19. Whales, Harpoons, and Other Actors: Actor-Network Theory and Hunter-Gatherer Archaeology

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Abstract: Recent archaeological approaches to agency tend to situate the capacity to act in individuals. Although the autonomy of social actors might be seen to vary depending on their position within a larger field of interacting individuals, such classic human agents end at the skin. Actor-network theory offers an alternative model of agency as an effect of much messier, heterogeneous assemblages of human and nonhuman actors. Agency is seen as distributed across hybrid networks that consist of concrete things, such as embodied individuals, artifacts, architecture, animals, and topography, as well as less tangible entities, such as ideas, symbols, technical knowledge, memories, and other imaginaries. Networks are maintained through the continuous mutual adjustment of actors' programs or goals and the delegation of many such programs of action into items of material culture (in the sense that a snare incorporates a behavioral script for both hunter and hare). Technological change can thus be seen as a renegotiation of social scripts, and not merely an adaptive response or cultural borrowing. These ideas are illustrated with examples from the archaeology of Inuit sea-mammal hunters.

During the theory wars of the late 1980s and early 1990s archaeologists were inveigled to side with a universalist processual science focused on the material and the ecological or with a historicizing postprocessual critique emphasizing the social and the meaningful. For the most part, hunter-gatherer researchers aligned themselves with the former, as reflected in on-going primary concerns with taphonomic processes, technological organization, formal ecological modeling, subsistence-settlement systems, and a general affinity for quantitative methods. Outside a small but growing body of feminist scholarship that emerged early on (including several of the contributions to Gero and Conkey [1991]), hunter-gatherer archaeology appeared largely oblivious to the

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theoretical moves labeled *postprocessualism*. Only relatively recently has there been a surge of interest in such traditionally postprocessual themes as meaning, textuality, practice, agency, and power (e.g., Dobres 2000; Dobres and Robb 2000; Duke and Wilson 1995; Feinman and Price 1995). While the *processual* and *postprocessual* labels helped foster vigorous debate in the literature at a moment of great theoretical uncertainty and instability, they were only ever discursive positions. Framing archaeological thought and practice in terms of such a stark theoretical polarity concealed the real multiplicity (and lack of orderly coherence) of archaeological idioms and approaches.

Theoretical diversity is in no way peculiar to late-twentieth-century archaeology. Archaeologists have always rubbed shoulders with sociocultural anthropologists, biological anthropologists, classicists, art historians, geographers, economists, paleontologists, geologists, biologists, ecologists, sociologists, philosophers, and many others and have in turn contributed to the development of those fields. Despite the great emphasis typically accorded rare moments of convergence and consensus around canonical texts, theoretical multiplicity can be considered the norm. Variations on the sequence antiquarianism-culture history-processual archaeology-postprocessualism make for tidy historical narratives but barely hint at the seething webs of theoretical synergy that have always connected archaeology to the rest of the natural and social sciences and the humanities and that have provided the germs of its conceptual evolution. In the spirit of continued theoretical cross-fertilization, in this essay I draw attention to a body of social theory—actor-network theory—closely linked to the work of Bruno Latour that has enormous potential to contribute to the social archaeology of hunter-gatherers but that has as yet gone mostly unnoticed (Shanks [2001] points in this direction; recent archaeological attention to Latour's important critical analyses of scientific practice and knowledge production, not explicitly considered here, can be found in Gidlow [1999]; Hodder [1999]; Holtorf [1995]).

Actor-network theory (ANT) embodies a vision of human social life as thoroughly mediated by nonhuman entities. The "actors" in ANT include not only humans but anything that can be construed as performing an actorial role in a social network, such as tools, architecture, concepts, animals, or other "natural" and "cultural" phenomena. ANT is thus premised on a determined erasure of the ontological divide between natural and social entities that symmetrically and, as it were, democratically (Latour 1992, 1993; Lee and Brown 1994) attributes actorial qualities, or agency, to both the human and nonhuman participants in the hybrid networks or collectives that compose society. After the brief consideration of some archaeological notions of agency that follows, the main themes and analytical idioms of the alternative actor-network framework are developed. I then provide some illustrations of the potential applications of ANT in hunter-gatherer archaeology, drawing from the later prehistoric record of Inuit whaling societies in the North American Arctic.

Agency

One of the important shifts in archaeology during the 1990s was a progressive turn away from structural or systemic models of social life in

which the analytical focus was on undifferentiated *categories* of individuals, such as classes or strata and their functional arrangement within a social system, toward a more actor-centered conception of sociality (e.g., Dobres and Robb 2000; Johnson 1989). In the latter formulation, society is composed of individual agents, or actors, whose behaviors are understood as differentiated and variable. In fact, the traditional social scientific term *behavior* has been increasingly rejected in favor of the less determinate notion of *practice*. Where behavior suggests actions that are more or less programmed, predictable, and explicable on formal sociological, psychological, or even biological grounds, practice implies that action is contextually variable, emergent with respect to the biographies of individuals and the historical unfolding of a local social and cultural setting. Individuals are constituted by their history and milieu and, in their practical actions and interactions with each other, in turn produce society (e.g., Bourdieu 1977; Giddens 1984). Structure is not absent from this model, but rather than standing somehow outside of and prior to individuals as a system of external constraints on their thoughts and actions, it continuously takes shape within the embodied practices that make up everyday activity.

That hunter-gatherer researchers have not been quick to embrace such approaches is probably due as much to our relative inattention to social relations generally as to any resistance to agency or practice per se (practice-oriented models of prehistoric hunter-gatherer sociality have in fact begun to appear in the last few years; e.g., Barrett 1999; Dobres 2000; Wobst 2000). Other conceptions of agency are fairly widespread in hunter-gatherer archaeology, tracing their genealogy to formal models of animal foraging behavior adopted from evolutionary ecology in the 1970s and 1980s (see, e.g., Winterhalder and Smith [1981] for early archaeological examples and Kohler and Gumerman [2000] for some current applications), which were in turn rooted in microeconomic models of human decision-making behavior. These can be characterized as rational actor or optimality models, since they are premised on the notions that for the most part individuals rationally pursue their self-interest and that there is a tendency over time for relatively optimal, or at least evolutionarily stable, scenarios of interest maximization to selectively proliferate.

Rational actors differ from those of practice theory in their tendency toward omniscience and homogeneity, although knowledge and capacities are sometimes differentiated, as in game theoretic models of sharing and competition. Rational actor approaches usually aim at the development of predictive models, sometimes based on quite elaborate stochastic simulations of the interactions among numerous actors' behaviors under a changing array of environmental conditions (e.g., Lake 2000; Mithen 1990; Reynolds 1986). Common to both optimality and practice approaches is the siting of agency, *the capacity for action*, in individual human actors. Although particular events are understood with respect to the relational matrix of all actors and their setting, agency is ultimately reducible to *individual* agency, whether understood as universal, rational, and maximizing or as local, embodied, and contingent.

A relatively painless way of moving forward with the archaeological conceptualization of agency would be to somehow combine both practice and rational actor approaches. For example, Pickering (1997:42), in looking at the

conceptual practice of scientists, distinguishes between what he calls "classic human agency" and "disciplinary agency." The former is idiosyncratic and creative, and the latter formal and rule bound, the result of the assimilation of conventional schemes of thought and action. Practice takes the form of a "dance of agency" in which there is an alternation between the free and forced moves of these different modalities of action. It is not difficult to imagine individuals as sometimes closely guided by conventional cultural schemata and sometimes more creative and risk-taking. Indeed, both are necessarily intertwined in practical activity. In making a tool, or performing a ritual, or heading out in search of game, individuals take up one or more cultural scripts, but then they must improvisationally adjust their actions as events unfold in practice, returning to a learned script or schema as occasion demands. This conception of agency as both imaginative and determined, a unique enunciation of cultural logics, is akin to de Certeau's (1984) poetics of practice, in which something as mundane as walking in the city can be seen as an act of cultural production, a creative negotiation of the city's spatial necessity.

