On Applied Archaeology, Indigenous Knowledge, and the Usable Past

Author(s): Daryl Stump

Source: *Current Anthropology*, Vol. 54, No. 3 (June 2013), pp. 268-298
Published by: The University of Chicago Press on behalf of Wenner-Gren Foundation for Anthropological Research
Stable URL: http://www.jstor.org/stable/10.1086/670330

On Applied Archaeology, Indigenous Knowledge, and the Usable Past

by Daryl Stump

Several recent discussions within archaeology refocus attention on the relationship between western knowledge and "indigenous knowledge": one arising from the question of local ownership of land, technologies, and archaeological materials; another responding to the continued interest within development, conservation, and ecology in the potential efficacy and sustainability of local resource-use strategies; and a third that explores the possibility of producing archaeological interpretations that incorporate local conceptions of the past. In addition to an interest in indigenous knowledge (whether technical or conceptual), these various lines of inquiry are related by the desire to give due respect to local beliefs, practices, and property, and by the ambition to define ways in which archaeological research can provide benefits to society in general or, more specifically, to the communities that play host to archaeological field projects. These shared goals account for the fact that these discussions are sometimes conflated, but they can nevertheless be separated into distinct projects by examining the criteria by which their proponents are likely to judge success. Doing so permits an assessment of the feasibility of these approaches, referred to here as applied archaeology, hybrid archaeologies, and the production of a "usable past."

This paper is essentially a review of the relationship between "archaeological knowledge" and "indigenous knowledge"—both of which are potentially ambiguous terms and will thus be discussed and defined below.[1] Although primarily theoretical, this review is prompted by a number of recent and ongoing archaeological discussions that are attempting to produce practical outcomes of benefit to modern communities. Presented from a variety of standpoints and with differing objectives, these various discussions cover interrelated issues and can be broadly categorized as concerning potential conflicts and confluences between archaeological and local interpretations of the past (e.g., Atalay 2006; Chirikure and Pwiti 2008; Damm 2005; Gnecco and Hernández 2008; Lane 2006, 2011; Schmidt 2006:180–182; Smith and Wobst 2005b; Watkins 2005); debates regarding the rights and responsibilities of archaeologists in the light of local claims to land, materials, or technologies (e.g., Issacson and Ford 2005:356; Nicholas 2005:96–98; Nicholas and Bannister 2004; Sillar 2005); and examinations of the ways in which archaeological data or methods could be employed to assist communities or guide modern policies through examinations of indigenous resource exploitation strategies (Erickson 2006; Hayashida 2005; Heimo, Siemens, and Hebda 2004; Kendall 2005; Minnis 2000, 2004; Nicholas and Bannister 2004:334, 338–339; Sillar 2005; see also Dawdy 2009 and various respondents). These in turn relate to discussions within cognate disciplines that include debates concerning the application of local technical knowledge (including ethnobotany and ethnopharmacology); the potential role of anthropologists as advocates or intermediaries between local communities and external agencies (e.g., Crate 2008; Rylko-Bauer, Singer, and Willigen 2006; Sillitoe 1998, 2006); case studies and theoretical discussions under the rubric of historical ecology (e.g., Balée 2006; Crumley 2007) and resilience theory (e.g., Costanza et al. 2007; Redman and Kinzig 2003) regarding the combination of ecological, social, and historical data to guide policies or predict future changes; and ongoing debates within development and conservation regarding the possible benefits of the use or extension of local approaches to the exploitation and maintenance of resources (e.g., Briggs 2005; Dove 2006; Harrop 2007; Nazarea 2006). Indeed, encompassing all of these discussions is the broader question of cultural relativism, particularly as regards the notion of the incommensurability of knowledge produced within differing epistemologies, itself a concept that continues to be discussed directly within both

Daryl Stump is Honorary Visiting Research Fellow in the Department of Archaeology of the University of York (King's Manor, York YO1 7EP, United Kingdom [darylstump@heeal.eu]). This paper was submitted 19 VI 09, accepted 30 VI 12, and electronically published 1 IV 13.

1. Potentially questionable terms are placed within quotation marks when first employed and used without thereafter. Following comments on an earlier draft of this paper, it should also be stated at the outset that the terms "western," "local," and "indigenous" should in no way be taken as referring to any specific or generalized "racial" or ethnic groups. Rather, the interest here is in the relationship between archaeological knowledge and culturally specific local knowledge, from which perspective race clearly cannot be equated with culture, as this would require a belief in "race-specific knowledge," an obvious nonsense.

 0011-3204/2013/5403-0002$10.00. DOI: 10.1086/670330

the archaeological and anthropological literature (e.g., Brown 2008; McGhee 2008).

These various lines of argumentation frequently overlap, not least because they all share an interest in three related themes. First, they are all concerned in some way with local technical or conceptual knowledge, either because they seek to learn from, reapply, or protect aspects of local technologies; or because they aim to assess the long-term sustainability of local practices; or because they focus on local understandings of history. Second, they all acknowledge the need to incorporate a historical dimension, either because this is a prerequisite of any discussion of the concepts of sustainability, conservation, and indigeniety (Stump 2010), or because it is recognized that the relationships between different groups need to be understood in their historical context. Indeed, it is noteworthy that even those studies that originate outside of the historical disciplines of history, archaeology, and paleoecology either explicitly or implicitly invite an archaeological contribution through a focus on interactions between humans and their environments over the long term (e.g., Caseldine and Turney 2010 and references therein). Third, all arise from the laudable concern that archaeological or anthropological research should produce practical benefits for society in general, or, at the very least, that researchers should minimize any detrimental impacts on the communities that play host to research projects.

