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To cite this article: Diane Lyons & Joanna Casey (2016) It's a material world: the critical and on-going value of ethnoarchaeology in understanding variation, change and materiality, World Archaeology, 48:5, 609-627, DOI: [10.1080/00438243.2016.1214619](https://doi.org/10.1080/00438243.2016.1214619)

To link to this article: <http://dx.doi.org/10.1080/00438243.2016.1214619>



Published online: 31 Oct 2016.



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It's a material world: the critical and on-going value of ethnoarchaeology in understanding variation, change and materiality

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ABSTRACT

Contemporary ethnoarchaeology has come a long way from material correlates and 'fleshing out the past'. This paper re-introduces ethnoarchaeology and opens a debate on its role in archaeology today. We summarize the role ethnoarchaeology has in developing, testing and building archaeological interpretation, and argue for its continuing importance in the wider discipline. This critical role further produces rich ethnographic and material information to think about human-material relationships not necessarily as analogies, but as empirical accounts of how culturally different people engage with the material in complex and variable ways. The study of human-material interaction in daily life and in long-term studies can both challenge and support dominant and emergent theoretical models.

KEYWORDS

Ethnoarchaeology; materiality; optimization theory; humanist and post-humanist approaches; archaeological theory

Ethnoarchaeology: a re-introduction

This paper re-introduces ethnoarchaeology as a methodology that is used to study the relationship between contemporary people and the material from an archaeological perspective. One would think that a methodology that has developed alongside archaeological practice for over a century, and has contributed substantively to archaeological theory building and its critique, would require little introduction to an archaeological audience, but recent and sustained criticism of the practice indicates that this is not the case. Criticisms of ethnoarchaeology link it to early manifestos of processual archaeology sourcing its roots in positivist science (e.g. González-Ruibal 2006, 2014; Gosden 1999; Hamilakis 2011; Harrison and Schofield 2009; Hicks 2010, 51; O'Connell 1995; Simms 1992; van Reybrouck 2000). Archaeologists frequently express the view that ethnoarchaeology is defined by middle range theory (MRT) with its primary goal to provide direct material correlates for archaeological interpretation. Although ethnoarchaeology was employed by early processualists, and some still conduct ethnoarchaeology as MRT, ethnoarchaeology was practiced for more than a century before archaeology's positivist paradigm emerged, and it has been employed by a large number of researchers using non-positivist theoretical frameworks since the late 1970s (see David and Kramer 2001). It is this latter body of research that is the focus of the debate.

Today, ethnoarchaeologists' methods are drawn from ethnography (e.g. interviews, participant observation) and archaeology (e.g. materials analysis, mapping) and recognize that only through

long-term, historically situated and ethically based research can we gain rich ethnographic information on the variation and commonality in how contemporary people engage with the material (sometimes immaterially), how they solve material problems through technology, and how they are affected by and interact with the materiality of other living and spiritual entities. Although ethnoarchaeology's results are rarely directly applicable to interpreting the archaeological record, they are invaluable in understanding contemporary people's relationships with the material. This varied and complex contemporary perspective is the only empirical opportunity to evaluate archaeological theory and methods within the range of known human experience. We cannot assume that the past is or is not different from the present, if we are ignorant of the diverse material practices and perspectives of contemporary people. More importantly, without other people's perspectives, we risk constituting contemporary and past people's histories as reflections of dominant Western interests and values.

Eight researchers with lengthy histories in ethnoarchaeological research were asked to reflect on the benefit of archaeologists taking on ethnographic research to explore human-object entanglements and mutual constitutions that occur in richly social worlds, as well as to envision new practices that would expand ethnoarchaeology as a sub-discipline. The resulting four papers demonstrate the authors' different approaches to ethnoarchaeology, but they are united in the view that ethnoarchaeology provides critical value to archaeology by contributing a nuanced deployment of ethnographic research in archaeological practice and in introducing a more critical form of praxis to assess archaeology's theoretical tools. This is a unique contribution that cannot be provided by researchers who are not trained as archaeologists. So as to further stimulate debate, the issue editor invited nine archaeologists, who work in different regions around the world, to offer their own commentaries on these four papers.

In their paper, Liam Brady and Amanda Kearney ask how ethnoarchaeology can make a valuable contribution both to indigenous communities and to archaeology. They suggest that ethnoarchaeology adopt a methodological openness to bridge the gap between the different perceptions of the world held by archaeologists and indigenous collaborators. This will allow Indigenous epistemologies to radically change our ways of understanding material evidence, including notions of time.