We have often approached the archaeological record from the perspective that action is tightly constrained by behavioral schemata that we wish to discover and have concentrated our efforts on the recognition of recurrent patterns, the forced moves of a disciplinary agency shaped by cultural rules, social laws, adaptive pressures, or situational logistics. Perhaps the most popular theoretical perspective on such patterns among hunter-gatherer archaeologists is behavioral ecology, which refers the ultimate causes of behavioral patterning to the invisible hand of natural selection operating over great swaths of evolutionary time (Winterhalder 2001).

A slightly different perspective is captured in Binford's (1978) phrase "behavioral economy," which refers to a more local, practical logic such as comes to govern the repeated performance of some everyday activity like butchering a carcass, pitching a camp, or making a tool. Although a persistent human predilection to achieve such behavioral economies might be understood within a behavioral ecological or other high-level theoretical framework, Binford actually introduced it in the context of a call for archaeologists to develop a body of middle range theory (MRT). MRT was to be concerned not with ultimate causes but with the proximate behavioral determinants of the archaeological record itself, in all its unadorned materiality (e.g., Binford 1983, 1989). An interest in site formation and hunter-gatherer logistics caught on (insofar as logistical considerations could be seen to underlie subsistence-settlement systems, site structure, and technological organization) but not "behavioral economy," though the phrase is perhaps due for revival as the notion of embodied practice gains currency within such traditional domains of archaeological science as lithic analysis (e.g., Karlin and Julien 1994; Sinclair 2000).

On the other hand, within more of an interpretive, postprocessual vein, we have tended to emphasize the free moves made by actors in the past, striving for a historical and contextual interpretation of the particular events that shaped the record (Hodder 1986, 1987a, 1987b). It was in this spirit that the notion of agency first took hold in archaeological thought (Hodder 1986; Johnson

1989), leading to the current proliferation of interest in agency and practice that cannot easily be reduced to a processual (neoprocessual?) or postprocessual (post-postprocessual?) orientation.

However, when we focus inordinately on either practical constraints or individual autonomy, their articulation in the dance of agency escapes us. Either the historicity and specificity of practice is lost and we fall back on pinched biobehavioral universalisms that belie the record's intricate, and cumulative, variability, or else the readily apparent material constraints on practice are ignored and we become prone to idealist and idiosyncratic narratives that belie the record's structure. The problem is that in the two instances we are really asking entirely different sorts of questions and not merely taking different approaches to the same issues.

Pickering (1997) uses another apt phrase that begins to dissolve the polarity inherent in the dance metaphor. In freely deploying disciplinary agencies in novel situations, actors inevitably encounter resistance. It ultimately becomes a matter not merely of choosing between improvisation and prior models, or between one script and another, but of rewriting the scripts themselves. Pickering thus speaks of practice as a "mangle" in which intentions, models of action, and context are continually reworked, accommodated to the resistances encountered in the world of practical activity. An extra twist that Pickering gives this formulation is to see the things that offer resistances out in the world—in his examples, mainly the natural phenomena and machines with which scientists are typically engaged—as having a material agency all their own, essentially equivalent to the forced moves of disciplinary agency. Agency is thus equated not with intentionality but with doing things, producing *agency effects* in the world. The principle that agency is uniquely localized in human actors begins to crumble.

Hybridity

Pickering is not alone in attempting to bridge the abyss between the purportedly objective world of natural and technological things and the subjective world of social and discursive phenomena. Over the past decade Ingold (2000) has increasingly championed what can be termed a "hybrid" ontology of nature and society that does not privilege either the biophysical or the sociosymbolic and does not assign profoundly different characteristics to each. For example, Ingold (1993) influentially encouraged archaeologists to see human dwelling in the world, the very essence of Being in a phenomenological sense (Heidegger 1977), as so thoroughly articulated with the landscape as to be inextricable from it, and he has made similar sorts of arguments for the intimate connections among people, plants, animals, and material culture (Ingold 1995, 1997).

Ingold's work has contributed greatly to a surge of interest in a phenomenological landscape archaeology that explores the field of articulation between embodied perception, spatial practices, and meaning (Ashmore and Knapp

1999; Bender 1998; Tilley 1994). It has also led us toward a larger reconceptualization of environmental archaeology, as reflected, for example, in the recent work of Barrett (1999) and Hastorf (1997). Similarly hybrid approaches to nature and society have become widespread in the social sciences under the label of *political ecology* (Escobar 1999) and are also closely paralleled in the turn away from the authority of the genotype in the developmental systems theory of biologists like Susan Oyama (2000), which introduces practicelike notions of emergence within a historical milieu into the life sciences.

The conceptual underpinnings and analytical implications of the notion of hybridity have been developed most usefully for archaeology in the work of sociological and anthropological critics of science and technology, such as Donna Harraway (1991) and Bruno Latour (1993, 1999a), as if only here (in the field that has come to be named *science studies*) did a proper theorization of the relationship between the material and the social prove absolutely unavoidable (the notion of hybridity has been taken up widely in anthropology and cultural studies in the past several years, but usually in a somewhat different form from the one Latour develops so effectively with reference to material culture; see, e.g., Brah and Coombes 2000). It is on the work of Latour, and closely associated actor-network theorists (e.g., contributors to Law 1986, 1991; Law and Hassard 1999), that the rest of this essay focuses, for Latour unfolds a vision of hybrid socionatural worlds that has a truly remarkable resonance with hunter-gatherer archaeology. In particular, he proposes a dramatically unpolarized model of human life worlds that replaces the binary opposition of Society and Nature with *collectives* of human and nonhuman agents, effectively moving the material, and especially technological, things that dominate the archaeological record to the center stage of social theory.

Actor-Network Theory

The basic premise of actor-network theory is that human sociality does not consist simply and essentially of relations between people but that it is an emergent property of collectives (or networks or associations) of humans and nonhuman entities (e.g., Latour 1993, 1999a). Agency is an effect that is produced within heterogeneous networks. This notion of agency differs from those sketched above not only in ascribing some sort of actorial or agentic capacity and role to various nonhumans, to which I return below, but in decentering the singular agent. Whereas Pickering points to the heterogeneity inherent in the dance of agency, Latourian agency is *profoundly* hybrid, referable to cyborg-like assemblages of humans and things. For example, turning to the moment when this essay was first presented as a paper at the Carbondale conference, my agency in delivering it could be seen as distributed across myself, the printed ink marks on the papers from which I read, my glasses, my clothing, the microphone, podium, laptop, software, LCD projector, screen, lights, building, audience, and so on, not to mention the texts, computers, fiber-optic cables, photocopiers, and coffee that were in-

volved in creating the text or the cars and plane that took me there. Although there may be some abstract, *meta*physical sense in which the conscious intention to write and deliver the paper resided first and foremost with me, in a physical sense it was a mediated, distributed, embedded, dependent act. In point of fact, even the intention would not have taken shape without George Crothers's request and encouragement (a string of e-mails and mailings), students and colleagues on whom to try out the ideas (and from whom the germ of the ideas ultimately came), and academic pressure to publish. The conference paper was not the neatly bounded product of an autonomous agency but was (and is) connected by innumerable filaments to a host of other entities, like a mushroom that is only the fruiting body of a huge subterranean network of mycelia.