These shared concerns are in themselves sufficient to explain why these issues are frequently discussed together, but they also potentially mask variations in terms of methodologies and motivations. Thus, some archaeologists advocate a contribution to contemporary issues on the grounds that archaeological sources and methods have something unique to offer: for example, the use of archaeobotany (or paleoethnobotany) to explore whether the history of exploitation provides lessons for the future (Minnis 2004) or the use of zooarchaeology (or paleozoology) to guide modern conservation practices (Lyman 2006). Others, however, are motivated by a desire (or perceived obligation) to correct the false historical perceptions that are employed to justify development or conservation projects (e.g., Fisher, Hill, and Feinman 2009; Stump 2010), itself potentially a political imperative where groups have been denigrated as environmentally destructive or stereotyped as somehow inherently in tune with nature (Balée 2006). Others, still, see their involvement as a professed act of political engagement and as a means of offering restitution to formerly maligned or currently marginalized groups (e.g., Atalay 2006:280, 292; Gnecco and Hernández 2008:439, 454; Smith and Wobst 2005a:5; Watkins 2006) and thus advocate the use of archaeological data in property claims (see Nicholas and Bannister 2004; Sillar 2005) or support the incorporation of local conceptions of the past in archaeological interpretations (e.g., Atalay 2006:284, 297; Damm 2005:78–85).

These diverse motivations are all valid, and the various methodologies proposed all have their own strengths and weaknesses, whether employed individually or in combination. There is nevertheless a danger of conflation of arguments where it is assumed or implied that the insights from one approach can be unproblematically applied to others. It is the contention here that such conflations occur within the existing literature, most clearly where individual writers advocate the "blending" of local conceptions of history within archaeological interpretations (referred to here as "hybrid" or "syncretic" archaeologies) while simultaneously attempting to draw on the authority of archaeology as a "western" science in order to influence modern policies (referred to here—following Andah 1995—as the "usable past"). Moreover, it will further be argued that there is a clear distinction between the usable past (i.e., the referencing or commissioning of historical research to provide insights of value to modern communities) and what is here termed "applied archaeology," with the latter defined as the potential for reusing technologies or local resource exploitation strategies as discerned wholly or partially through archaeological investigations (following Erickson 1998 [1992]).

This paper will attempt to draw these related and overlapping approaches apart by exploring how they diverge from—for want of a better word—"conventional" archaeological knowledge production (an approach suggested but perhaps not fully followed by Atalay 2006:283). In other words, the paper will attempt to identify differences in how these alternative approaches are likely to judge success and, in doing so, also ask whether archaeology can truly claim to "see" indigenous knowledge—this second question having a clear bearing on the first. While accepting that knowledge production has to be understood in the context of the social, political, and economic frameworks inhabited by the actors involved (e.g., Feyerabend 1993 [1975]; Foucault 1974; Kuhn 1970), the focus here is less on the practical or political aspects of archaeological engagement with local communities and more on the ways in which archaeologists attempt to define, explain, translate, and incorporate local practices and conceptions.

Before addressing these larger questions, however, it is necessary to first clarify the terms employed here, in part because these are contentious and far from unambiguous, but also because this ambiguity is itself a potential source of confusion and conflation within the alternative approaches summarized above.

Notes on Terminology and a Profusion and Confusion of Terms

No doubt the most obviously contentious term in the context of the current discussion is the word "indigenous," particularly as part of the concept "indigenous knowledge." It is used by convention within development studies as a synonym for local (see Sillitoe 1998), though the possibility that this term will be taken to imply longevity of occupation and sustainability of resource use is not lost on those who regard small-scale, locally developed solutions as preferable to large-scale, externally imposed developmental interventions (Stump 2010). The alternative terms "traditional" and "traditional knowledge" do not entirely avoid these implications, and indeed there is a risk that communities with shorter histories of occupation will be further marginalized and thus perhaps precluded from external political, legal, logistical, or financial support (Nygren 1999). Note, for example, that in promoting the potential value of local knowledge as a developmental resource the United Nations (e.g., UN 1992:26.1) treats the words "traditional" and "indigenous" as synonyms, despite concluding that indigenous groups are "generally descendants of the original inhabitants of such lands." Nevertheless, the term "indigenous knowledge" is now so ingrained within the developmental literature that it continues to be used despite these issues, and it is in this context that the term is used here.

