vessel is a mingle of relations to materiality, wooden parts, blade knifes and perforators, scrapers and skins, needles, lines and thread, resin and grease, ambient conditions, fauna and hunting strategies, landscapes and seascapes, human muscles, knowledge, senses and experience, and future hopes for successful hunting and safe travelling. In the finished product, all details, components, and external relations are "blackboxed" and reduced to one—the thing—in this case a boat

representing a comprehensive package of affordances and constraints. How did the people use the boats? Or perhaps more intriguing, "What did the boat do to its human companions and their logistical strategies, activity patterns, settlements, and social structure?"

EARLY MESOLITHIC SETTLEMENTS: PINPOINTING BASIC RESIDENTIAL UNITS IN THE ORMEN LANGE PROJECT

The empirical backdrop for this discussion is the general picture of the Early Mesolithic (11,500–10,000 cal. BP) settlements in the Scandinavian coastal areas. Settlements are small lithic scatters that are found in considerable amounts. Lithics are mainly from flint that are not found in Norwegian bedrocks. Flint was collected from drift ice sediments along the coast and studies of more specific raw material sources are not possible. Excavated settlements have produced occasional fireplaces, and stone alignments that seem to represent tents or expedient huts, perhaps also wind shields. In contrast to the Middle Mesolithic (10,000–8500 cal. BP), no permanent dwellings are recorded. Some Early Mesolithic sites may cover hundreds of square meters in area, but all excavated sites have proved to be agglomerations of smaller lithic scatters that seem to relate to basic residential groups and an unknown number of re-occupations. In spite of some differences in artifact composition, there is little evidence for functionally differentiated sites like large base camps or specialized hunting stations. The number of occupations at each site seems to be the most prominent variation. From this, it is inferred that people were highly mobile and that the basic residential unit were small, family-based groups (Åstveit 2009; Bang-Andersen 2003, 2012; Bjerck 2007, 2010; Bjerck et al. 2008; Fuglestvedt 2012; Kindgren 1996; Nærøy 2000; Thuestad 2005).

The Ormen Lange project at the island of Gossen in central Norway (Figure 1) provided detailed insights into the character of the Early Mesolithic settlements (Bjerck et al. 2008:218, 436). Localities 48 and 72 (14C-dated to ca. 11,000–10,800 cal. BP) consisted of a series of the characteristic lithic scatters (mostly flint) that seem to represent residential units (Figures 3–7). Most units (14) contained fireplaces, collections of pebbles and sooty sand with pieces of charcoal. The sooty substance was also found in the in situ beach sand underneath the fireplaces, indicating that its origin was fluid, perhaps burnt blubber oil (Figures 4, 5, 7; see details in Odgaard 2003; Pettersson and Wikell 2013). Chemical analyses of the sediments failed to produce traces of marine lipids, but this negative result may just as well be a matter of preservation. In some cases, the actual dwellings were recorded in the form of stone alignments. All of these (three tent rings, one cobble floor, Figures 4–7) were associated by presumed blubber fueled fireplaces.

Lithic Scatters and Artifact Composition

The 20 lithic scatters units are about the same size, varying from 10 to 25 m^2, but the amount of artifacts differs from ca. 11,000 to 1,000 (Table 1). The layout of the 20 units suggests that the site sometimes was visited by several groups at the same time. Most units have one or more distinct concentrations of micro flakes that probably represent spots where flint knapping took place (Figures 6–7). The co-variation between the number of flint knapping spots and the amounts of artifacts suggests that the largest lithic scatters may reflect several re-occupations. Independently of the amount of lithics, the artifact assemblages in the different units are similar. All the residential units include primary lithic production—blade cores, platform rejuvenation flakes, and lithic waste. Most units contain micro burins that show production of projectiles and lithic waste from production as well as maintenance of flake adzes. Most interesting is that there seems to be a standard repertoire of tools in the different units. There are instruments that relate to subsistence activities—projectiles—as well as a variation of knives, burins, flake adzes, and scrapers (i.e., the instruments that were needed to produce and maintain the full range of necessary tools and equipment, Figure 8). In spite of some variation, the artifact assemblages suggest that a structured range

Figure 3. *Overview of the Early Mesolithic Localities 48 (left, foreground) and 72 (right, center), looking towards southwest. In this photo, most fireplaces at the settlements were covered by yellow, frost insulating mats (fieldwork in the winter) that clearly mark their positions. The settlements are located close to a raised shoreline at 19–20 masl. The age of this shoreline is in agreement with the ^{14}C dating of the settlement, pinpointing that the excavated settlements are from the period around 11,000–10,800 cal. BP. At a slighter higher elevation (22 masl.) to the right (background) is the excavated area at the heavily wave-eroded Locality 51, which is shoreline dated to c. 11,300 cal. BP. Photo: H. Bjerck/NTNU University Museum.*

of activities took place at each and one of the occupational incidents (Figure 9).