That social life is everywhere and always mediated by nonhumans in such ways is in some sense entirely self-evident; people consist of bodies with a material existence, a corporeality, shaped by the need for food, water, and warmth, the force of gravity, the movement of the earth around the sun, and so on. However beyond the biophysical inheritance they share with other organisms, humans are distinguished precisely by the great extent to which their interactions with each other and with other entities are mediated by material culture. As anthropologists we should be aware that humans remotely like ourselves existing in a "state of nature" is a purely fanciful notion. Even the simplest of anatomically modern human societies already depended for their existence on a wide array of tools, clothing, and shelters, not to mention all the cultural knowledge and practices that stand behind the reproduction of those elements of material culture and that served to knit the social collective together.

In spite of the absolute necessity and ubiquity of things in social life, they have received remarkably little attention from social theorists. Society seems to be magically held together by naked human bodies or, even more implausibly, by disembodied subjects, a notion Latour (1993) refers to as the "brain-in-a-vat." Latour believes that anthropologists have done a much better job than sociologists of incorporating things in their ethnographies, but interest in material culture has hardly been strong in recent years. The interpretive or linguistic turn in Anglo-American anthropology shifted attention away from the ecological, technological, and economic toward the discursive and psycho-social, leaving increasingly little allowance for the materiality of social life. Something like gender could be seen (at least for a brief period in the literature) as a pure social and cultural construct, a representation, and biology a mere epiphenomenon.

Latour's reinsertion of things into the mix was accomplished in a surprising way. Starting out studying scientists (Latour 1987, 1988a, 1993, 1999a), Latour adopted sociologist David Bloor's principle of symmetry for evaluating scientific knowledge claims (see Bloor [1999] and Latour [1999b] for contrasting perspectives on the relationship of Bloor's sociology of science to science studies), which is that true and false propositions must be treated within the same analytical frame. The development of scientific thought cannot be ex-

plained by appealing to the inevitable triumph of objectively true propositions, since all scientific claims are ultimately socially mediated constructions of reality, the outcome at any given moment of the power games of interested social actors. However, for Latour this goes both too far and not far enough. On the one hand, although it erases the analytical asymmetry between purportedly true and false representations of the world, it reinscribes another between the material and the social. In a sense, the natural scientific worldview is denied any grounding in objective reality, while the social scientific deconstruction of that reality stands. But why should "power" be more real, less a social figment, than a "quark"? On the other hand, the resources of social science seem pitifully inadequate to the task of explaining the tangible effects of technoscience. Are nuclear bombs and gene therapy reducible to mere matters of belief? What about matter?

Latour (1993) thus adopts a second principle of generalized symmetry, which is that we cannot be constructivists where nature is concerned and realists where society is concerned, but we must come to appreciate both the constructedness of these and similar categories within the Western tradition and the common reality in which humans and nonhumans dwell, which is one of networks and hybridity (Figure 19-1). Latour considers the categorical divide between nature and society to be a kind of Constitution for modernity, the basis of a division of interest and power between technoscience and social science. By engaging in a constant process of categorical purification that assigns phenomena to either the object pole of nature or the subject pole of society, and ignoring the production of networks that connect humans and nonhumans in endlessly inventive ways, socionatural hybrids were allowed to proliferate on an enormous scale. Social life has come to be more and more thoroughly dependent on the mediation of technoscientific things—from electromagnetic waves to antibiotics—even as the work of science continues to be seen, by both scientists and their critics, as a technical engagement with a detached and wholly alien natural world.

Nonmodern societies, Latour suggests, do not have such a Constitution, do not compulsively assign plants and animals and things and the physical environment to a purified nature remote from humans. This idea has been explored by hunter-gatherer researchers like Bird-David (1992) who have taken a "culturalist" perspective on human-environment relations and especially by the growing community of scholars looking at so-called traditional ecological knowledge (e.g., Grim 2001; Inglis 1993). However, there is a tendency in such discussions to dichotomize Western and non-Western knowledge in a way that suggests they are fundamentally different sorts of phenomena. Latour insists that the epistemological differences are superficial, a difference in the *representation* of the relations among humans and nonhumans and not an *essential* difference in the content or composition of those relations—hence the title of Latour's key theoretical manifesto, *We Have Never Been Modern*. The observable differences between small-scale nonmodern societies and our own, then, are not attributable to some profound ontological fault line, whether scientific enlightenment or the corrosive effects of capitalism, but are merely differences in the scale of the networks mobilized in each. What distinguishes the *kula*
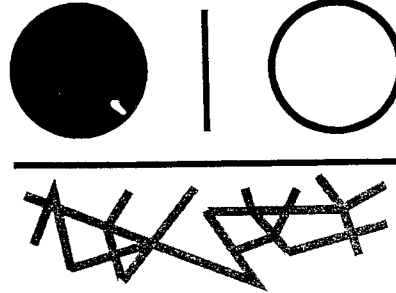
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WORK OF PURIFICATION

nonhumans/
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hybrid networks

WORK OF TRANSLATION

Figure 19-1. *Purification and translation (after Latour 1993:Figure 1.1).*

ring from the World Trade Organization is the number and length of the chains of interaction that these words designate, but each is ultimately reducible to a (larger or smaller) set of local interactions among people and things. Latour's third principle of symmetry is that we must use the same analytical tools for studying modern as nonmodern societies.

From the perspective of a hunter-gatherer social archaeology these are astonishing admissions. Not only does Latour offer us a social theory that accords full analytical importance to the sorts of technological and environmental phenomena to which we have readiest access, but he also sets the study of the simplest societies beside that of the most complex, as different instances of the same problem, and thus effectively makes all the intellectual resources developed for the study of Western societies available to us, and us to them. Contemporary sociocultural anthropology is hardly as generous, having progressively withdrawn from what it chides as a puerile fascination with the exotic and the primitive and a reductionist concern with the ecological and the technological. Latour, by contrast, has written about long-term social change in something very close to an archaeological or paleoanthropological idiom, both on his own and in essays coauthored with primatologist Shirley Strum (Latour 1986, 1999a; Latour and Strum 1986; Strum and Latour 1987). Clive Gamble (1999) has already begun to work through the implications of the Strum-Latour social evolutionary framework for understanding long-term change in the European Paleolithic record (see also Thomas 2000).

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Actantial Model

At the heart of the entire theoretical edifice is the principle of generalized symmetry and a conceptualization of nonhuman agency that owes much to Greimas's (1987) semiotic account of the narrative structure of texts (Budniakiewicz 1998; Greimas and Courtés 1982). Greimas adopted the term *actant* to refer to the quasi-universal roles that appear in narratives, like the archetypal heros and villains and objects of desire in folktales. Actantial roles are often, but not invariably, identified with human characters in this context. The object of a folk hero's desire could be a spouse or a fortune, and the obstacles to success an evil sorcerer or the hero's own character flaws. Actants are *generic* roles, condensations of narrative action. Greimas's great insight was to connect this narratological framework to the syntactic structure of language and see each sentence in effect as a miniature narrative, with the subject as protagonist, the grammatical object as the goal of the hero's striving, and adjectives and adverbs as the various entities that oppose or help the hero. The implication of this equivalency is that meaning is fundamentally narratological, that it is only released, as it were, in a narrative, actantial form: "the semantic microuniverse [i.e., an instance of speech or text] can become or be defined as a meaningful whole only insofar as it can manifest itself as an actantial structure" (Budniakiewicz 1998:5).