Similar objections have also been raised by archaeologists, anthropologists, and historians who note that the antiquity and continuity of occupation implied by the term "indigenous" may be inaccurate, inappropriate, contested, or impossible to prove, and may vary depending on the temporal or spatial scale of the inquiry (e.g., Ingold 2000, chap. 8; Kuper 2003; Lane 2006; Ouzman 2005; Sillar 2005:72). While some archaeologists are thus wary of the term and have critiqued its rhetorical use in developmental and political narratives, proponents of the broad project of "indigenous archaeology" often openly employ the term as a strategic essentialism (e.g. Colwell-Chanthaphonh et al. 2010:230–231) and see their role as an avowedly political act designed to "decolonize" archaeology (e.g., Atalay 2006; Smith and Wobst 2005a). Smith and Wobst (2005a:16n), for example, capitalize the word "Indigenous" throughout their volume in order to "emphasize the nationhood of individual groups." It is worth noting, however, that presently the phrase "indigenous archaeology" has very limited currency outside North America and Australia, presumably because these are former European colonies where archaeology is well established as a discipline and where descendants of precolonial populations are politically and economically marginalized (and vastly outnumbered) by the descendants of more recent immigrants. The term is, in contrast, rarely heard in former colonies throughout Africa and South Asia, where this demographic position is reversed and where attempts by modern communities to claim autochthonous rights to land or resources would be both historically and politically contentious (although see Lane 2011 for exceptions). Terms such as "First Nation," "Aboriginal," "descendant communities," or "Native"—as preferred by archaeologists or local groups in some areas (e.g., Atalay 2006; Nicholas and Bannister 2004; Smith and Wobst 2005b)—are also not used in much of the developing world and will consequently not be used here, not least because the last of these would be viewed as offensive in many regions.

It is noteworthy too that proponents of indigenous archaeology often leave the term "indigenous" undefined (e.g., Colwell-Chanthaphonh et al. 2010) and, as befits the very inclusive and political nature of this project, are content to assign the status of indigeniety to "people who see themselves, and are seen by the world, as Native peoples" (2010:230). Moreover, the range of approaches they regard as aspects of indigenous archaeology is sufficiently broad to encompass all of the projects summarized above and includes widening participation and consultation in archaeological projects and interpretations; community ownership of sites, excavated materials, and records; the rediscovery and "restoration" of lost indigenous knowledge; research into local epistemologies and conceptions of the past; and examinations of the possibility of producing hybrid archaeologies that incorporate aspects of local and western epistemologies (e.g., Atalay 2006:295; Colwell-Chanthaphonh et al. 2010:230; Issacson and Ford 2005; Wobst 2005:27–28). Note, however, that this list is so inclusive that, were it not for the caveat that such projects are carried out "by, for, and with indigenous communities" (Colwell-Chanthaphonh et al. 2010:229), the approach seems almost synonymous with other archaeological subdisciplines.

Contributors to Meskell's (2009a) volume, for example, discuss these issues as aspects of "cosmopolitan archaeologies," while Sillar (2005) discusses them from the perspective of "public archaeology." In a recent discussion on the incorporation of local interpretations within archaeological reports and museum displays, Chirikure and Pwiti (2008) referred to their subject as "community archaeology" and were promptly criticized for failing to move the debate beyond the realms of "cultural resource management" (Phillips 2008). Discussing this same issue, Gnecco and Hernández (2008:454) refer to research that explores how the discipline has helped oppress the indigenous "other" as "decolonized, reverse, [or] applied" (462). Erickson (1998 [1992]) and Kendall (2005), in contrast, use the term "applied archaeology" to refer only to projects that seek to reapply past technologies or practices (the sense it which it is used here), while Lozny (2006) employs "applied archaeology" to refer to historical ecology, heritage management, and to modern development mitigation projects, the latter the sense in which it is used by, among others, the Centre for Applied Archaeology at University College London. In answer to the self-posed question "is archaeology useful?" Dawdy (2009:141) concludes that it can be and coins the term "futurist archaeology" to refer to any approach that references data about the past to guide current policies.

Disagreements as to terminology and nomenclature may therefore contribute to the conflation of arguments, but it should be stressed that this is not merely a question of a potentially confusing plethora of terms because these various issues are interrelated. Nicholas and Bannister (2004:340–341) and Sillar (2005:87), for example, note that debates over bioprospecting (or "biopiracy" if this equally value-laden term is preferred) would seem to demand an archaeological contribution since attempts to assert local ownership of specific plants or plant uses are likely to require that the protagonists demonstrate historical precedents of exploitation (see also Agrawal 1995:422; Dove 2006:195; Nazarea 2006:322–323;

Ouzman 2005). Furthermore, this line of reasoning might become an issue for archaeology (or at least for heritage management) because indigenous knowledge could be taken to include "not only the intellectual tradition itself (i.e., the information preserved and transmitted) but also the traditional use sites that are the geographic expressions of that knowledge" (Nicholas and Bannister 2004:334; for a similar argument at a landscape scale, see Nazarea 2006:328). Moreover, it is clear that attempts to settle such disputes raise epistemological issues; for example, where western courts have rejected as mere hearsay attempts to prove precedents of ownership by citing oral histories (Sillar 2005:77). It is thus entirely understandable that these various issues have been discussed from different perspectives employing different nomenclatures, especially given that near identical topics may be discussed under apparently very different headings.

For a striking example of this note the similarity of the UN's (1992:26.1) definition of "indigenous knowledge" and UNESCO's (2003) outline of "intangible cultural heritage": the former states that indigenous groups "have developed over many generations a holistic traditional scientific knowledge of their lands, natural resources and environment" (UN 1992: 26.1; reaffirmed 2002), while the latter defines intangible cultural heritage as "the practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artefacts and cultural spaces associated therewith—that communities . . . recognize as part of their cultural heritage" and considers that these are manifested in "knowledge and practices concerning nature and the universe" (UNESCO 2003; also quoted by Sillar 2005:85). Under these definitions "indigenous knowledge" and "local heritage" appear synonymous, but this does not mean that archaeological approaches to "heritage" (itself a nebulous concept) can be unproblematically applied to studies of local knowledge.