All in all, and in agreement with other observations (e.g., Åhrberg 2012; Bang-Andersen 2003; Nærøy 2000; Nyland 2012b; Thuestad 2005), the Ormen Lange sites have produced evidence of the basic Early Mesolithic residential units in the Scandinavian seascapes. Most single occupational floors are lithic scatters of less than 25 m^2 that contain around 1,000 to 3,000 artifacts. The presence of disorderly and varied remains of mobile dwellings, the lack of permanent houses, and the systematic co-variations in amount, distribution patterns, and composition of lithic artifacts underline the expedient character of settlements. There seems to have been some kind of standardization in the size of the basic residential unit, and that the people carried out a similar set of activities on each visit, left after a fairly short time (weeks more than months), and eventually made a new site of the same character. Why this standardization of group size? What structuring agencies may have produced the observed standardization of the tool assemblages? What could have evoked this repetitive range of activities?

BOATS AS MOBILE SITES IN THE EARLY MESOLITHIC LIFESTYLE

The actual settlement may be viewed as an interrelated construction of things and

Figure 4. *Scrutinizing the details of the possible blubber-fueled fireplace (concentration of fist-sized rocks) in residential unit G, Locality 48; see Figure 7. The larger cobbles overlying the beach sand are probably a disturbed tent ring. Photo towards southeast. Photo: H. Bjerck/NTNU University Museum.*

human actions. In the following, I explore how settlements as human-thing machines were part of a bigger network of relations, including landscapes, seascapes, and logistics. To do this, we have to break away from the traditional, site-centric view of settlements. The settlement itself is what we see directly in the archaeological record, and we tend to ascribe a similar pivotal meaning of the dwelling site to the people who once lived there (e.g., the fireplace as some kind of spatial inner core surrounded by concentric circles of reduced importance—the dwelling, the settlement, the general surroundings). Somewhere in the margins, between "the settlement" and "the general surroundings" we see, by means of indirect evidence, a boat. We know that the inhabitants of the settlement came and went by means of this vessel, and that the boat was a floating work platform in their subsistence activities. Thus, the boat is a mobile site that is closely related to the settlement.

What if we turn this around and see the boat as a core in these peoples' being-in-the-world and the settlement as a supplement, a necessary land support for their being-in-the-boat? What if the boat was perceived as the center of their physical and mental world, a mobile site that was always there? In what manners may boats have influenced the role and function of the land settlements?

Carrying Capacity, Size of Crews, and Basic Residential Units

Boats, like all machines, consist of different parts that are all needed to ensure its function. At the same time, this integrated whole also restricts the machine's capacities and capabilities. Affordances and constraints are likewise important for the outcome. Boats are constructed to meet a set of demands—function, maneuverability, safety, carrying capacities, ambient