Now, if meaning is emergent as actantial structure, and if human practice is meaningful action (as practice theorists and postprocessualists tell us), then it follows that practice too should have an actantial essence, should be decomposable into a relatively small set of generic roles in this semiotic sense. One of Latour's theoretical innovations was to make precisely this move of further extending the actantial scheme, to see social life as the on-going generation of actantial structures (actant-networks, or actor-networks), with no strict requirement that actants be humans. Like Greimas's adjectives and antagonists, things and other nonhuman entities figure prominently in the actant-networks within which we all maneuver. The objective and the material and the natural are thus brought into the same analytical frame as the subjective and the meaningful and the social. The actantial model is a kind of string theory for the social sciences, expressing the underlying affinity of discourse, social relations, and materially embodied practices (by way of clarification, the term *actant* is more or less synonymous with *actor*, but it carries the semantic flag that actants need not be classic human actors; this connotation is embedded in the usage of *actor* in *actor-network theory*).

Translation

The relationship between actants, or actors, in an actor-network can be described as one of translation. If one considers two human actors with their own distinct goals, one faces the problem of how collective social action is forged. The ANT answer is that actors align themselves around new goals that represent modifications of the original ones (Figure 19-2). The two sets of

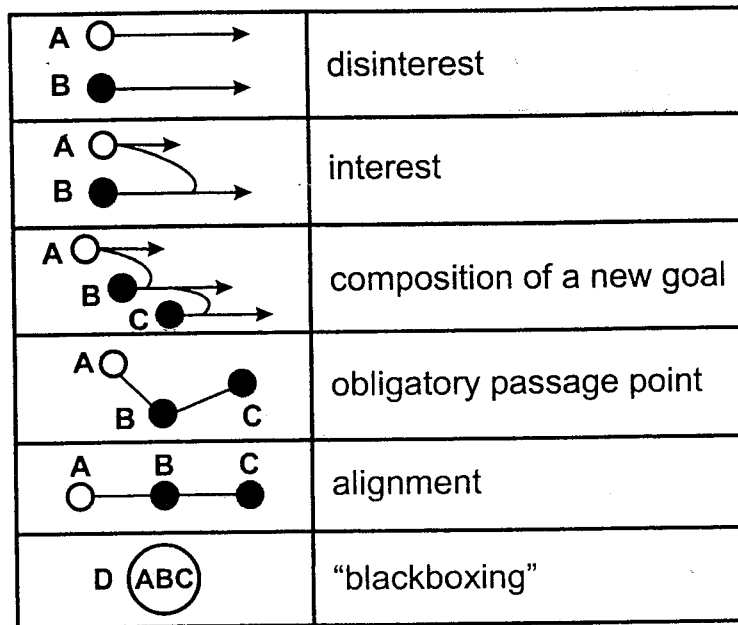|	
A ○———▶ B ●———▶	disinterest
A ○⤳➤ B ●———▶	interest
A ○⤳➤ 　B ●⤳➤ 　　C ●———▶	composition of a new goal
A○╲ 　B ●—● C	obligatory passage point
A　B　C ○—●—●	alignment
D (ABC)	"blackboxing"

Figure 19-2. *Some major steps in the process of translation (after Latour 1999a:Figure 6.3).*

goals are effectively translated into a third term so that each actor no longer pursues precisely the same course as before. Though the new goals may be similar to the original ones, they are now routed through some mediating entity and distributed across the network composed of actors and mediators. In many cases this mediation is performed by a thing. Latour (1999a) uses the example of a speed bump that translates the desires of the university administrator, who wants to ensure that students are not run down but cannot station police on every campus road, to those of the driver, who wants to get somewhere without destroying her car's suspension. The work of mediating the goals and interests of the driver and the administrator is delegated to the speed bump, and perhaps also to warning signs, an e-mail sent out to the university community, and even the odd police officer. The speed bump incorporates a distinct program of action, a script, based on an understanding of drivers, cars, and students. Indeed, we could look at it as incorporating an entire historical trajectory of programs of action that reflect the negotiations among car manufacturers, drivers, pedestrians, traffic engineers, planners, and politicians. The driver ignoring the posted speed limit is engaging in an antiprogram, a resistance to the program of action delegated to the sign. The speed bump is thus really a second (or higher)-order *anti*-antiprogram that subsumes a model or theory of driver behavior derived from a history of practice (see also Gell [1996] for an elegant illustration of the incorporation of theories of action in technological things).

The agency of the speed bump consists in its capacity to slow down speeding cars. To speak of the agency of a lump of concrete is not as anthropomorphizing a move as it seems because it is humans who have delegated hu-

man behaviors to it in the first place; the speed bump is thoroughly (and literally) *anthropo*morphic because its morphology is humanly devised to help orchestrate future human interactions. The programs, or scripts, inscribed in things are as much a part of society as humans themselves (Latour 1988b); they represent delegations of human agency, a "shifting out" of actions (Latour 1988c), to use the narratological term. In studying technology, we cannot only look at forms and production sequences, but we also have to unfold the social programs that have been folded into technical things. Looking only at the mechanism of some technical device and ignoring its social entanglements "is like watching half the court during a tennis game; it appears as so many meaningless moves" (Latour 1992:247).

This model applies equally well to entities like animals, plants, or topography that are not manufactured by humans. Although the form of these actors might not be the product of human design (but it often is to some degree), to the extent that they are meaningful to an understanding of human action they must have been brought into a network. An influential account of this sort of translation of interests among humans and animals is Callon's (1986; Callon and Law 1989) study of a group of marine biologists who attempted to introduce Japanese techniques of aquaculture into the French scallop fishery. The biologists had to create a whole series of alignments among various actors, including government funding agencies, their academic colleagues, the scallop fishermen, and not least the scallops themselves. The biologists had to figure out how to align the interests of the scallops with their own research goals by having them anchor themselves to devices placed on the sea floor. Latour (1988a) develops a similar argument with respect to Louis Pasteur's enlistment of newly isolated microorganisms into his ambitious plans for a network of microbiological laboratories. In each case the scientists attempted to define their role in a network as an "obligatory passage point" (Latour 1987) through which other actors must pass. The expanding networks of coaction can then be deployed for purposes that are not necessarily related to their original rationale, can be "blackboxed" and drawn into new translations, enhancing the agency of the actors occupying originary nodes and allowing authority to "flow back up the network" (Murdoch 1997:737).

Archaeological Implications

The translation, or network, model of the connections among people, things, and animals speaks directly to many of the central issues in hunter-gatherer archaeology, and especially to the problem of producing accounts of hunter-gatherer sociality based on a sparse material record. The manufacturing residues, features, and plant and animal remains with which we typically work are re-envisioned as having been entrained within past hybrid networks. From this perspective, changes in harvesting patterns, stone-tool production, or whatever were not mediated in some essential way by discrete economic or technological subsystems but had causes and effects that were heterogeneously distributed throughout society depending on the local

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configuration of the networks in which they figured. Indeed, the notion that phenomena have any essential, definitive qualities that would allow them to be assigned, a priori, a stable function within a discrete domain of human activity (e.g., harpoon head = technological device belonging to sphere of subsistence production) is undermined by ANT's emphasis on heterogeneity and the local, historically constituted definition of networks and their constituent actants. In ANT-informed archaeological research, rather than assuming invariant systemic relationships among people, cultural entities, and nature, we would trace out the twisting paths of networks that extend in idiosyncratic directions from a given analytical starting point (say, an artifact type, an animal species, or a form of ritual practice), taking our lead from the local contextual structure of the archaeological record itself (as Hodder [1986] has long advised).