The use of terms such as "tradition," "indigenous," and "history" within definitions of contemporary practices is thus not necessarily sufficient to make these modern activities direct archaeological concerns and certainly does not suggest that all areas where these terms are applied are susceptible to the same modes of analysis. Nazarea (2006), for instance, uses the term "memory" to refer to both oral history (235) and to local resource-use strategies and technologies (237). It can certainly be argued that these concepts have features in common—both being relearned, reevaluated, and perhaps adapted or distorted on at least a generational basis (Ingold 2000:138)—but is it useful to equate personal memory to a community's history or to local technical solutions to pragmatic problems? The position here is that it is not, primarily because the criteria for judging the validity of a particular history or the utility of a particular technology may differ markedly.

Much of what follows is, in essence, an extension of this line of inquiry, since it will be argued that archaeological approaches to local knowledge can be grouped on the basis of how closely they adhere to the process of western historical knowledge production. Seen from this perspective, the three broad projects referred to here as the usable past, applied archaeology, and hybrid archaeologies can be seen as existing on a sliding scale, with the usable past indistinguishable from the western knowledge-production process from which it draws both its authority and utility; with applied archaeology diverging from this procedure in the way that it employs ethnographic and experimental observations to produce functional models rather than authentic reconstructions; and with proponents of hybrid archaeologies attempting to push the bounds of this process of knowledge production, in some instances through an avowedly postcolonialist approach designed to challenge the hegemony of western archaeology and historiography. One cause of confusion and conflation is therefore where individual writers either inadvertently jump between the stages of this sliding scale or where writers tack between these stages without making it sufficiently clear that they are simultaneously discussing two or more of these projects.

To finally return, then, to the issue of the broader terminology employed here, it should be acknowledged that all such terms are value laden, none of them is perfect, and most are quite meaningless if taken literally (local to where? west of what?). For no better reason than simplicity of language, this paper predominantly uses "local" as a synonym for "indigenous" and in opposition to "western" but acknowledges that western scientific conceptions are no less local in origin (e.g., Derrida 1982 [1972]; Foucault 1974). The use of these terms should not be taken to imply homogeneity between differing non-western worldviews (Agrawal 1995); does not suggest that non-western conceptions are somehow more limited in scope than "scientific" knowledge; does not preclude the possibility that local knowledge might be regarded as scientific; recognizes that local "folk" traditions persist within the developed world; and notes that individuals within any given society might employ different and potential contradictory conceptions in different circumstances (e.g., Sperber 1982).

Causation, Plausibility, and the Production of Historical Knowledge

> *Historical thought is always of the past, of something which can never be to the historian a this, because it is never here and now. The events which he studies are events no longer happening, the conditions he describes are conditions no longer in existence. History is a standing refutation of all theories which describe knowledge as the apprehension of an object which, to be apprehended, must exist, or think of subject and object as somehow compresent in one environment.* (Collingwood 1999 [1935]:168–169)

If, as has just been contended, archaeological approaches to local knowledge can be grouped by their level of adherence to the conventional process of historical knowledge produc-