Scott MacEachern and Jerimy Cunningham rethink ethnoarchaeology's role as 'slow science' that provides archaeologists with a broader understanding of variability in how contemporary people view and interact with the material. Slow science pushes back against the growing trend of 'fast science', which is based in big data sets that are used uncritically to pump out statistical generalizations about human populations. The danger here lies in the production of highly inaccurate accounts of people, including their histories, that promote Western interests. To counter this trend, they argue that ethnoarchaeology must have an ethically and socially engaged commitment to the research and communities where they work, treating people as contemporaries and not representatives of 'traditionalism'. The complexity and variability of contemporary human experience are important in broadening the narrow perspective held by western archaeologists who come from the most privileged economic class in the world.

Bill Sillar and Gabriel Ramón Joffré explore the relevance of ethnoarchaeology in Andean archaeology. Ethnographic analogies in earlier practice were used to create a uniform Andean model that glossed over regional variability. Recent research demonstrates the value of historically situated studies of craft, careful regional comparisons using ceramic *chaînes opératoires*, and situating craft within its broader economic, social and religious context. They argue that we need more cross-cultural comparison to understand commonalities and differences among

contemporary societies, but *without* objectives to produce universal laws. Most importantly, ethnoarchaeological projects must be relevant to contemporary communities.

Our paper begins in the following section and focuses on three issues: on-going misrepresentations of ethnoarchaeological practice, the value of ethnoarchaeology in providing balance between humanist and post-humanist theories of materiality that are currently developing within the discipline, and how interpretations informed by perspectives and observations of contemporary people contribute to our understanding of the complexity of human-material engagements. This latter inquiry specifically critiques the underpinnings of optimization theories that continue to pervade areas of archaeological theory.

Not handmaidens

Ethnoarchaeology has a long history that is described elsewhere (see David and Kramer 2001; Marciniak and Yalman 2013) and is not of concern here. In its modern form, ethnoarchaeology begins with Kleindienst and Watson's (1956) call for 'Action Archaeology', a challenge to archaeologists to conduct their own ethnography in order to provide more useful analogies for archaeological interpretation. Ethnoarchaeological research expanded rapidly in the 1960s (see David and Kramer 2001), but early practitioners soon realized that easy correspondences of present actions and past patterns are rare, delivering 'cautionary tales' demonstrating that people do not act in accordance with functionalist expectations.

In the 1970s, Lewis Binford conducted ethnoarchaeological research with the Nunamiut in a field programme framed as MRT. MRT sought material correlates between observable human behaviour and the archaeological record, reasoning that if cultures were adaptations to the environment, then subsistence practices in any given environment should be universal and predictable. Binford's (1980) article 'Willow Smoke and Dogs' Tails' contrasts subsistence styles of Nunamiut and Kalahari Desert foragers, concluding that hunter-gatherers in temperate and tropical environments leave distinct occupational patterns on the landscape.

At about the same time that Binford was writing 'Willow Smoke', Hodder (1982, 1986) used ethnoarchaeological insights to launch postprocessual theory as a critique of positivist science. Hodder's more integrated view of culture, informed by Bourdieu (1977) and Giddens (1984), foregrounded the role of individuals and groups as knowledgeable actors within society, and their capacities to bring about social variation and change. This view showed that material culture is meaningfully constituted, and not passive reflections of human adaptive behaviour as suggested by processual archaeology. Social groups were also viewed as diverse in age, gender, identity and interests rather than as homogeneous functional adaptive units.

Although ethnoarchaeology was critical in formulating these two major theoretical paradigms, it experienced considerable backlash from postcolonial and postmodern archaeologies that emerged in the late 1990s. These approaches questioned not only the utility of ethnographic insights to interpret the past (contra Graves-Brown, Harrison, and Piccini 2013, 10; Hicks 2010), but criticized the ethics of ethnoarchaeological practice, specifically the subordination of ethnography solely for archaeological purposes (Gosden 1999; González-Ruibal 2014; Meskell 2005; Phillipson 2005, 10; van Reybrouck 2000), with Hodder (1986) subsequently referring to ethnoarchaeology as the handmaiden of materialism. These critics described an ethnoarchaeological practice that was unrecognizable to most of its practitioners (see Cunningham 2009; Politis 2007, 72). Tarring all ethnoarchaeologists with the same materialist brush was uninformed, especially in North America where many ethnoarchaeologists had embraced postprocessual, feminist and other non-positivist

theories by the 1980s. Processualists were affected also by the theoretical debates of the late twentieth century, and had divided into two camps: those who continued to seek universal truths, and those who incorporated social theory into their research agendas and recognized that local behaviours were unlikely to produce universally applicable models (see Kehoe 2013).