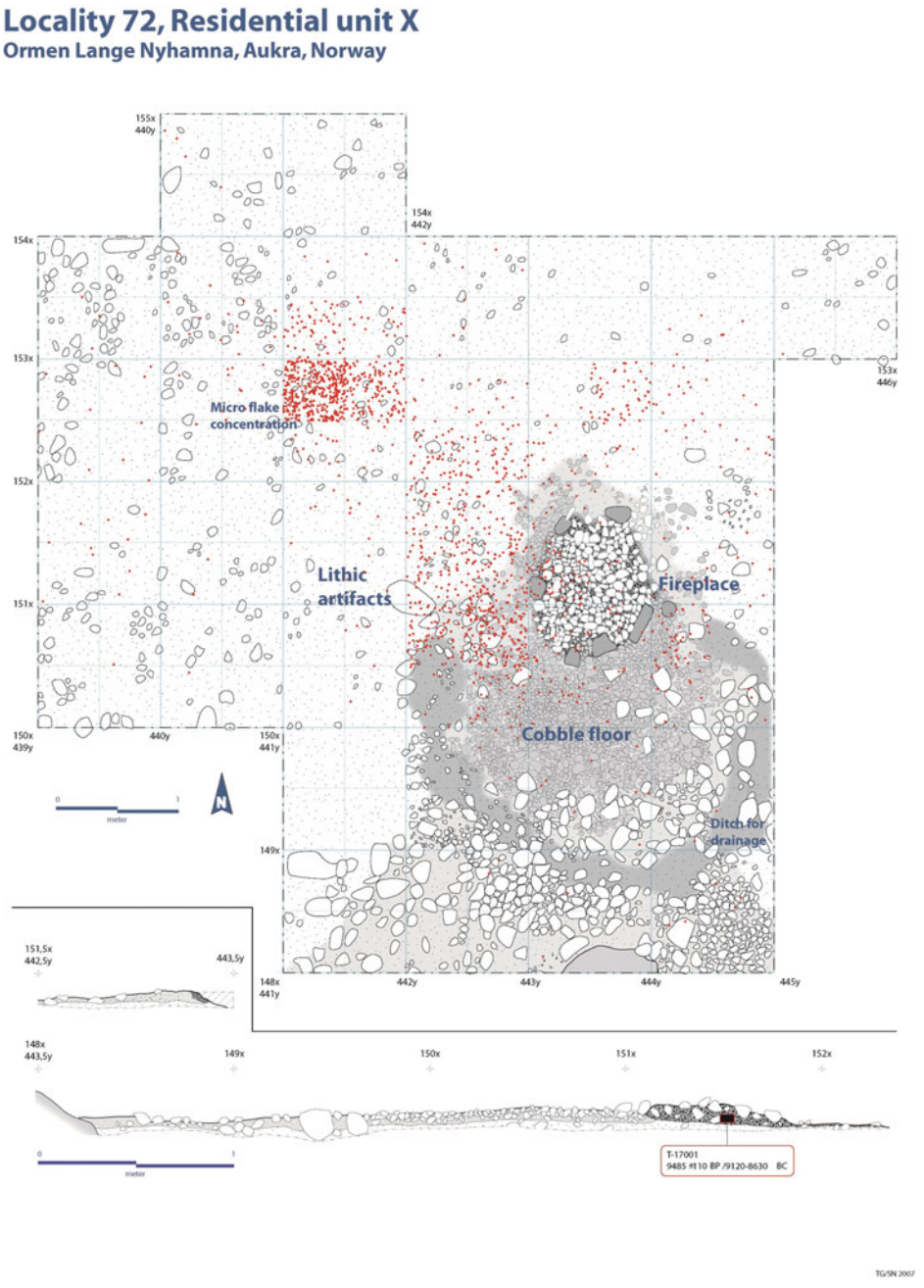

Figure 5. *Locality 72/Unit X seems to represent a single occupation from a typical Early Mesolithic residential unit. The cobble floor and drainage ditch adjacent to the fireplace are parts of an expedient dwelling, probably a tent. By the opening, facing the former beach towards the north, lithic instruments and debris mark an activity area. The concentration of lithic debris to the northwest probably marks where basic lithic tool-making took place. The fireplace (Structure 1) is dated to 11,120–10,630 cal. BP (T17001, 9585 ± 110 BP). The square patterning in the lithic distribution is caused by data-generated positioning within the 50 × 50 cm excavation units. Drawing: T. Gil/S. Normann, modified by the author.*

Figure 6. *Locality 48/Units L–R that are believed to represent single occupations of basic residential units of the time. The concordance between the lithic scatters of similar size and artifact amount, the fireplaces, and the confined micro flake concentrations (places for flint knapping) enhances the expedient character of the settlement, and strengthens the assumption that units represent single occupations; see Table 1. Drawing: T. Gil/S. Normann, modified by the author.*

conditions, and seascape. The entangled relations in this dynamic provide a ghost image of the actual vessel. Site locations reflect the seascapes and hardships the vessels had to cope with. A quick glance at the map illustrates the total dependency of boats in the Scandinavian seascapes, in subsistence as well as transport. Since it was next to impossible to move between settlements without crossing open water, we may infer that boats were dimensioned to carry *all* members of the co-residing basic group (i.e., a canoe). The lack of sizable trees in Early Mesolithic times suggests that boats were skin canoes, perhaps similar to Arctic umiaks (Chapelle 1994; Petersen 1986:117). The existence of an additional type of vessel similar to the kayak is more dubious. Kayaks are specially designed to increase speed and for hunting activities operated by single hunters, a task