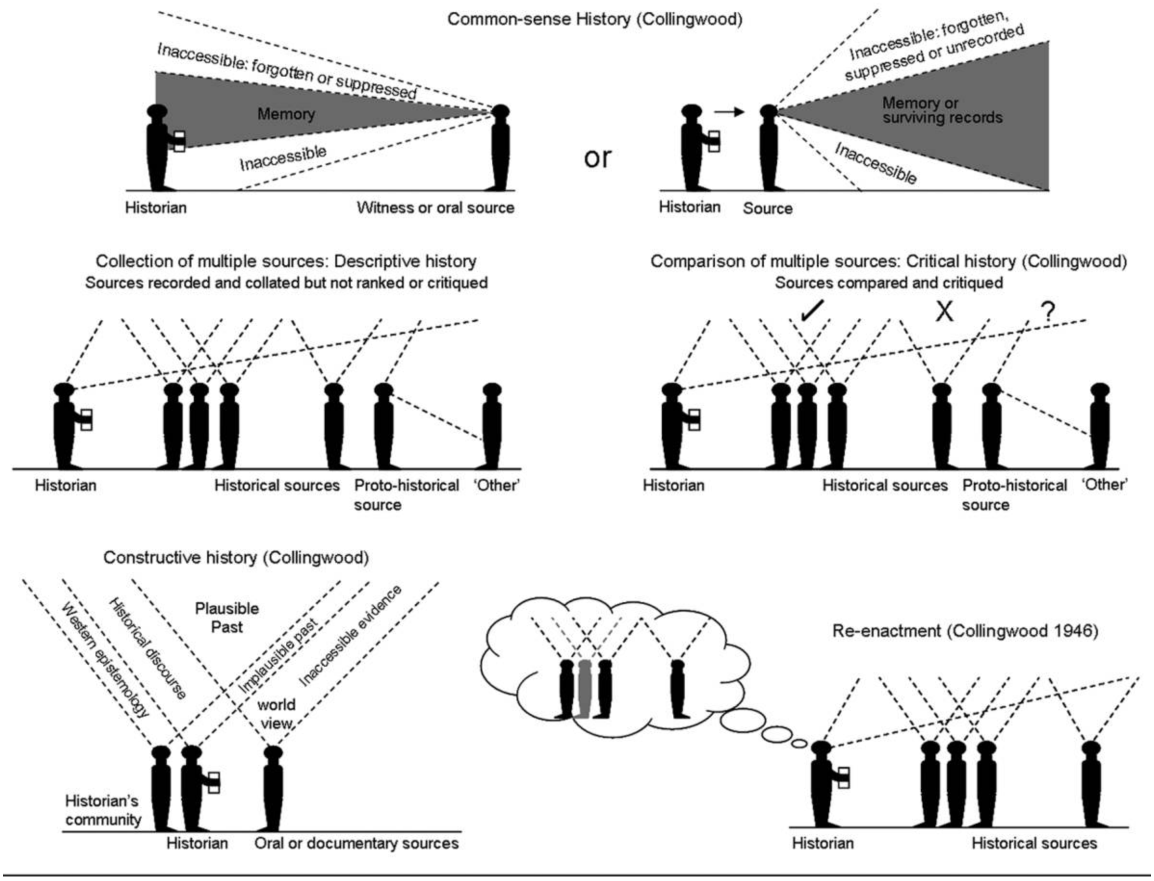

Figure 1. Approaches to historical knowledge.

tion, what does this process entail? There are clearly may ways of answering this question, but the one employed here follows that proposed by Collingwood (1940, 1999 [1935], and see also 1946), an analysis that is particularly apposite to the current discussion because Collingwood demonstrated the lack of a fundamental difference between archaeological knowledge and knowledge of the past based on linguistic sources and was an early exponent of the use of oral traditions and testimonies (including myths and fairy tales) within conventional western historical interpretations. The suggestion that local conceptions of the past should be incorporated within archaeological interpretations is thus neither as controversial nor as innovative as some more recent writers seem to imply (e.g., Damm 2005; Harris 2005). For the purpose of this discussion it is thus possible to treat archaeology and history (henceforth referred to here as historiography as a means of distinction) as two aspects of historical research, since both disciplines share the primary aim of attempting to elucidate the nature of events and processes in the past. Indeed, since all of the approaches summarized above are concerned with how archaeological data relates to modern communities, all such inquiries are likely to encounter local interpretations of the past, the evaluation of which (even if it is mere dismissal) is unquestionably an act of historical interpretation. At the risk of restating what are now well-established principles, it is therefore worth examining the process by which the western historical disciplines produce knowledge about the past and to ask whether there is something unique about historical knowledge as a concept.

In order to define the process of historical knowledge production, Collingwood first examines the problems with what he terms the "commonsense" theory of history (see fig. 1), according to which the role of the historian is simply to collate the memories of individuals who are in some way acquainted with the events in question. This simplistic approach is rejected on the grounds that it elevates all sources to the status of objective authorities, ignores the problem that the historian may need to select only elements of the available sources (see also Carr 1961), assumes that contradiction between sources will be limited, and does not allow for the contribution of nonlinguistic (archaeological, pictorial) sources of evidence. Under this conception it would be impossible for the historian to discover anything that had not been known previously by those involved in the production of the source material, whereas the critical examination of historical evidence clearly can produce information that was unknown at the time this evidence was generated, an ability that has an obvious relevance to debates regarding assessments of resilience or the reapplication of indigenous knowledge, since it allows for the possibility that those involved in a particular resource exploitation strategy may themselves be unaware of the broader economic, political, or environmental factors that influenced their economy. The historian may, therefore, be the first person to gain this knowledge, but note too that in rejecting the commonsense view the historian might discount as implausible the historical narratives presented by some or all of the available sources. Those who advocate the inclusion of local histories within archaeological interpretations as a means to show respect for indigenous conceptions may therefore still be engaged in the production of orthodox western histories, as is evidenced by the assertion that indigenous conceptions should be "tested" (Andah 1995:174; cf. 159) or that archaeology should seek to "confirm" oral histories (Harris 2005: 37; see also Echo-Hawk 2000:287; Schmidt 1995:146; Watkins 2005; Zimmerman 2005:308; for similar discussions, see Layton 1994:12–14; Vansina 1985).

The process by which this testing or confirmation is undertaken requires additional clarification, but it is significant that claiming the authority to do so is based on ownership of the method of evaluation, not on a claim to ownership of the sources. This is, of course, equally true of cultural/social anthropology, as indeed has been discussed in relation to the production of "polyphonic" or "dialogic" ethnographies (e.g., Clifford 1988:46–50). It is nevertheless a conflation to suggest that concessions by archaeologists regarding the reburial of human remains may lead to similar compromises concerning interpretations of the past (Damm 2005:80, citing Zimmerman 1997). These two issues are simply unrelated, reburial being a political concern pertaining to archaeology only via the discipline's self-defined notions of stewardship (for which see Wylie 2005), whereas the interpretation of history is a matter of epistemology. The return of archaeological collections or offers to relinquish control over sites thus merely requires concessions on what are entirely ancillary roles performed by archaeologists and indeed might be regarded as something of a political sop designed to forestall or avoid claims to resources of greater economic value (McGhee 2008: 592–593, citing Trigger 1997) or might be seen as self-interest on the part of researchers keen to negotiate access to particular areas or artifacts (Gnecco and Hernández 2008:452; McGhee 2008:594). "Compromises" concerning interpretations, on the other hand, would represent not merely reinterpretations or the acceptance of the incomparability of alternative worldviews but would require the historian to redefine the tenets of logical coherence and evidential constraint that form the basis of the historical method.