These criticisms were raised 20 years ago and continue to be debated (see Ravn 2011 for a recent example), reflecting the frustrating persistence of analogical illiteracy in the discipline. **Ethnographic analogy** is a comparative practice that identifies similarities *and* differences between present and past material contexts along a temporal continuum (Stahl 1993; Wylie 1985, 1988). Analogy is never intended to map the present onto the past; both continuity *and* change must be demonstrated and not assumed. However, in current practice, most ethnoarchaeological studies are not packaged as analogies for archaeological application (see Cunningham 2009; Hamilakis 2011, 403; Schmidt 2010; Skibo 2009), but rather as ways of thinking differently about people's engagements with the material, and to test and develop archaeological theory in real time (e.g. Cunningham 2003, 2009; Fewster 2006; Insoll 2008). These studies contribute as much to understanding contemporary human-material relationships as they do to the study of the past. Nevertheless, these criticisms resulted in some researchers rebranding their work as ethnographic archaeologies (Casatañeda 2008; Hamilakis 2011), although their new manifestos broadly overlapped with practices of many ethnoarchaeologists working at the same time (see Cunningham 2009).

The second charge, that ethnoarchaeology subordinates ethnography to archaeological interests, ignores how long-term studies work. Good ethnoarchaeology cannot be developed in a brief stint to a local village to get quick answers to pressing questions as a sideline to an archaeological project. Good research involves long-term, multi-year and often multi-decade studies that are historically situated and ethically engaged and that specifically seek to understand contemporary people's relationships with the material. Rather than subordinating ethnographic concerns to archaeological interests, it is more common in ethnoarchaeological projects to find that the ethnography leads the study, with people's practices and responses reshaping research agendas, breaking preconceived notions (e.g. Cunningham 2009; Friesen 2002), and challenging archaeological wisdom (e.g. Biagetti 2014; Livingstone Smith 2001).

An example of excellent long-term ethnoarchaeology research is shown in Brumbach and Jarvenpa's (e.g. Brumbach and Jarvenpa 1997; Jarvenpa and Brumbach 2009) study of the Dene in northern Saskatchewan when they learned, contrary to archaeological theory, that Dene women hunt big game (see also Bodenhorn 1990; Frink 2002). The Dene study is theoretically processualist, but unlike Binford's relatively brief Nunamiut fieldwork, it is based on more than three decades of research and is historically situated, and gender roles were determined rather than assumed, using Janet Spector's (1983) task differentiation method to remove researcher interview bias. Their results challenged both the environmental determination of Binford's forager/collector framework and the androcentrism of the man-the-hunter model broadly, while contributing new ideas about transitions to sedentary life. Jarvenpa and Brumbach's (2009) circumpolar study that followed demonstrated both variability and similarity in women's and men's participation and material engagement in hunting lifeways cross-culturally. Archaeologists studying hunter-gatherers rarely cite this rich ethnoarchaeological project, preferring to perpetuate the tidy material correlates and environmental determinism of 'Willow Smoke and Dogs' Tails', which is estimated to be one of the most cited archaeology papers of all time.

Most ethnoarchaeological research over the past 20 years transcends the handmaiden role of proffering up material correlates for archaeological consumption. **Ethnoarchaeologists have**

contributed to theories that include material agency (Brown and Emery 2008; David, Sterner, and Gavua 1988; Fredriksen 2011), memory (Arnold et al. 2013), the material constitution of social identities and ontologies (David 2012; González-Ruibal, Hernando, and Politis 2011; Lane 2006, 2008; Lyons 2014; Mayor 2010; Weedman Arthur 2013), how technological knowledge is transmitted across generations and space (e.g. Stark, Bowser, and Horne 2008; Gosselain 2001; Dietler and Herbich 1998), how technological practices are integrated with the social (e.g. Livingstone Smith, Bosquet, and Martineau 2005), and subaltern histories (e.g. Cunningham 2009; Wayessa 2016), to name a few.

We now provide two reflections on how ethnoarchaeology retains a fundamental role in assessing current archaeological theory and in moving theory forward. The first reflection, by Lyons, is of ethnoarchaeology's contribution to emergent post-humanist archaeologies of object materiality and archaeologies of the contemporary past. The second, by Casey, examines the use of optimization theories that rise above material and social realities. In both reflections ethnoarchaeology provides the only empirical means of testing these ideas, and they both support a balance between social and material explanations.

Here's the thing

In the early 2000s, many disciplines in the social sciences, including archaeology, took a material turn to things. Postprocessual archaeology's humanist approach increasingly viewed material culture as symbolic with little regard to its physicality or materiality (Hicks 2010). However, the post-humanist turn to object materiality risks modeling a world that draws too far away from people. One problem is that materiality means different things to different researchers (e.g. see Knappett 2012a). It is understood here as the mutual constitution of human life and other material entities, as a result of their physical interaction and engagement.