Because ANT does not presuppose that a particular sort of object will consistently perform the same sorts of actantial roles, a nominally technological thing such as a harpoon head is not prone to figure in fields of Inuit cultural activity merely in ways essential to all technological things, but rather it could come to be enlisted in all sorts of social roles and settings (indeed, predictably so). By way of stylistic variability it could be a site of symbolic differentiation, of generational dialogues on craft and aesthetics, or intersocietal dialogues on social difference and identity. Through variation in the use of raw materials (antler or ivory for the body, slate or copper for the blade), the harpoon head could be enrolled into material discourses on access to exotic commodities, wealth, and status (Whitridge 1999a) or a cosmological discourse on the proper ritual handling of animal substances (McGhee 1977). A harpoon head might also come to be an important *performative* (sensu Butler 1993) component of gender roles and identities—not merely an icon of masculinity (though it might be that as well; Whitridge 2002a) but an *instrumental* accompaniment to acting as a man. The latter connection is revealed in the semantic logic that derives the Netsilingmiut word for "catches seal" (*angujuq*) from the word for "man" and "father" (*angut*; Rasmussen 1932; Whitridge 1999a; indeed, *angujuq* evokes a complex hybrid network centered on the terms *man-harpoon-seal*). Conventional actantial roles (mother, hunter, shaman) emerge practically, in the context of individuals' creative engagement with the habitual activities historically inscribed in the things (*amauti* [a parka with enlarged hood for carrying a child], harpoon head, drum) and other entities with which they interact.

The nonhunting actantial dimensions of the harpoon head are not inherently less important than its function of securing a line to whale or seal, though the latter function may have a temporal priority that is not analytically inconsequential. The only "essential" quality of the harpoon head is its liability to be enrolled in an ever-expanding web of circulating sociality and meaning, like all material culture. The co-opting of an item of material culture (or a less tangible entity such as a concept, an image, or a gesture) for other ends is witnessed repeatedly in the archaeological record and can be regarded as a key dimension of culture change in all times and places. The actantial fluidity of things is akin to the general evolutionary process that biologists

term *exaptation*, referring to fitness by virtue of felicitous form rather than the function designed by natural selection. A structure that emerges under a particular suite of selective pressures (for example, feathers, as a thermally efficient form of body covering) may eventually turn out to confer significant advantage in unrelated selective arenas (be exapted to flight; Gamble [1993] explores some implications of exaptation for the Paleolithic record). From an ANT perspective, exaptation is a kind of translation, a redistribution of actantial roles or functions within an enlarged network of relations.

Thule Whaling and Actor-Networks

The above ideas can be illustrated more fully through their application to a specific archaeological case, that of Thule whalers of the North American Arctic. Research on bowhead whaling by Thule groups and its relation to other Arctic whaling patterns has been reviewed elsewhere (Whitridge 1999b, 2002b). Briefly, whaling emerged as an important economic focus in the Bering-Chukchi Sea region in the context of growing interregional interactions among Punuk, Birnirk, and perhaps other culture groups in the late first millennium A.D. (Mason 1998). The Birnirk-Thule transition seems to be marked by the diffusion of the boat crew (as a substantially new mode of social integration rather than merely a shift in harvesting technology or prey selection; Sheehan 1985) from Punuk whaling and walrus-hunting groups in the Bering Strait area into North Alaskan Birnirk society about A.D. 1000. Beginning at that time, and accelerating substantially around A.D. 1200, the Canadian Arctic and Greenland were colonized by Thule migrants who originated in northern Alaska and bore the whaling organizational paradigm eastward (Whitridge 2000).

Based on numerous points of direct analogy between the Thule archaeological record and ethnographic whaling practices (Whitridge 1999a), whaling was conducted as a quasi-entrepreneurial endeavor by *umialit* (singular *umialik*, wealthy boat captain) recruiting groups of six to nine kin and other followers to crew an *umiak* (plural *umiat*, large, open skin boat) during a seasonal hunt targeting bowhead (*Balaena mysticetus*) yearlings. Several *umialik*-helmed *umiat*, and sometimes additional kayakers (Grier 2000), cooperated in attaching sealskin floats, or drags, using toggling-head harpoons, fatally lancing the exhausted whale, and towing it to shore or to the ice edge for flensing. Crew members were rewarded with shares of the harvest and other gifts and social considerations outside the whaling season, and they may have formed a cohesive action group for other activities such as trade and warfare (Bandi 1995; Spencer 1972, 1979). *Umialit* maintained special communal buildings (singular *qargi*, plural *qariyit*) that served as club houses and workshops for crew members, as well as the principal sites of community feasting and ritual.

From an ANT perspective, a number of analytical avenues come into view. One is to consider the changing configuration of sea-mammal hunting technology that is observed archaeologically, not in narrow terms as chance cultural borrowing or ecologically driven adaptation but as a process of distrib-

uted historical change that was simultaneously social, technological, ecological, and discursive—a "sociotechnical imbroglio" (Latour 1992). For example, a harpoon head is merely the tip of a complex technical assemblage—the harpoon—that was composed of a host of individual parts (foreshaft, foreshaft socket, shaft, finger rest, butt, etc.) and component assemblies (lines, floats, etc.). Indeed, the harpoon head itself was usually a composite artifact, consisting of such elements as end and/or side blades, blade slot packing or rivets, socket lashings, and socket reinforcements (Figure 19-3). Change in the proximate functional attributes of a harpoon head would have produced ripples that extended to the components of the larger harpoon assemblage, and vice versa: the presence of barbs on heads used for open-water sealing was linked to the design of the socket and foreshaft, butt configuration, mode of float attachment, and so on. Particular harpoon configurations also required particular accessory devices such as throwing boards, seal indicators, gaffs, or lances, and, importantly, particular elements of transportation technology such as sleds, kayaks, and/or *umiat*. Boating technology in turn involved the acquisition (though direct harvesting or trade) of wood, hides, sinew, and oil; the labor of skilled seamstresses; and the organizational mechanisms for assembling a boat crew (in the case of the *umiak*) or coordinating the actions of lone kayakers (e.g., in certain forms of communal hunting of small whales). An apparently minor shift in some harpoon head attribute may thus be linked to an extensive redistribution of actantial roles within a complexly ramified network.

We could thus take a particular harpoon head type at a particular moment in prehistory as a starting point for a historical analysis of changing and accreting programs, antiprograms and anti-antiprograms (Figure 19-4). Each shift in attribute state represents a slight rewriting of the sociotechnical scripts in which harpoon heads figure—from the nature and extent of hunters' gearing up (in turn involving such things as prior acquisition of materials and manufactured goods), to patterns of cooperation during the harvest, to the symbolic resonances of harpoons in ritual, art, and communal performances. The tracing backward and forward in time of particular strands of microtechnological change in some attribute can be thought of as a *paradigmatic* analysis of substitutions of individual elements within a larger actantial sequence (Latour 1991). The synchronic unfolding of the actantial sequence in which the harpoon head is inserted—the tracing outward of the chain of actantial roles that constitute the actant-network—could be thought of as the complementary *syntagmatic* mode of analysis. Both are combined when we attempt to reconstruct the changing configuration of networks over time with as much contextual detail as possible for each temporal moment that we are able to isolate.