To approach this last point from a slightly different direction, the rejection of commonsense history and the realization that the historian is producing original ideas about past events serve to highlight that the process of writing history is always an act of interpretation and hence that historical narratives are constructions rooted in the present rather than wholly objective reconstructions of the past. Such a statement is neither new nor controversial. Nevertheless, this simple conclusion remains the obstacle that proponents of hybrid archaeologies have to overcome, because the process of evaluating the plausibility of historical sources requires interpolative or extrapolative inferences that are based not on the experiences of the sources but on the experience of the historian (e.g., Collingwood 1999 [1935]:150—see fig. 1), a point that is most obvious when considering different approaches to causation, since individuals may employ different criteria of plausibility in different circumstances, and what is considered plausible results from culturally and contextually specific notions of cause and effect (Sperber 1982:48).

Collingwood's (1940:285, 287) identification of three senses of the word "cause" in English helps illustrate this point: the first is the historical sense (referred to below as sense I), in which an event provides an individual with the motive for a resultant action; the second is that in which an individual agent applies perceivable natural laws to bring about an event (sense II), while the third sense is the "pure" physical causational effect that need not require human agency or observation (sense III). For example, the belief maintained by various east African agricultural communities that certain individuals are capable of inducing rainfall forms a central role in historical analyses of power relationships in these societies (e.g., Feierman 1990). Note, however, that a historian with a grounding in western science is likely to treat rainfall in terms of sense III (as a natural phenomenon) and human reactions to it via reference to sense I (in this case, perhaps, that the need for rain provided a motive for some individuals to supply that need, or at least to claim an ability to do so, while others were given a powerful reason for paying for that service). The local conception of rainfall, in contrast, involves Collingwood's sense II (an individual manipulates the environment to bring rain). In attempting to produce a plausible historical narrative, therefore, the historian is obliged to reject the notion that an individual in these societies could affect the weather on the grounds that the historian's conception of the way in which the physical world operates contains no mechanism by which this manipulation could occur.[2] The implausible elements of the local narrative nevertheless remain crucial in reaching an understanding of how the historical actors might respond to, say, a prolonged period of drought.

In terms of the current discussion, the foregoing has three main ramifications. First, this potential contrast between the local and western accounts points to a fundamental difference between the production of historical narratives and the application of that knowledge, because the construction of a historical account requires information regarding the local conception of causation in order to understand the motives

2. Though note too that within western science gravity serves as an example that failure to identify a mechanism does not necessarily invalidate an observation.

behind local decisions, whereas a historian involved in the application of historical knowledge may have the luxury of regarding the indigenous conception of causation as largely superfluous. Note, for instance, that in discussing the possible benefits of learning from local agricultural knowledge, Sillitoe (1998:226) comments that beliefs in weather manipulation held by some New Guinea highlanders would be of only indirect interest to those seeking to apply anthropological research because, bluntly, "from a scientist's perspective, people who believe these practices influence the weather are wrong." Although not a historical example, the principle here is the same: failing to record or account for the influence of these beliefs on agricultural practices would be poor descriptive ethnography, but such information is nevertheless essentially insignificant if the aim is to identify valuable indigenous technologies or techniques. Similarly, Needham (1976) has critiqued earlier western descriptions of head-hunting in Borneo because these described head-hunting as conferring well being on the hunter due to the "life force" of the victim being retained in the captured head. Needham, however, heard no reference to either this force or to the notion that captured heads act as receptacles and concluded that earlier descriptions inserted these elements because the western conception of causation requires a mechanism for a physical action to have a physical effect. Thus, while Needham (1976) critiques earlier ethnographies for inserting a causative supernatural mechanism absent in the indigenous account, Sillitoe (1998) proposes to deliberately ignore an indigenous mechanism because it has no western correlate. The stances adopted by Sillitoe and Needham are not necessarily contradictory, however; they are simply the result of pursuing different projects that employ different criteria of success: the former prioritizing the functionality of local knowledge, while the latter is concerned with the description and translation of local practices to an external audience.

A second issue of relevance is that the existence of multiple causational schemas poses problems for advocates of hybrid archaeologies. As with the rainmaking examples, the major stumbling block here is the maintenance of beliefs in chains of cause and effect that would require a mechanism not recognized by western empirical science. The suggestion that historical evidence witnessed during shamanic dreams should be heard in Canadian land rights cases serves as an example of this (Brody 2001, cited by Kuper 2003:391), as would Keesing's (1990) account of an attempt by the Kwaio Fadanga of the Solomon Islands to claim compensation for damages sustained as a result of a punitive expedition that followed the assassination of a British district officer in 1927, a petition that could not be accepted in its original form because it included a demand for reparations for the lives and property lost at the time of the assault as well as for the subsequent deaths of individuals killed by ancestral spirits whose shrines had been desecrated. Both of these cases thus face the problem that the legal systems asked to adjudicate them do not recognize the mechanisms on which these claims rely (see also Nicholas and Bannister 2004:331, 334, regarding the rejection of nonlinear views of time in international law). When writers such as Damm (2005:78–85) and Schmidt (1995:120) talk of "negotiating" interpretations of the past, therefore, it is not clear on whose terms or on what common ground they feel this negotiation will take place (cf. Appadurai 1981:1; Rappaport 2008:459; Watkins 2006:999).