The recent post-humanist critiques of postprocessual theory are influenced by Bruno Latour's actor network theory (ANT). Latour's ambition (Latour 1993, 2005) to make anthropological theory symmetrical requires eradicating Cartesian dualities that create asymmetrical distinctions between modern/non-modern, human/non-human, culture/nature. Latour (2005) re-envision the social, not as an explanation of human actions, but as something to be explained in the assemblage of diverse human and non-human entities in networks of association. In this framework, both human and non-human entities are actants. Agency is not the privilege of humans, but the product of engagements of humans and other entities in networks of connectivities.

ANT inspired the recent archaeological development of 'symmetrical archaeology' (Olsen 2007; Olsen and Witmore 2015; Webmoor and Witmore 2008; Webmoor 2007). Symmetrical archaeology reasons that humans and things are so entangled that they are ontologically indivisible: things are us, humanity begins with things, we are all cyborgs with our 'technological prostheses' (Olsen 2012; Webmoor 2007, 571; Webmoor and Witmore 2008, 59; Witmore 2007), culminating in Olsen's (2012) proclamation that archaeology is archaeology or it is nothing. In this material-based archaeology 'things' are defined as a gathering of skills, materials, and our companion species to form an assemblage that transforms events and interactions such that we are not made aware of the world through human bodily engagement, but through the mediation of things such as eyeglasses, maps, footwear, pavement (Harrison and Schofield 2010; Webmoor and Witmore 2008, 59).

While symmetrical archaeology makes us consider non-human agency and material affordances in shaping human life, it is criticized for failing to make important distinctions between living organisms and inert matter (e.g. Ingold 2012; Sørensen 2013) and to recognize the self-reflexive

capacity of humans to think about their experiences and to act upon this knowledge (Barrett 2014).

Our purpose here is not to engage in a critique of symmetrical archaeology, but to argue for the role that ethnoarchaeology can play in discussions of object materiality and also human/non-human relationships, including those that elude the archaeologist. Importantly, much of the process of ethnoarchaeology is to observe and to query people as they interact with the material, which is to come at things from the opposite direction than the archaeologist. From the ethnoarchaeological perspective, it is impossible to reject the notion that for people, objects have meaning and they are used to constitute social relationships. For example, social constructs of gender in any given society affect and sometimes determine which technologies, materials and spaces gendered individuals can interact with in daily life. While it is undeniable that humans are shaped cognitively, emotionally, physically and genetically by interaction and co-evolution with plants, animals and other material entities that we live among and that we create (Boivin 2008), what is not addressed is how persistent socially prescribed inequities and differences in who interacts with plants, animals and other material entities shape us differently. What needs to be considered is how 'social affordances' affect how material actants penetrate human worlds differently, rather than universally or uniformly.

Lemonnier (2012, 304–05) suggests that the current focus on object agency requires us to document the relationships that tie people with the material world, understand what people *do* with things, including how people reinforce social relationships through material objects, and how the materiality of an object is involved in people's thoughts and actions when people and the material engage. To do this, Lemonnier (2012, 305) argues that we need ethnographic study and to look at material things as materials and not just symbols. *We argue that ethnoarchaeology contributes to the current discussion of object materiality in the manner that Lemonnier suggests, in at least three ways. Ethnoarchaeology can provide some balance in the relationship of the social and the material, including those that clearly dissolve Cartesian divides between material and non-material entities; it provides observable examples of technological systems in a variety of social contexts; and it can elucidate human-material engagements that leave little if any detectable material evidence.*

Balancing the social and the material

Object materiality that fails to account for the social in pursuit of the material provides as unbalanced an approach to archaeology as the postprocessualist overemphasis of the symbolic at the cost of the material. For example, Boivin (2008) uses her experience as an ethnoarchaeologist studying Rajasthan houses to reflect on the relationship between the humanist and post-humanist position. Recognizing that Rajasthan houses are deeply symbolic in the lives of their occupants, Boivin's geoarchaeological study of soils in house building led her to conclude that the malleable qualities of soil in mud-wall construction and wall plastering afforded the dynamism that its occupants needed to shape houses to draw people closer into ritual cycles and social understandings of their world. Similarly, in Lyons' (2009) research in rural Tigray in highland Ethiopia, maleness and femaleness are performed with the use of materials with different affordances, specific bodily gestures, actions and techniques, and in spaces that are used routinely in daily life. Men work in outdoor spaces with hard materials (especially stone) and they use iron tools to break stone, butcher animals, and cut the land with ploughshares. Women work with soft and often wet materials including clays and slips to plaster and paint walls and house furnishings,