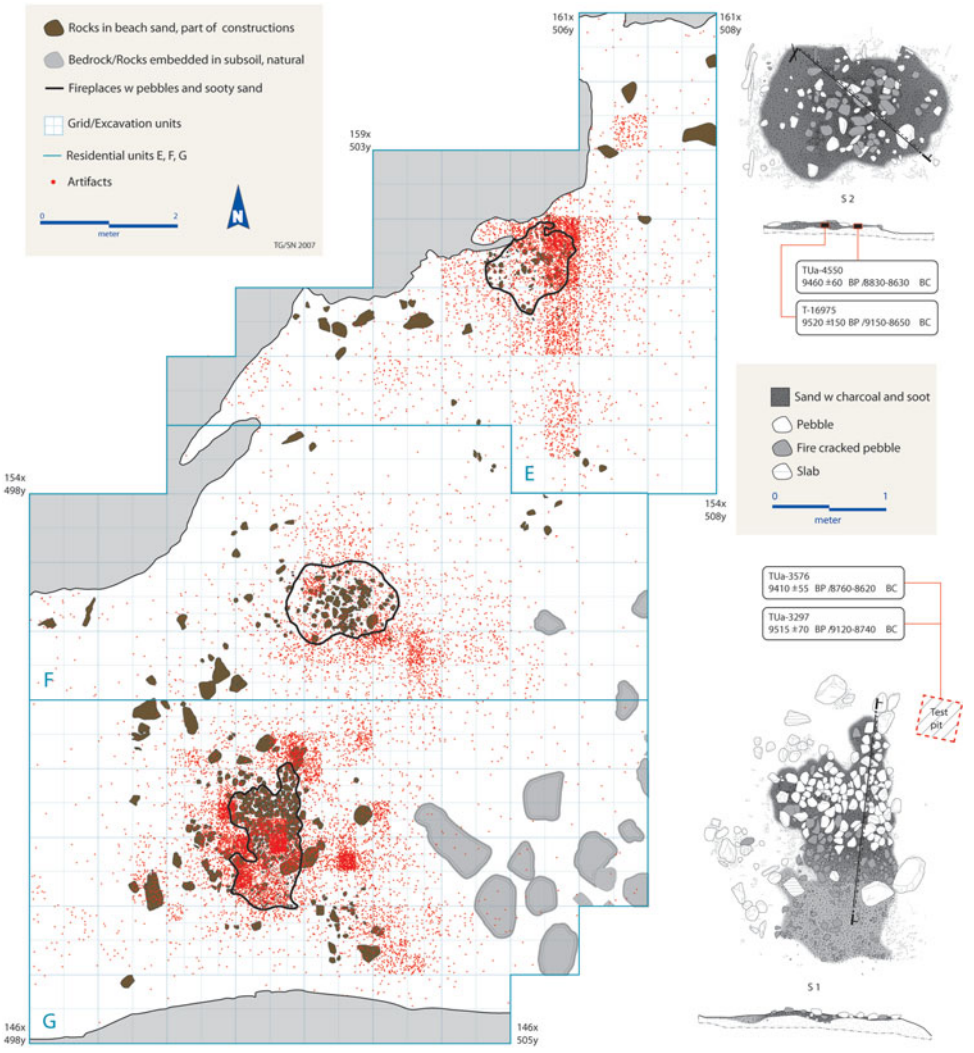

Figure 7. *Excavation in 25 × 25 cm units produced a more detailed picture of the distribution pattern in the F and G units. Note that the artifact-rich G unit has several micro flake concentrations, presumably a result of re-occupations (Table 1). The alignment of beach cobbles (dark brown) are probably a disorderly tent ring. Drawing: T. Gil/S. Normann, modified by the author.*

group logistic regime that tends to produce a settlement pattern with task-specific hunting stations within a high level of logistical mobility. However, the Early Mesolithic archaeological record is more in line with small and uniform social groups, probably families with high residential mobility (i.e., "foragers" more than "collectors"; see Binford 1980). Task-specific camps are less evident. Thus, we may conclude that seafaring, transport as well as hunting activities, probably was conducted by a single boat type. Furthermore, we may infer that this vessel was dimensioned to carry all members of the residential units. The documented settlements suggest that residential units were small, probably

families counting between 5 and 10 individuals.

Departing from knowledge of normal-sized Arctic umiaks, we know that they will easily carry a cargo of one ton in addition to a crew of 5 to 10 persons (Ames 2002:29; Chapelle 1994:174). This means that the boat easily may carry the things the co-travelers need, tools, raw materials, equipment, fuel, food, and a tent with poles to name a few. Carrying capacity also has constraints, however, a big boat is more difficult to handle, needs a bigger crew, and is not as optimal in subsistence activities like seal hunting, where speed and flexibility are decisive. This implies that the Early Mesolithic boat probably was designed for long-range as well as short-range travel, bulk transport, and hunting activities. This is a compromise between conflicting demands—on one hand concerns of stability and carrying capacity and on the other lightness and maneuverability.

A boat may be designed to cope with a wide array of demands. The point here is that once this is defined, you also have defined a series of affordances and constraints, a consonance of relations between the boat's carrying capacity, range of crewmembers, safety precautions, speed, and maneuverability. Like machines, boats represent holistic constructions that are designed to cope with a set of demands "outside itself," including the crew, paddlers, and passengers. Thus, extensive use of boats may very well evoke some kind of standardization in the number and social composition of crewmembers. As co-travelers and co-residents probably were one and the same, boats will also influence the size and character of settlements.

Delayed Actions and Preparations for New Travels May Produce a Standardized Range of Activities at Settlements

Going by boat tends to structure activities. A mobile lifestyle with extensive use of boats is totally dependent on land support. This pivotal relation may standardize chores and activities at the settlements. In addition to a range of bodily concerns, there are a lot of necessary actions that are hard or dangerous to do in a boat at sea. I think that primary lithic reduction was banned in skin vessels, likewise things that are messy, like butchering, and precision work that requires warm fingers and stable ground (sewing, mounting projectiles)—not to mention chores that needed a fire. Most of this and more are likely to have been postponed until firm ground was reached and the camp was settled. In addition, a large part of the activities at the land site were probably directed towards preparing tools and equipment for the next journey. This entails yet another "checklist" of things to do at the settlement—knowing the advantages of having everything in ship-shape before entering the boat.