The changing configuration of the networks in which arctic whaling was embedded can be considered in this light. Although the archaeological record of the low-level whale use that must have preceded the emergence of focal whaling economies is patchy and sometimes difficult to interpret, an overall trend toward escalating technological, social, economic, and ritual investment in whaling over time is clear (Whitridge 1999b). Whaling-related programs of action proliferate within all of these domains of material culture and practice.
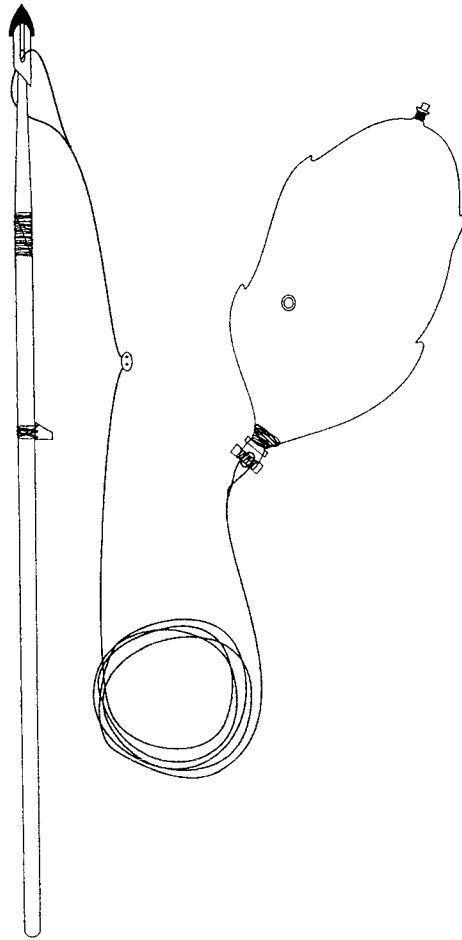
Figure 19-3. *Inuit whaling harpoon.*

This long-term process can be illustrated by briefly considering three distinct modes of whale harvesting and the changing technological and social arrangements—the sociotechnical programs of action or scripts—that characterize each (Figure 19-5).

Large whales can be hunted by individuals or small groups using small boats and lances who rely on gradual death of the animal from injury or drowning and the natural beaching of the carcass, as practiced successfully by some Aleut and Koniag groups (Figure 19-5A; Crowell 1994; Heizer 1943; Yarborough 1995). The organizational and technical demands are relatively low, but high levels of skill and risk are involved in effectively wounding the animal. Success rates can be moderately high, but the technique appears to have been practiced by relatively few groups, its effectiveness circumscribed by the accessibility of whale migration corridors, the configuration of coastline and currents, and prevailing weather. Simple maritime hunting technology, coastal topography, weather, and whales must all be enrolled by the successful hunter. The relative dearth of reliable technological actants in this network, to which whaling tasks could be shifted out, was associated ethnographically
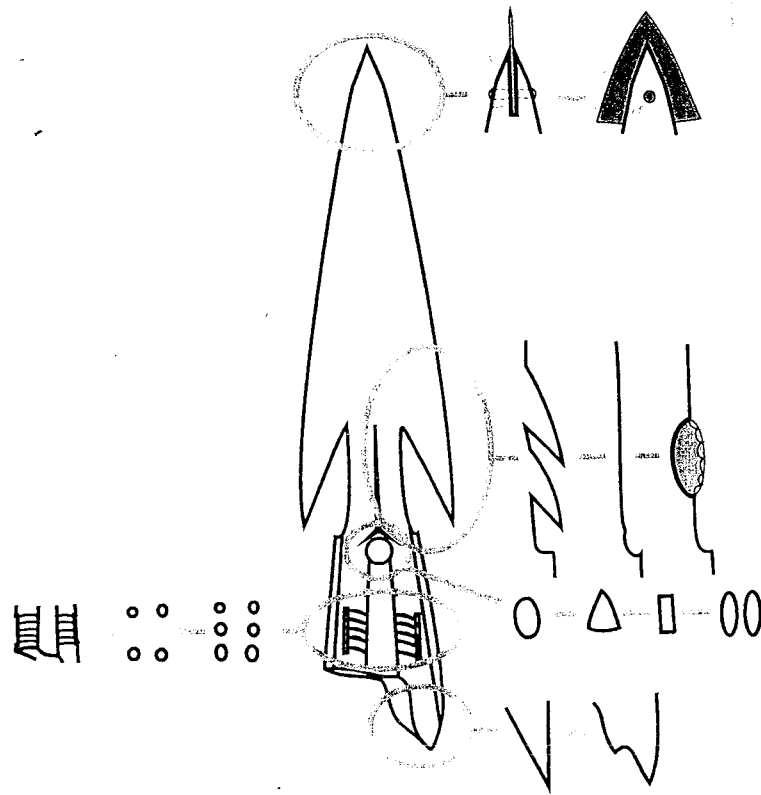
Figure 19-4. *"Paradigmatic" substitutions of elements in Thule 2 sealing harpoon heads.*

with a relatively heavy reliance on the personal qualities of the whaler, including a high degree of technical skill with lance and kayak, possession of esoteric knowledge (perhaps including secret knowledge of plant-based hunting poisons), ritual prowess, and elevated social status. With each whaler deploying a boat and a wide variety of specialized training and expertise, the whaling enterprise is expanded only at great social and economic cost. Lances and small boats are generalized and probably universal items of northern-maritime harvesting gear, and hence they are not specifically inscribed with a history of whaling programs. However, their use in this fashion can be inferred archaeologically where they co-occur with whale bone in the absence of whaling harpoon gear, as in a number of regions around the North Pacific during the early and middle Holocene and perhaps among early Paleoeskimo groups in the Eastern Arctic.

At an intermediate level of sociotechnical elaboration, large crewed boats can be used to pursue whales in open water. In conjunction with a strong harpoon line and (advantageously) toggling harpoon head, the boat is used as a drag to prevent the whale's escape, as practiced by some historic Koryak groups (Krupnik 1984; Figure 19-5B). Alternatively, nets could be used to entangle and drown whales in open water, as also practiced by some Koryak. In
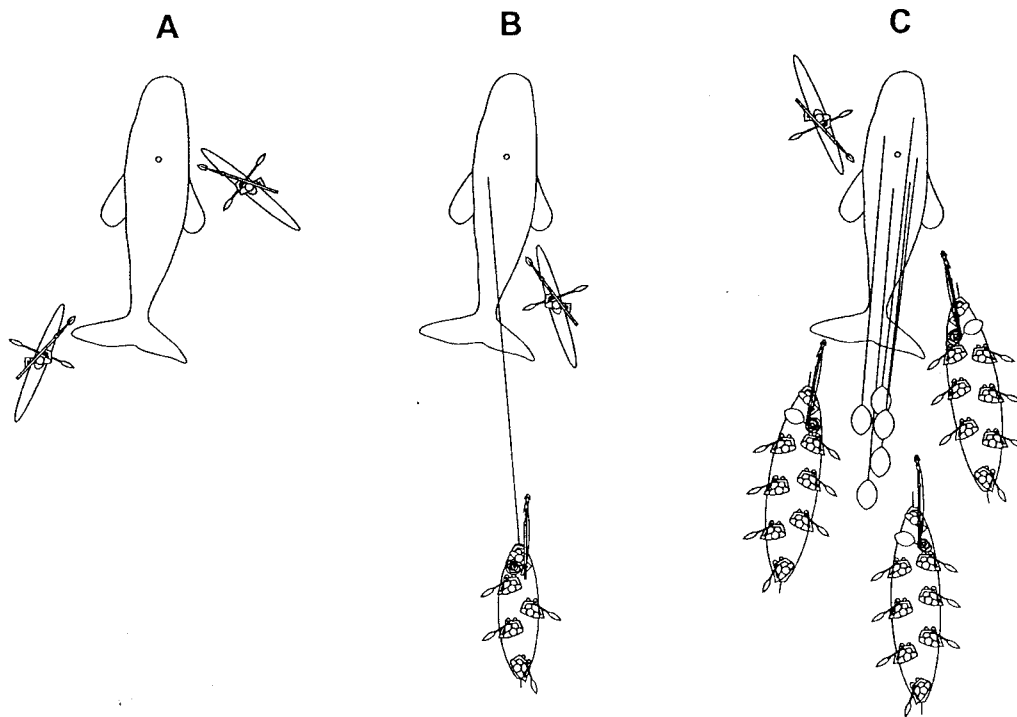
A   B   C

Figure 19-5. *Some alternative sociotechnical configurations of bowhead whaling.*

either case, technological demands are relatively high, and new mechanisms of labor coordination are required in both the hunt (for pursuing and towing the whale) and the boat-manufacturing process, but success rates should be higher as well. In attempting to interest the whales more consistently in their network, whalers have aligned themselves (literally and figuratively) within a large boat and enlisted the harpoon head and harpoon line (or net) and boat itself as mediating devices that physically connect the whalers to the wounded whale, holding fast a relationship that was previously tenuous and subject to the vagaries of wind and tide. Archaeologically, this mode of whaling may be indicated where plausible whaling harpoon heads occur but no recognizable float parts, as in Norton, Ipiutak, and perhaps Dorset assemblages, although the possibility of crude floats is difficult to rule out.