and soft fresh cow dung is used to make storage containers (Lyons 2009). These materials and actions are not symbolic of gender, but men never work with clay because it is understood to 'feminize' them. Female potters claim to become old women before their time, losing their femininity in the hard work of cutting clay and temper from grazing lands and rock outcrops using masculine techniques and gestures at sites of masculine agency (Fig. 1) (Lyons 2009, 2014). Here the boundary between things and people is blurred, and the material affordance of things enacts social perceptions of 'gender-ization'. Nevertheless, cultural perceptions of who makes what with certain materials and where affects the materiality of objects in the specific spatial contexts where men and women make things as socially gendered people.

An additional concern of materiality is the human physical body (Boivin 2008). The interaction of people, their skills and materials affects the body. In Africa, ethnoarchaeological studies of technology show that the embodiment of certain types of technological knowledge is understood to transform artisans by polluting them or in giving them dangerous preternatural powers that can harm people and other non-human entities including animals, plants and agricultural land (e.g. David 2012; Lyons 2014; Wayessa 2016; Weedman Arthur 2013). Depending on the craft, artisans'



Figure 1. Potter breaking up rock temper with a wood baton in an area of masculine agency.

bodies transform by becoming more muscular or by developing new motor skills, and bodies can be soiled or permeated with the smell of raw materials and production processes. When artisans' bodies become perceptibly different from socially normative bodies, then other members of society describe them as 'different types of people' (e.g. Sterner and David 1991; van Beek 1992; Wade 2012; Warnier 2012). These types of studies provide us with an understanding of how socially prescribed and differential engagement of certain categories of people with specific materials and their affordances shape people's bodies, thoughts and actions differently.

Materiality and chaîne opératoire

Knappett (2012b) suggests that the study of technology using the *chaîne opératoire* approach is promising for understanding object materiality, especially ethnoarchaeological studies that observe production processes. *Chaîne opératoire* assumes that the artisan's technological choice at each stage of object production is guided by social choices learned as a member of a social group (Gosselain 2001). The suite of technological choices (e.g. paste recipes, fashioning techniques, firing, post-firing practices) of a particular artisan community constitutes their technological style: a material identity of that community and a material means to track historic relationships of that community with other ethnographic and archaeological groups (Gosselain 1998, 2001; Sterner and David 2003). In an extensive cross-cultural analysis of pottery making in sub-Saharan Africa, Gosselain (2001) demonstrates the close relationship between pottery learning networks (linked to ethnolinguistic groups) and pottery fashioning techniques. This observation was subsequently borne out in ethnoarchaeological and archaeological studies across the continent (e.g. Dale and Ashley 2010; Gosselain and Livingstone Smith 2005; Livingstone Smith, Bosquet, and Martineau 2005; Mayor 2010; Stahl et al. 2008). Cross-cultural studies of ethnoarchaeological research need greater development to draw out broader general understandings of object materiality and human-material relationships (Sillar and Ramón Joffré, this volume). Ethnoarchaeological studies of iron smelting in sub-Saharan Africa in the 1980s and 1990s provides an excellent example of earlier cross-cultural and cross-disciplinary approaches that showed how variability in smelting technologies was the product of working with different types of ores within different social and ideological contexts (for summaries see David 2012; Killick 2004; Schmidt 2009). These studies exemplify the value of long-term study and the use of carefully contextualized data and its variability that are essential to 'slow science' (Cunningham and MacEachern, this volume).

When things are not enough

Although people and things may be indivisible, that relationship may not be archaeologically detectable. Australian ethnoarchaeologists, using an 'ethnoarchaeology of engagement' approach (Kearney 2010), document the largely intangible but intense long-term relationships between Australian aborigines and their territories, a relationship with things, rock art, places occupied by spirits, history and the practice of aboriginal law. Aboriginal engagement with place often leaves little or no material trace, leading conventional archaeological surveys to conclude that aboriginal land use is absent at sites of significant aboriginal value. Aboriginal engagement is only recoverable by querying living people and how they understand places, their responsibility to manage the land, and their deep relationships with the land and its ancestral and non-human entities (see also Brady and Kearney, this volume).