Thus, settlements that are integrated in the human-boat machine reach beyond themselves in time and space, by representing delayed activities and doings and also preparations for things that are needed on the next travel at sea. Not only did they unload people, tents, and tools when they reached the shore, along with these was a long list of chores. As the repertoire of activities was repetitive, things that were left at settlements tend to be similar.

Boats Produce a Pulse in the Need for Settlements

Boats may evoke a pulse between sea and land. At certain intervals, you need to visit a land support—to rest, to take care of things. This also applies to the boat itself. A skin boat has to be regularly tended—tightened up, dried, and oiled—at least every fourth day (Ames 2002:33; Chappelle 1994:176). This operation needs more than a night's stop and is a factor likely to reduce speed on longer journeys, especially in the cold season. As an illustration of this problem, Ames (2002:33) notes that "groups on long trips sometimes took a spare umiak and alternated them, with the wet boat turned hull up to dry over the one in use." Drying a skin boat is time consuming, but involves little labor. Very probably, these longer stops at land supports were coordinated with other forms of basic maintenance and procurement. Thus, the extensive use of skin boats may also influence the timing of intervals and the length of occupations at settlements.

Table 1. **Basic data from the 20 lithic units from Localities 48 (A–R) and 72 (X–Y) .**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	X	Y
Age (m^2)	20	25	25	25	27	17	27	22	10	8	10	7	15	16	12	9	10	16	10	7
Debitage concentrations	2	2	1	3	2	3	8	2	1	1	1	1	1	2	2	1	1	2	1	1
Pebble fireplaces	X	x	1	1	1	1	1	x	1	1	1	x	1	2	1	x	1	x	1	1
Number of artifacts	11,020	8,653	7,626	6,455	5,400	2,887	9,399	2,941	2,631	854	2,227	1,014	1,850	2,347	2,623	559	995	1,349	1,742	511

Figure 8. *Selected flint instruments from Locality 48. Top, from left: Burin-like pointed tool (perforator), a three-edged burin, knife, scraper. Bottom: Unifaced blade core, flake adze, microlith, single-edged projectile point. All photos: Å. Hojem/NTNU University Museum.*

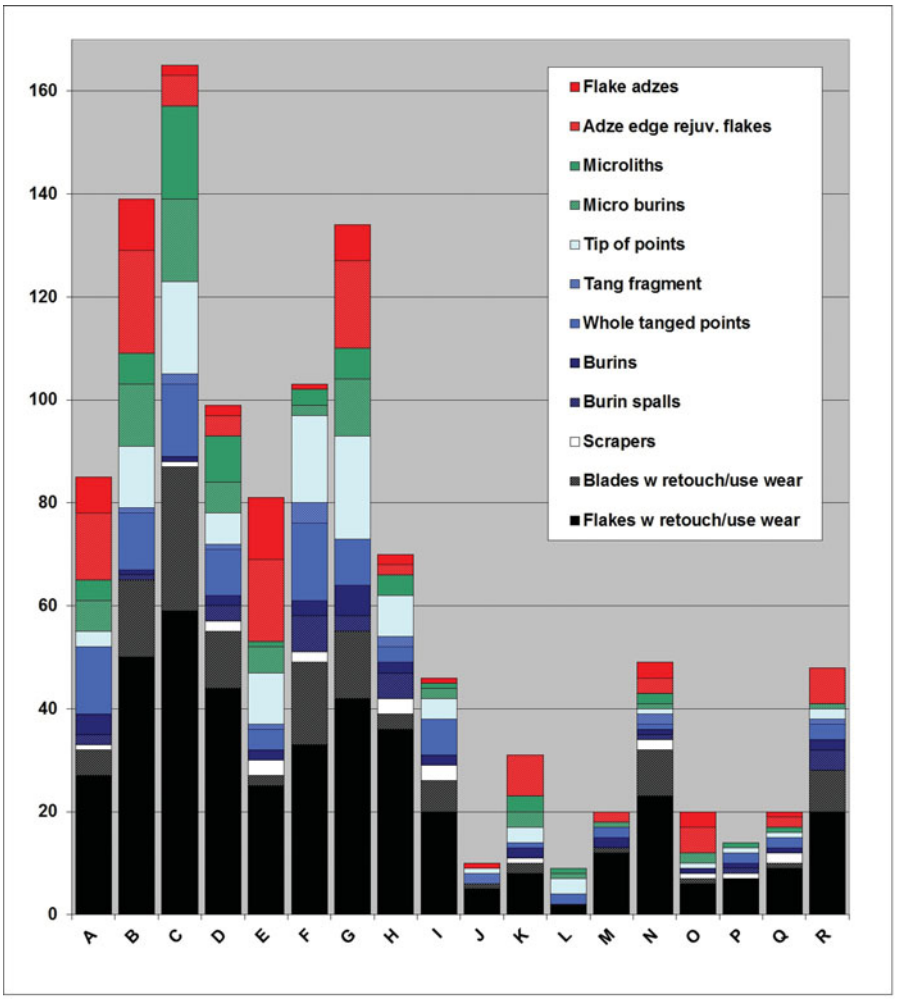

Figure 9. *The number and composition of diagnostic instruments (exclusive waste flakes) in the residential units A–R display distinct similarities in tool assemblage. This may be related to standards in the repertoire of activities during each occupation. The most prominent difference between residential units is the amount of artifacts—probably a function of time and reoccupations; see Table 1. Based on Bjerck et al. 2008:table 3.36.*