With the adoption of effective floats the role of drag device is delegated once again, shifted out from the risky site of a boat full of people to an inflated and stoppered sealskin attached to the harpoon line (Figure 19-5C). By virtue of being relatively cheap and expendable, the sealskin float can be endlessly multiplied, with each additional float increasing the odds of success. No longer is participation in the pursuit of an individual whale limited to lancers in kayaks and a boat crew daring enough to set off on a "Nantucket sleigh ride." Each harpoon strike can now be made to count, contributing to the likelihood that the whale will be slowed down sufficiently to be lanced and killed. Effective inflation nozzles render the whaling enterprise itself inflatable, ame-

nable to ever-increasing levels of intensification by virtue of the reliability, portability, mobility, and replicability of floats.

Harpoon-float technology succeeds through an expanding chain of cooperation both within and between boat crews. The crew members are aligned in the *umiak*, the boats are aligned with each other, and the whale is aligned with the boats through the additional mediation of the simplest of translation devices: a bag full of air, endlessly multiplied. Although the skill of individual crew members is still at a premium, especially those wielding harpoons and lances, sheer numbers stack the deck in favor of larger whaling enterprises; more floats, larger and faster boats, and more boats on the water all rapidly yield larger and more consistent harvests. With the appearance of elaborate float technology in Old Bering Sea culture (at the beginning of the Neoeskimo whaling tradition), the sociotechnical scripts have become more elaborate and the programs of action more fully inscribed in the equipment. These programs of action are also materialized in patterns of settlement organization that map new kinds of relations between people (the other half of the tennis court, in Latour's metaphor), including the clustering of houses within large settlements that resemble the *umialik*-headed kin group compounds (*upsiksui*) associated with whaling crews in North Alaska (Burch 1981) and the appearance of ceremonial buildings analogous to the historic *qargi*.

There is a striking homology between the schematic configuration of hunters and boats and whale on the water and of households and kin groups and *qargi* on land (Figure 19-6). On the water, individual hunters assisted by harpoons and lances and floats and paddles align themselves in a boat crew helmed by an *umialik* that in turn aligns itself with like boat crews in fixing their lines to the leviathan, holding it fast so it can be towed to shore. On land, individual hunters assisted by the siblings, wives, children and others of their household align themselves in *upsiksui* headed by *umialit*, in turn aligned with other *upsiksui* in the social and ceremonial life of the community centered on the *qargi*. In the latter case it is the social totality, the Hobbesian Leviathan, that is held fast, so that it can be brought intact to the shore to undertake the whale hunt. It is as if each technical link in the network that comprises *umiak*-float whaling had to be forged through the production of an equivalent social link, which in turn requires the enlistment of the material idioms of architecture and community layout (and much else besides).

This homology between the social and the technological is graphically depicted in an incised Thule drill bow (Mary-Rousselière 1960; Maxwell 1983) that, among other meaningful juxtapositions, includes scenes of whaling (showing *umiat* with crew, kayakers, and whales about to be harpooned) adjacent to illustrations of villages (showing normal summer dwellings beside oversized structures that are most likely *qariyit*). In this and other instances of Thule figurative art (virtually identical examples in the same style and same media are common historically in North Alaska; Hoffman 1897), we appear to have more or less explicit representations of the syntagmatic scripts involved in whaling. The whaling set-ups depicted on these drill bows and knife handles characteristically focus on critical moments in the harvest, hinge points at which the agency of hunters, harpoon, and whale hang in the balance. The
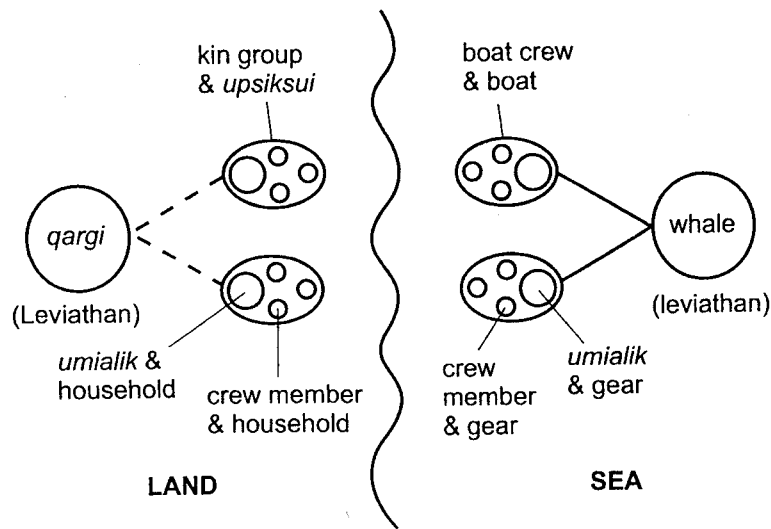
Figure 19-6. *Homology between technical configuration of whaling during hunt (towing the whale) and social configuration of whalers in village.*

harpoon head emerges as a kind of grammatical operator in the conversation between hunter and prey, an obligatory passage point. The incredible technological and stylistic elaboration of this intimate site of translation within the corpus of Inuit material culture is made more comprehensible. The slightest change in harpoon technology had the potential to redistribute actors on a disproportionately vast scale. We are fortunate to have precise archaeological analogues for ethnographic images in this case, but I would submit that even in their absence archaeologists are highly skilled at decoding material culture so as to unfold these sorts of sociotechnical programs.

Although the *umiak*-boat crew-float whaling network enabled substantial local intensification and extraregional expansion of whaling economies, the magnitude of the harvest was still limited by the paths, timing, and magnitude of whale movements and aggregations. They are controlled by variability in the weather conditions that determine the spatial pattern and seasonal timing of sea-ice clearance and associated bursts of biotic productivity, the topography of coastlines and ocean floor, and the long-term demographic and biogeographic history of whales and the larger marine communities of which they are a part. Such factors must always have been of concern to whalers, and they were likely the object of ritual interventions in the past, as they were ethnographically. Among North Alaskan whalers, the list of ceremonies and ritual observances associated with whaling is long (Lantis 1938; Lowenstein 1993; Rainey 1947; Spencer 1959) and involved a wide range of groups and individuals in particular sets of practices. The community as a whole, all whalers, individual whaling crews, individual *umialit*, wives of whalers, wives of *umialit*, shamans, and even children had roles to play in one or more rituals that nominally represented a means of communicating to the whales the gratitude of the community for the whales' annual gift of their bodies, the promise

to continue to behave in a morally righteous fashion toward the whales and toward each other, and the request that the whales continue to make themselves available in future. Shamans were also enlisted in attempts to intercede with the entities that controlled the atmosphere, to ensure winds that would produce a favorable configuration of sea ice.