Archaeology's 'loss of courage' (with apologies to David Clarke)

Symmetrical archaeology has inspired other new archaeologies that claim academic genealogies in ethnoarchaeology, but their context and use of ethnographic methods differ. One of these

approaches is the archaeology of the contemporary past as defined by Harrison and Schofield (2010, 30). This approach distances itself from the presumed 'unethical practices' of its ethnoarchaeological heritage by studying 'us' in the contemporary West in the period after 1950 (Harrison and Schofield 2009, 2010). Other practitioners, however, have broader temporal and cultural programmes that incorporate varying degrees of ethnography in their studies of contemporary archaeology in non-western societies (e.g. Derbyshire 2015; González-Ruibal 2006; Jarvenpa and Brumbach 2009; González-Ruibal 2014; González-Ruibal, Hernando, and Politis 2011) as well as subaltern experiences in post-industrial ones (e.g. De León, Gokee, and Schubert 2015; Zimmerman, Singleton, and Welch 2010). Nevertheless, any direct querying of people involved is often very limited in comparison to the researchers' interpretations of the material evidence.

While Hicks (2003) refers to archaeologies of the contemporary past as archaeology's 'loss of antiquity', we suggest that without ethnoarchaeology that engages with other people's perspectives, archaeology faces a 'loss of courage' – contemplating a world of modern things, particularly when withdrawing to the presumed ethics of studying the West through objects and auto-ethnographies. Importantly, Fewster (2013) makes a clear distinction between ethnoarchaeology and archaeologies of the contemporary past that has ethical implications for how the people that we study are represented. She suggests that ethnoarchaeologists can only understand the relationship between contemporary people and the material by asking for their 'testimonies', information that always informs our interpretations. In doing so, Fewster states (32–33):

It does not set the scientist-observer (myself) up as the sole interpreter of modern material culture, as though it were an empty archaeological site, but it acknowledges the various accounts of the users of that material culture. It is a means by which multivocality, as far as is possible, may be achieved.

Multivocality and relevant research are not learned solely within the safety of 'us' and the familiar (even if made unfamiliar) through the application of only archaeological methods to understand the present, and relevant archaeology cannot develop from the fascination with often-detailed minutiae of modern things that define 'us', a deeply problematic term (see Fewster 2013). We do not suggest that the West's contemporary past is unworthy of study, but surely in a world of political and social turmoil archaeologists must engage with people's views of their own material practices and histories to better understand and appreciate difference, including in the West where any claim to social or cultural homogeneity is blatantly political.

Just like us? The value of social balance in evaluating theory

If we accept arguments against using ethnographic material, especially that derived from ethnoarchaeological studies, in helping us to understand the past, then what other recourse do archaeologists have? Many find refuge in appeals to optimization models derived from evolutionary and economic theory, leading O'Connell (1995) and Simms (1992) to suggest that to be relevant ethnoarchaeology needs to ally itself with these approaches. While some archaeologists use these models explicitly, many others appeal to the logic of optimization as a more straightforward way of envisioning the past, thereby circumventing the enormous amount of detail and contradiction that characterizes living social systems. To ally ethnoarchaeology with behavioural ecology is to return to the adaptationist perspective that dominated processual archaeology and to ignore the lessons learned about the importance of the social in the constitution of the material. A more serious problem is that optimization models are loaded with assumptions that make them of limited utility and necessitate extreme caution in their application. These perspectives have little

place in socially engaged ethnoarchaeology, and should not be applied as defaults when 'better' analogical material is not at hand.

A number of approaches can be lumped under the heading of optimization, including evolutionary ecology, cultural ecology, ecological archaeology, evolutionary archaeology, behavioural archaeology, behavioural ecology, optimal foraging theory, cultural materialism and sociobiology. Supporters of one or another of these types see them as being quite different from each other (Broughton and O'Connell 1999; Cordell 2011; O'Brien, Lyman, and Leonard 1998; Schiffer 1996; Smith 1987), but they all draw on two bodies of theory: evolutionary biology and neoclassical economics (Smith 1987). Those that draw on evolutionary biology regard human behaviours and elements of culture as being subject to selective forces that reinforce traits that enhance adaptation while eliminating those that are detrimental. In biology, adaptation is measured by reproductive success, but as this is difficult to determine in the archaeological record, models of economic efficiency drawn from neoclassical economics are used as a rough proxy for reproductive potential (Kuhn 2004, 562). Evolution and economics work together in something of an acknowledgement that evolution designed humans to make rational decisions (Boone and Smith 1998).

Optimization models are attractive because they can quantify human behaviour, and have broad explanatory power. We should, however, be very sceptical of their use in social contexts because not only are they flawed, they are loaded with ethnocentric assumptions.

Optimization models have received a great deal of criticism, primarily because they are deterministic, give a static view of culture, and produce tautological arguments that are not amenable to testing (Gould and Lewontin 1979; Ingold 2007; Lewontin, Rose, and Kamin 1984; Pierce and Ollason 1987; Shanks and Tilley 1987, 1992). Most significantly, they are based on ethnocentric ideas about human nature and the meaning and structure of society, and they take a very limited view of cultures that primarily hews to clichés about bands, tribes, chiefdoms and states. This is no benign heuristic for getting baseline data against which to compare archaeological phenomena but a technique that imprints modern ideas onto the past, naturalizing and justifying them.