"All-On-Board" Entails Independency From Fixed Settlements

Yet another implication of boats, making it possible to carry material necessities as well as all co-residents along as you travel, is a reduced dependency on established camps. At the end of the day you do not have to reach a specific site to find the things you need, a dwelling and a place to sleep, food storages, instruments, and equipment. Your home is where you need it. You do not have to fight bad weather to reach the things that you depend on or persons that depend on you. This freedom may reduce both transport costs as well as the risk of losing life and material valuables in the struggle to reach "home." A consequence is that many settle-

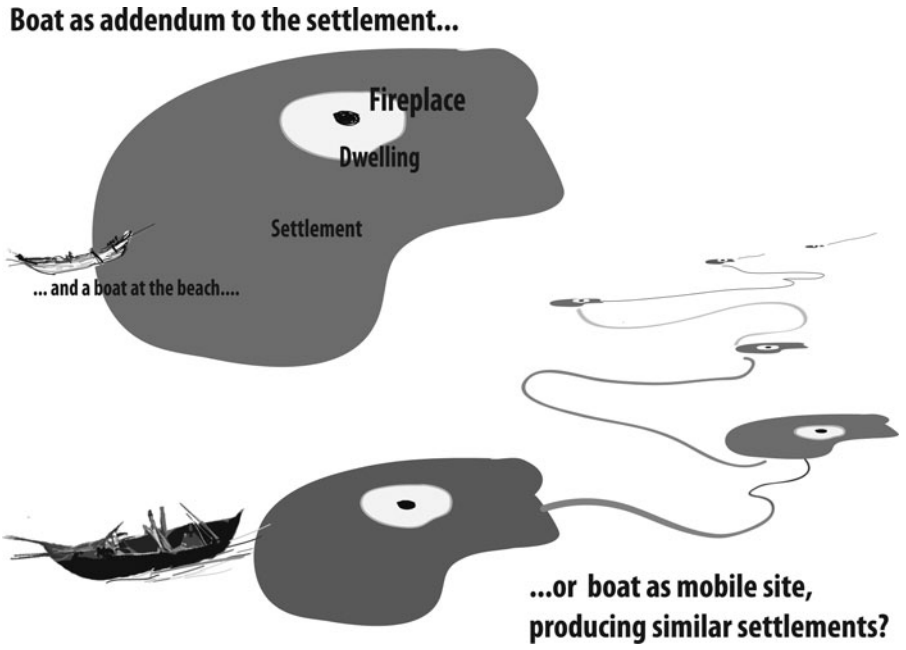

Figure 10. *What did the boat do to its human companions and their logistical strategies, activity patterns, settlements, and social structure? Was the boat a piece of equipment in the outskirts of the settlement—or a mobile site that contributed to structure settlements and activity patterns? All in all, the Early Mesolithic foragers' dependency on boats may have produced a long trail of similar-looking archaeological sites as they traveled through space and time. Drawing: H. Bjerck.*

ments are produced, many more than in a stable settlement structure with permanent dwellings at optimal locations (e.g., Bjerck 1990). "All-on-board" may also explain the fact that Early Mesolithic evidence is never reported from caves or rock shelters in coastal Norway, why look for natural shelters if you already brought your dwelling to the beach?

To conclude, the combined affordances and constraints of boats may very well have affected the size and composition of basic residential groups, set of activities, intervals and length of occupation at the settlements, and, subsequently, how settlements appear in the archaeological record (Figure 10). In fact, extensive use of boats may be a pivotal factor in explaining the observed high level of uniformity and the abundance of Early Mesolithic sites in the Scandinavian seascapes.

COMPARATIVE PERSPECTIVES TO THE YÁMANA OF TIERRA DEL FUEGO

The human-boat relation may be illustrated by a comparative perspective using the seascapes of Patagonia, specifically the Yámana in the extreme end of South America (Figure 1). The relevance of this comparison is rooted in the "Marine Ventures Project," a Norwegian-Argentinean study of human-sea relations in two similar seascapes in Scandinavia and Patagonia (Bjerck and Breivik 2012; Bjerck and Zangrando 2013). Contrary to the Norwegian Mesolithic, the lifestyle of the Yámana is well documented in historical and ethnographical sources, including photos showing boats with crew members and settlements with dwellings and their inhabitants (e.g., Borrero 1997; Briz et al. 2009; Chapman 2010; Gusinde 1931; Lothrop 1928; Orquera and Piana 1999;

Figure 11. *Yámana bark canoes somewhere in the Fuegian archipelagos around 1890. The sea-adapted Yámana relied heavily on their canoes in their mobile lifestyle, and traveled with all-and-everybody on board—including their fire. The Yámana bark canoes are made within a confined size range that underlines the close relation between boat crew and residential units. Photo: Mission Scientifique du Cap Horn, Lt. J. L. Doze, in Haydes and Deniker 1891.*

Orquera et al. 2012; Piana and Orquera 2009, 2010) (Figures 11–12).