Third, the need to have access to local conceptions of causation in order to interpret the actions of individuals or communities in the past demands a consideration of the archaeological visibility of such conceptions. The pivotal role played by ethnographic and historical analogies in archaeological interpretations is no doubt sufficient to demonstrate that such conceptions are generally archaeologically invisible or highly ambiguous, and this in turn acts to qualify claims that archaeology might be capable of helping to "repair" or "restore" lost local conceptual or religious knowledge (e.g., Atalay 2006: 295). More fundamentally, it also serves to illustrate that the process of constructing archaeological knowledge is essentially the same as that employed by historiography, since to claim that archaeology is more objective on the basis of the materiality of its source material (e.g., Shanks and Hodder 1995: 20) ignores the fact that importing ethnographic, ethnoarchaeological, or historiographic data effectively introduces a third subjective perspective: not just archaeologist and subject community but archaeologist, subject community, and ethnographic or historical "other" (see fig. 2).

By way of summary, then, the production of historical knowledge as defined by Collingwood can be argued to be unique because it involves the evaluation of testimony-based sources of evidence and material indices of the past via conceptions of reality that are verified through direct observation but may not be shared by the modern and past societies that form the historian's object of study. At one level, then, this process of evidence analysis represents familiar questions regarding the identification of deliberate, unwilling, or observational biases on the part of witnesses, or of biases of recovery or preservation in the case of material remains. However, to accept that sources are subject to critical examination, be that an appraisal of whether a statement is "true" or an assessment of the validity of archaeological data, is to accept that the historian is bringing something to the inquiry that is not inherent in the sources themselves. The historian is not looking for a quality within these sources—truth or fact—but is attributing this property to them. Historical claims to authority are thus founded on the ability to draw together what are potentially two competing claims to knowledge in the form of empirical observation on the one hand, and the collation of testimonies (whether directly or via analogy) on the other. Yet because western historiography and archaeology both employ scientific notions of causation, the historian must prioritize the former. Statements that are incommensurate with the historian's conception of reality have to be treated merely as contextual information rather than as factual statements pertaining to past events.

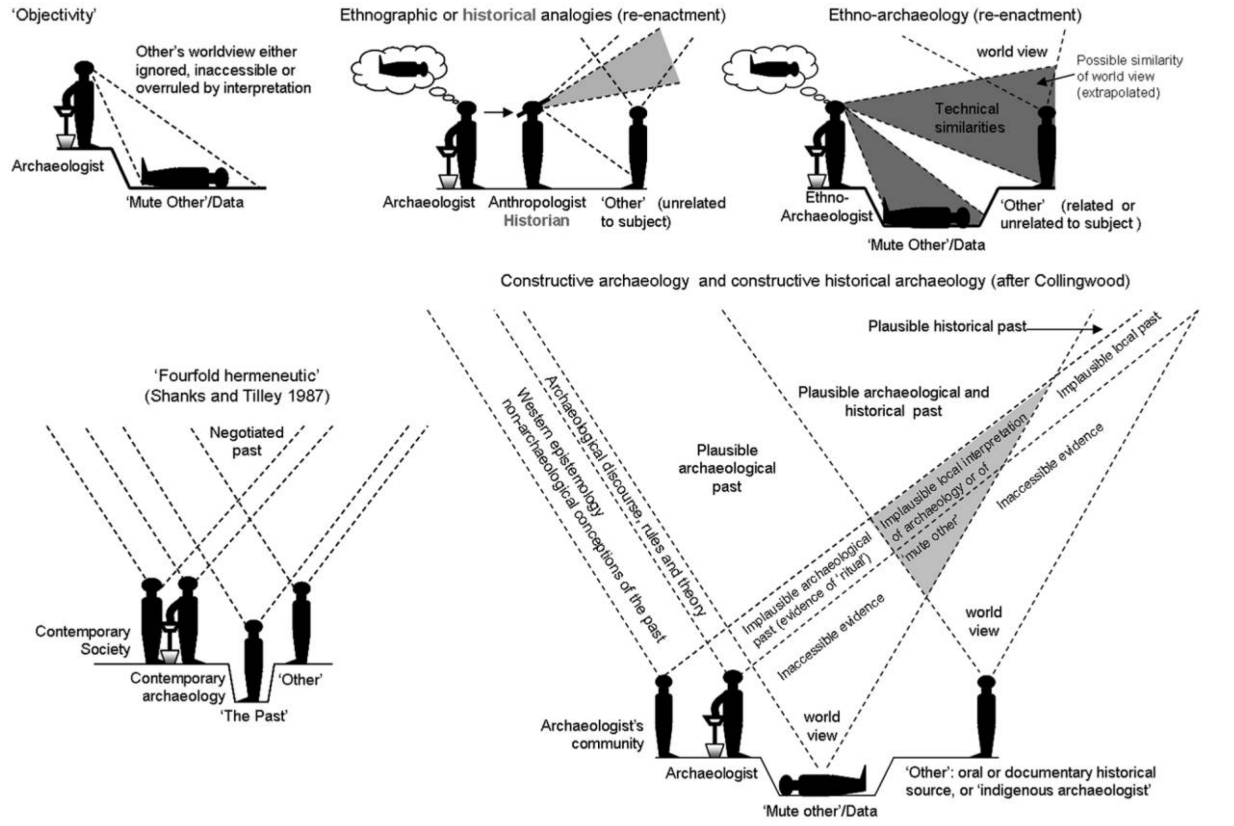

Figure 2. Archaeological approaches to local knowledge and to "the past."