Optimizing models drawn from evolutionary biology find virtually every cultural practice to be optimal in some way because their very existence indicates that they have withstood selective pressures (Harris 1979, 1989). Most archaeologists use analogical data drawn from Sahlins and Service's (1960) taxonomy of cultures, which was in turn based on an amalgamation of ethnographic information. They also use their own understandings about the way the world works. These ideas, entrenched over decades of interpretations, become archaeological facts such that we search for chiefdoms as the only type of political and economic organization more complex than tribes and less so than states (McIntosh 1999a, 1999b; Pauketat 2007), and believe that bands adhere to only one of two possible foraging strategies (Binford 1980). It is also clear in the obsessive and often bizarre ways in which male competition, violence and dominance over females are parsed as being so essential to the evolution of the human species that they have been suggested as the prime motivator behind everything from the Acheulean hand axe (Kohn and Mithen 1999) to the origins of agriculture (Hayden 2003). Furthermore, we are given the eugenics-redolent spectre of 'high-quality' and 'low-quality' individuals (Heath and Hadley 1998) as though in human societies, only the elite and the lucky can, or should, reproduce.

Equally problematic are models that rely on the language and theory of capitalist economics. It was Adam Smith who observed that it is human nature to calculate the risks and rewards of every interaction, and surmised that the tension between parties operating in their own self-interest

insures that trade is fair when it is unrestricted. This idea of maximizing benefits while minimizing costs is a truism in economics the same way that 'survival of the fittest' is in evolutionary approaches – an immutable law with the power to explain all human behaviour and cultural phenomena.

This basic philosophy of the capitalist system describes an ideal state, and the study of economics works best at a very large scale where details are obscured in the volume of data. The system is less useful for describing or analysing actual economies or economic behaviour (Ariely 2009; Cowgill 1993; McFadden 2014; Stiglitz 2002; Webster 1996). Economic theory has not been very good at understanding small-scale or household economies or integrating them into larger economic systems (Mayer 2005), a frequently cited problem in development discourse, and obviously a serious concern in trying to understand the economies of the past (Garraty 2010, 6). Economics uses a very restricted definition of the economy as consisting only of labour and trade that results in payment. Consequently, it systematically excludes all domestic, caring and support labour that is usually done by women, and which in many societies is also done by children and the elderly (Boserup 1965, 1970; Waring 1988), and virtually all forms of distribution and exchange that do not take place in market contexts.

Economic models of rational choice assume that everyone has an equal opportunity to make the same choices, and therefore inequalities result only from some people making better choices than others. However, all economic opportunities world-wide are determined by many interrelated social factors such as age, gender, race, class, ability and ethnicity (Nelson 1993, 2006; Power 2001). The use of economic models ignores social inequalities and makes the whole system and the structures that support it appear to be natural and beneficial (Barker 2005), when in fact unbridled self-interest has serious social consequences virtually everywhere. Projecting economic models steeped in neoclassical economic theory onto the past gives the illusion that the social, political and economic systems that currently dominate the Western world are part of the natural order of things, rather than recognizing that they are made by humans and are intended to benefit only a small segment of the population.

Optimization and economic rationality do exist in human societies, and it is important to consider ecological relations in our interpretations, but we need to think of them broadly in terms of relations between humans and the total environment including the natural, social, material and ideological. Most people past, present and future probably do try most of the time to do the best and get the most they can. But trying to optimize is not the same thing as actually doing it, and uniformitarian principles suggest that in the past as in the present, most people fall short of their desires and, in many cases, their needs. What we see in the archaeological record are not optimal, rational solutions, but rather adequate and provisional ones. While genes and traditions may be what individuals are born with and into, the relationships people make and the experiences they have individually and collectively as they continue through their lives will have a far more deterministic, though less predictable, effect on who they become (Granovetter 1985; Ingold 2007). Consequently, it is much more reasonable to expect variation and complexity and to make those the focus of study rather than an unrealistic expectation of ideal adaptations and decisions that are rational in the very narrow sense of the term.