All sources point to an extreme marine subsistence base, but the adaptation of the Yámana (and their ancestors) was quite different than Early Mesolithic Scandinavia, as shellfish (mostly mussels, limpets, periwinkle) were a stable part of the diet, in addition to pinnipeds, birds, fish, and guanaco. Like seal hunting, intensive shell collecting also calls for a mobile lifestyle. After some weeks at the same site, the amount of sizable shells within reasonable distance will diminish. Although other resources might be more decisive in subsistence systems, the abundance of shellfish as a basal and predictive resource in the daily diet were probably an important factor in strategies concerning the locating as well as the relocating of settlements (Piana and Orquera 2010:265).

Historical information demonstrates a strong relationship between family-based social groups and bark canoes with standardized design and dimensions. As opposed to Arctic umiaks, which are reported to range between 4 and 20 m in length (Ames 2002:26; Chapelle 1994:175), the length of the Yámana bark canoes seem to be much more confined, ca. 4–7 m (Orquera and Piana 1999:238–239) (Figure 13). This probably is related to the marked functional differences between the two vessel types. The Arctic umiak was designed for long-range transport of all women and children from several co-residing families between base camps (Chapelle 1994:175; Petersen

Figure 12. *Yámana group in front of their dwelling in Bahía Orange near Cape Horn, 1882. The dwelling is surrounded by shell midden deposits that through repeated occupations have formed a sheltering wall around the actual hut—a conical or dome-shaped framework of saplings covered by layers of branches with leaves, bark, skins, or whatever that was useful and available. When moving to a new settlement the dwelling was left undamaged, leaving valuable building material for future use at the same place. Photo: Mission Scientifique du Cap Horn, Lt. J. L. Doze/E.-L.-A. Payen, in Haydes and Deniker 1891.*

1986:161). The Yámana canoe was made for one (or two) co-traveling family with high residential mobility for transport as well as a range of foraging strategies. Most observations concerning size of Yámana boat crews are within the range of four to eight individuals, most frequently one man, two (or more) women, and a variable number of children (Orquera and Piana 1999:251–263), corresponding to the polygamous family structure (Lothrop 1928:163).

The seemingly stable relation between boat size and social group is also reflected in Yámana settlements, thousands of shell middens with alignments of house pits that are strikingly uniform in shape and size. The most frequently used sites may contain hundreds of house pits, normally aggregated in clusters and alignments (Piana and Orquera 2010). The circular formations around the pits are accumulations of shell refuse that were deposited in a wall around the hut. The sheltering wall of accumulated shell midden protected the simple huts, a basic structure of wood covered by branches with fresh leaves, grass, and sometimes skins to keep out rain and wind. The sheltering wall also contributed to protect the dwelling from the harsh and sudden winds, and was frequently re-used. It is reported that the Yámana normally left the huts intact when breaking camp, a practice that ensured that they would likely find usable remains of huts at their next camp (Piana and Orquera 2010:266). As archaeological formations, the largest settlements with more than 100 house pits may look like villages. Historical sources, however, inform about merely

Figure 13. *The Yámana settlement "Wikirrh" in Cambaceres, Tierra del Fuego, Argentina. This structured shell midden deposit includes 96 dwelling pits, all c. 4 m in diameter, like the vast majority of Yámana huts. The uniformity of house foundations may reflect the structural interrelation between boats, families, and residential units. Photo: H. Bjerck/NTNU University Museum.*

a handful of co-residing groups, even at the largest sites (ibid.).

These ring-shaped midden formations reveal a strikingly uniform dwelling size in the Beagle Channel, the vast majority are around 4 m in diameter (Piana and Orquera 2010:238) (Figure 13). In fact, the *Yamana–English Dictionary* (Bridges 1933:48) informs that there was a common word, *ökör*, for "wigwam, house, any dwelling. Tribe, clan, household, family kindred," underlining the strong relations between basic social groups and dwellings—a home. Archaeological excavations suggest that this dwelling tradition also reaches back to prehistoric times, perhaps from the onset of the Fuegian marine foragers more than 7,000 years ago to the Yámana in recent times (Piana and Orquera 2009, 2010).