Archaeologically, there are numerous indications of whaling ceremonialism, many of which correspond closely to ethnographic practices (Whitridge 2002b). Examples include whale-tail figurines and ivory chains linked to the ritual paraphernalia of whaling, incised whaling scenes on structural elements of houses, whale crania built into the walls of *qariyit* and dwelling kitchens, and evidence for ceremonial consumption and distribution of prized whale body parts. Such ritual practices could actually be seen as an integral part of the translation process, providing a crucial context for the assignment and rehearsal of actantial roles. While it may seem inconsequential for a shaman to visit the whales before the hunt, for the *umiak* to be given a drink of water, or for the wife of a whaler to lie still in her dwelling, it is precisely through such practices that the roles of people and things and other entities are specified and agreed upon and that key players are drawn into the network. The set-up for the whale hunt was exceedingly complex and had to be scripted and attended to in many different ways.

Finally, it can be noted that for North Alaskan Inupiat whalers and their prehistoric Thule antecedents, whale carcasses did not represent only a resource—meat, blubber, bone, and baleen—procured in greater or lesser quantities from year to year, but a *medium* through which relations between people were enacted and reproduced (Whitridge 2001; and see Thomas [1999] on Neolithic exchange and sociality). Participation in the kill was mapped onto the carcass and determined its distribution. The various whale products circulated within and between levels of an interlaced series of social networks, including the boat crew, household, extended kin group, community, regional group, and interregional trade network, through a number of different exchange channels (Burch 1988; Worl 1980). Ethnographically, formal shares were allotted to crew members, crew shares distributed within kin groups and households, and household shares channeled into the regional and interregional networks through trading partnerships, trade fairs, and potlatch-like redistributive feasts. The *umialik*'s share was not only the largest, but it was dissipated through the widest variety of exchange mechanisms. The value of whale products to the *umialik* lay precisely in this potential for redistribution to a host of different social actors with whom social relationships were thus created, reinforced, or transformed. Exchanges of whale products and other goods were not simply economic transactions; they were key instantiations of the actor-networks within which these things circulated. Archaeologically, exchanges are reflected directly in patterns of occurrence of the most valued whale parts (bones of the flipper, tail, and tongue) in dwellings and ceremonial contexts (Whitridge 1999a, 2002b), while the scale of transfer of whale products out of the community is reflected indirectly in the complementary movement of large quantities of exotic commodities (especially metals; McCartney 1991; Whitridge 2002a) into the community.

I have considered the overall whaling set-up as a complex sociotechnical imbroglio, a vast translation network ramified throughout the Thule world (and beyond, to embrace the northern forests, Asia, and even the Norse out-posts of the European world system), but any individual element of whaling technology, ritual, or social practice (e.g., *umiak*, whale-tail figurine, *qargi*) could have been examined in much more historical and contextual detail. Each embodies a history of enrollment in networks, alignments of actors, and inscriptions of programs and antiprograms that is registered in variability over time in its composition, configuration, and contextual occurrence. Some parts of these networks were effectively "blackboxed," shut off from the tink-ering and manipulations of historical actors, as reflected in centuries or even millennia of relative stasis. Indeed, the history of arctic whaling plays out over much of the Holocene, with effective sociotechnical configurations faithfully reproduced for very long periods, punctuated by moments of rapid change as the social collective reformed around new cultural schemata, innovative tech-nologies, changed environmental circumstances, or other shifts in the actantial milieu. The toggling whaling harpoon head is one such form that undergoes relatively little change during much of the Neoeskimo tradition. For example, the traditional flaked-chert end blade was retained in North Alaska even after iron came into widespread use for other kinds of end blades. This implies close fidelity to the larger social, economic, and symbolic scripts deeply folded into whaling technology. Sealing harpoon heads, in contrast, occur as a con-stantly changing array of stylistically and technologically fluid types, sug-gesting their more intimate and flexible insertion within the everyday social life of the community (although certain types of sealing harpoon head also experience long periods of stability).

Alterations in any of the components of the whale harvest would have forced a redistribution of roles and actors that, to varying extents, rippled down the chains of translation that issued from the hunt. Whaling represented an alignment of roles and interests within and among interregional trade net-works, regional groups, communities, kin groups, *umialit* and their wives and supporters, crew members and their wives and supporters, shamans and their spirit helpers, the agency of the weather and sea ice, the actorial programs in-scribed in boats, harpoons, floats, lances, and ritual paraphernalia, and of course the active agency of the whales themselves. In producing an account that treats all of these players symmetrically, as equally integral participants in the whaling enterprise, we are not making a fantastic descent into a Won-derland of acting whales and harpoons, but we are simply attending to the ac-counts of whaling that Inupiat whalers themselves produced. All of these entities played very active roles in the harvest as the Inupiat conceived of it, and thus for all intents and purposes possessed the agency attributed to their roles. Human actors in the network disposed themselves in practice so as to anticipate the agency imputed to whales, harpoons, and other nonhuman enti-ties, and so even based on the most skeptical, "technologist" of readings, the agency of nonhumans imposed itself in the cognized affordances these entities presented to human actors, and the agency effects they produced (Gibson 1979).

Conclusion

In conclusion, I would envision the key analytical modalities of an archaeological actor-network approach as being the *description* of technological things—in much the same vein as we currently unpack the social scripts encoded in architecture (e.g., Pearson and Richards 1994)—and the tracing out of the actor-networks of which those things were a part. The emphasis on the local, empirical character of networks, their extension outward from a selected analytic node such as a stone tool or a nutshell or a medicine wheel to the most unexpected corners of a past life world, usefully orients us to the heterarchical quality of social life. Society is composed from the bottom up by intersecting and overlapping networks and not by a totalizing, hierarchical grid or structure that exists apart from its local manifestation.

Latour (1996) writes that the essential character of actor-network theory is expressed in the idiomatic shift that it entails, from notions of level, layer, territory, sphere, category, and structure to phenomena that are fibrous, threadlike, wiry, stringy, ropey, or capillary. Similar conceptual and idiomatic shifts appear to be underway in the physical and life sciences, as reflected in string theory's derivation of the universe's multidimensionality from the proliferation of different types of strings or particles early in its formation, each effectively begetting an additional dimension of the expanding universe. The configuration of the universe is given by the networks of particles that historically came to compose it. So too in recent theoretical biology, Earth's overall configuration of life forms is not specified by the abstract systemic possibilities of an inert atmosphere and lithosphere, but by the historical accretion (and occasional catastrophic depletion) of networks of species, communities, and niches within a locally expanding (and contracting) ecospace (Erwin 2001).

Richard Bradley (1984:11) once observed that, to judge by archaeological accounts of the Neolithic and Mesolithic, "successful farmers have social relations with one another, while hunter-gatherers have ecological relations with hazelnuts." From a Latourian perspective, I think we could now assert that hunter-gatherers have not only ecological but also social relations with hazelnuts, not to mention salmon and harpoons and memoried landscapes and, yes, even each other. The same holds, symmetrically, for the farmers, whose networks embrace cattle and barley and pots and pastures and megaliths, and it also holds for us, with our fast food and cruise missiles and internet and ozone holes. We have never been modern, or, what amounts to the same thing, we have always been modern. The sociotechnical imbroglios that Latour and his colleagues delineate in the present existed in the remote hunter-gatherer past as well, and actor-network theory provides an analytical paradigm that allows us to unfold the hybrid scripts and programs and translation networks of which the stones and bones were once a part.

In some ways, archaeologists have always understood this. We have always paid attention to culture and environment at the same time and have usually proceeded in practice on the basis of a broad understanding of the complex

array of factors that shape the archaeological record. It is perhaps only in theoretical debate that we feel compelled to take sides, to dismiss the ecological, technological, and physiological when speaking about meaning and sociality, and vice versa. ANT deliberately sets out to occupy and illuminate the excluded middle ground and to direct our attention to the myriad and inextricable associations of people and things, to the hybrid, cyborg assemblages that compose the social world and that a practical archaeological consciousness already grasps.

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