The dreaded 'cautionary tales' that are anathema to archaeologists and supposedly undermine ethnoarchaeology's credibility tell us that we actually know very little about what people do in other parts of the world and under different kinds of social, political and economic circumstances. In debates about the use of analogy in archaeology, some archaeologists have argued that an over-reliance on ethnography will cause archaeologists to seek and consequently find correlations

with known cultures, while cultural configurations with no modern parallel will go unrecognized (Gould 1980; O'Connell 1995). However, archaeologists relying on optimal solutions are in an even worse position to find new cultural configurations. At best they are superficial sketches of our expectations, but at worst they are figments of our ideologies. How can we know what is new and different if we do not know much about what people do and think in the many different scenarios that present themselves around the planet right now? And, importantly, how can we recognize and change our own unfair social, economic and political systems if we are forever seeking them and finding them in the remains of the past?

In Northern Ghana where one of us (JC) first undertook ethnoarchaeological research, people may well have found an optimal solution to life in the dry, seasonal savannas, but the shape it takes is nothing that could have been predicted given prevailing archaeological models of how societies organize themselves. Men and women have separate economies in which women handle virtually all the money and trade, while men's power and prestige are drawn from their attachments to lineages and their ability to contribute to the support of their large extended family through farming. Men and women contribute specific resources to the household but have no control of each other's finances beyond what was expected from any marriage. Personal success is regularly downplayed out of fear of supernatural attacks by jealous persons. The social imperative to give money to those who request it leads most people to tie their money up in elaborate systems of credit, debt and favours that reap other rewards, especially for women who could extend their social networks well beyond their husbands' family houses where they go to live at marriage. The fragile environment, short growing season, low population and unpredictable rainfall make it difficult to wrest surplus from the land, and most people are lucky if they can grow sufficient crop to last the year. But the region nevertheless produces surpluses, not by increasing farm production, but through a system of small-scale trade enacted by women enmeshed in social and commercial networks, who move goods in very small amounts through higher- and higher-order markets until the quantities are substantial at markets where bulk amounts are needed (Fig. 2). Recently, archaeologists have taken an interest in the large-scale, long-distance trade that took place in West Africa (DeCorse 2002) for many hundreds of years, bringing gold, slaves, kola and other products across the Sahara and ultimately to the coast. Much of the interest has been in the rise of powerful polities who act as middlemen and in the kinds of dealings among chiefs and elites who were able to extract duties and tariffs from merchants plying the roads in their territories. Rarely asked is how these enormous caravans were provisioned in sparsely populated dry season landscapes, and what kinds of impacts they had on local communities. Looking at the way trade is currently enacted by women in this part of northern Ghana provides some insights that may be useful for building testable hypotheses, but we doubt such a system could have been imagined if it had not been witnessed in action. We cannot know whether this form of women's trade was practiced precisely the same way in the past, but it seems a more plausible place to start than a bland optimization model based on assumptions drawn from evolutionary biology and capitalist economics.

The importance of what we do as ethnoarchaeologists is in learning to understand the lived experience of people under many different kinds of influences. We play an essential role in presenting the possible – not what people should, rationally, do, but what they actually do and how this is rationalized and made logical by the terms of their own cultural contexts.



Figure 2. Women selling in Nakpanduri Market, Ghana.

Conclusions

Ethnoarchaeological studies now form a vast cross-cultural compendium of interesting information about the relationships among people, materials, objects and other living or spiritual entities. This body of literature should be read by archaeologists the way cultural anthropologists read ethnographies (Stahl 1993; Wylie 1985, 1988). Ethnographers do not study a group of people expecting them to be an exact parallel with some other ethnic group, but they do proceed with a wealth of examples, some of which will resonate with the circumstances that they encounter. In the course of their own research they contribute to a discipline-wide conversation by looking for places of correspondence and departure with other studies.

We suggest that what ethnoarchaeology contributes to current archaeology is a means of testing theory in real-life contexts. This is a critical role that ethnoarchaeology uniquely plays in tempering archaeology's theoretical swings between the material and the ideological, pushing

new ideas forward and reevaluating theories in real time, a process that is essential. There are consequences for living communities when archaeology silences subaltern pasts and legitimates contemporary inequities and western 'common sense notions' by providing these structures with ancient pedigrees.

Ethnoarchaeologists come at things differently from archaeologists. We talk to living people, and we want to understand their perspectives and observe their engagement with the material. In this verbal and visual dialogue, other people's views and actions modify our research agendas, force us to critically evaluate our research questions, and make us look at material culture from a viewpoint other than our own. We offer these rich sources of information to archaeologists to allow them to think critically about human-material relationships outside of their own experiences. If the new material approaches intend to create symmetries between western and non-western people, then we must incorporate what other people say and do with the material on an equal footing with auto-ethnographies that western researchers provide for the archaeology of 'us'. If not, then symmetry is just academic talk and a new form of silencing the Rest by the West in academic discourse.

Disclosure statement

No potential conflict of interest was reported by the authors.

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