To some extent, technology and available materials are reasons for the uniform construction of dwellings (see Piana and Orquera 2010:268–270) and boats. If bigger or different boats or dwellings were needed, however, the Yámana would find a way to make them as demonstrated by their larger ceremonial huts (up to 12 × 3.5 m) (Orquera and Piana 1999:289). Thus, the main reason for the documented stability may be the interlocked relations between the affordances and constraints in the human-boat-settlement "machine," its subsistence base, and a myriad of other relations to the surrounding materiality.

CONCLUSION

> The boat is a floating piece of place, a place without a place, that exists by itself, that is closed in on itself and at the same time is given over to the infinity of the sea and that, from port to port, from tack to tack, from brothel to brothel, it goes as far as the colonies in search of the most precious treasures they conceal in their garden, you will understand why the boat has not only

> been for our civilisation. .. the great instrument of economic development. .. but has been simultaneously the greatest reserve of our imagination. The ship is the heterotopia par excellence. (Focault 1966:27, cited in Van de Noort 2011:34)

Boats are more than telling examples for Foucault's "heterotopis," or Augé's (1995) notion of "non-places." Boats of all times and types relate to and depend on "true places," on land, ports, harbors, suitable landing places, towns, and settlements. Boats and seafaring also tend to structure their terrestrial companions, where settlements are located and how they are structured, activity patterns, and what was left at abandoned settlements. In the archaeological record of the human-sea relation, the actual boats are for the most part missing. It is the physical remains of seafaring-related sites on dry land that meet the archaeologist's eyes. In the past, boats were imperative as "things" as well as decisive instruments in a way of life. In the archaeological record, boats are evasive. They rarely survive as material remains. For the most part, they are reduced to indirect evidence that may be inferred from other observations like settlements on islands and close relation between settlements and natural harbors. However, archaeological studies are dominated by the hard facts that meet the eyes of archaeologists, although we are all aware that the things that are lost through time were probably just as (or even more) decisive in the lifeways and strategies of past peoples. My study departs from the fact that Early Mesolithic encampments in Scandinavian seascapes demonstrate a striking uniformity in size and that lithic assemblages seem to represent similarities in the repertoire of activities carried out at the settlements. It is suggested that the key to understanding this dynamic may very well be found outside what is directly preserved in the archaeological record. Actor-network theory and symmetrical archaeology contribute to envision the much wider meshwork of relations between humans and their material world. In this case, the locations of settlements highlight the presence and pivotal role of seaworthy vessels. An analysis of how boats and logistics may influence the character of settlements and the patterning of tasks may very well explain the observed similarities between the encampments. Comparative perspectives to the case of the Yámana in Tierra del Fuego may illustrate the repetitive dynamics of the relations between social groups, logistics, boats, and settlements. In addition to the archaeological record of settlements, the Yámana case includes ethnohistoric data on the character and variability of seaworthy vessels, as well as basic social groups—co-travelers and co-residents. In pair, the two cases illustrate how relations between things and humans may be interlocked for a time period long enough to leave an imprint in both ethnohistorical and archaeological data sets.

Boats are constructed to meet a wide set of demands within a larger meshwork of materiality, needs, and strategies within a functional whole. The carrying capacity of boats may also influence logistic strategies and the number and location of settlements. "All and everything on board," permits a high level of "residential mobility" where basic social units (and most material necessities) are co-travelers. This logistical strategy reduces the peoples' dependency on fixed settlements. Their home was where they needed it. In the long run this would produce a large number of encampments in line with what we see in the seascapes of Norway and Patagonia.

High mobility logistics by boat may also structure the timing and character of activities. A number of necessary tasks must await firm and secure ground at settlements. And others are mandatory in the preparations for the next journey. On each landing, more than peoples and equipment are set ashore. There was also a certain repertoire of things to be done, and what was left at the sites, the archaeological record, bear the hallmark of their coherent and specific lifestyle.

In the Beagle Channel, as well as in Early Mesolithic Norway, this functional consonance of relations between boats and settlements could be constructed in different manners. And there are plenty of examples

that demonstrate that there are other ways to cope. For instance, the Middle Mesolithic settlement system documented at Vega in northern Norway (ca. 9500 cal. BP) included large residential base camps for a number of basic social units with permanent houses and hunting stations (also frequently with permanent houses) and reveal an intent to re-occupy settlements in a network of established sites (Bjerck 1990). In this system, boats would have to meet other demands. There also are ample examples in the ethnographic record, like the umiak-kayak combination in Arctic America and Greenland that include logistics, social structure, and settlement systems very different from that of the Early Mesolithic Scandinavia or the Yámana in Patagonia. However, these are all examples of different human-thing machines, made from different parts to meet other challenges that entailed different affordances and constraints.

Clearly, there are other relationships and agencies that influence how settlements are structured and I am sure that other conclusions are possible. However, the main point here was to demonstrate the value of exploring the relationships to the things that we do not see directly in the archaeological record and to point to the analytical opportunities in the concept of human-thing relations.

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