The relationship between empiricism and historical knowledge is not direct, therefore, but the concept of observation is always invoked, albeit generally through the vague notion of plausibility. It is for this reason that Collingwood, following Kant, characterizes historical knowledge as *a priori*, by which it is not meant that claims about the past are simply produced deductively but rather that the nonexistence of the past means that it cannot be directly experienced by the historian (at least in western conceptions), and thus any image of it cannot be properly considered to be empirical. However, this distinction between a priori (or transcendental) and empirical examinations of the validity of concepts is fragile because perceived empirical information from the historian's own experiences, together with the collective experiences of the wider community, informs the assessment of what is plausible. Indeed Kant (1993 [1781]) is unequivocal that knowledge can only be achieved through observation and experience but notes that transcendental inquiries offer the ability to conduct investigations into unobserved or unobservable events by asking the question, under what conditions could such an event be experienced? It is in this sense that Collingwood refers to historical knowledge as a priori and, moreover, it is the reason why Collingwood repeatedly emphasizes that historical knowledge requires empathetic imagination. This process of empathy, termed "re-enactment" by Collingwood (1946), allows the historian to take account of implausible elements within the narratives presented by sources and to use these to establish the motivation of human actors while still maintaining the hierarchy of knowledge that prioritizes empiricism. There is, therefore, an idealist element to Kant's philosophy and in Collingwood's invocation of it, insofar as both recognize that something can only be known if it exists in space and time and is thus perceptible, with the caveat that these observations can lead to an understanding of the unobservable, providing that it is recognized that such an understanding cannot be in abstraction from the inquirer. In short, since conceptions of the past are projections of a perceived reality, differences in how that reality is perceived will lead to images of history that diverge from those produced by western historical research. Thus, western historiography and archaeology never produce an "indigenous past," merely a "past of the indigenous."

Once again, of course, this last statement can hardly be regarded as controversial. It is nevertheless significant in view of recent critiques of indigenous archaeology (e.g., McGhee 2008) that Collingwood's description of historical knowledge production is a cultural relativist position, since highlighting the effect of the historian's presuppositions on the resulting interpretation recognizes that alternative worldviews exist within different cultures and acknowledges that competing accounts may be equally correct (i.e., equally internally consistent) in their own terms. The western account cannot be said to definitively invalidate a local account, therefore, in part because it is impossible to empirically demonstrate the nonexistence of phenomena such as supernatural forces but in essence because lack of consensus as to the presuppositions of the competing accounts means they cannot be discredited to the satisfaction of their proponents. It follows, too, that relativism is itself an empirical position in that it results from the observation that different cultures may employ mutually incommensurate concepts, and it arises from precisely the sort of detailed examination of the context of observation and inquiry that is the basis of the historical method.

This issue will be returned to below. For the moment, however, it is worth reiterating that Collingwood's account of the process of historical knowledge production points to a fundamental distinction between applied archaeology and the usable past, because the former may chose to ignore aspects of local epistemologies that are incommensurate with those employed by a western historian, justifying this decision on the grounds that such projects are interested in studying functional technologies and techniques that may be of benefit to modern communities. The next section aims to explore this topic further.

Applied Archaeology and Archaeological Visibility

> *Because most of ancient African history is accessible only through archaeological approaches, there is compelling reason to refocus attention on archaeological constructions of the past as a means to build an independent, authentic and distinctly African history. At the same time, archaeology is a distinctly Western activity. Its governing paradigms and epistemologies often conflict with African historical needs, views of the past, and ways of structuring time and space. Thus the paradox unfolds: a repertoire of techniques and approaches that promise significant ways of recuperating African pasts heretofore obscured is accompanied by theoretical assumptions that are often out of tune with African sensibilities, needs, and structures.* (Schmidt 1995:119)

> *Only by digging into the conceptualizations of rural and urban African societies, especially as expressed in ethnographic and oral historical sources, can we gain entry into the fabric of African knowledge systems. . . . Understanding those knowledge systems is a firm basis for learning the social and environmental plans and designs of past populations and for formulating actions for social and environmental planning today.* (Andah 1995:173)

The two statements above originated from a seminar that aimed to explore issues arising from the use of the essentially western disciplines of archaeology and history in non-western settings. In summing up the discussions at this meeting, Wylie (1995:267) reports that the participants issued a series of recommendations, including an "insistence" that historical research should prioritize questions that are "relevant" to local communities and should thus be carried out "for the people." In Andah's terms, archaeology should be striving to produce a "usable past," defined as a past "that does not merely instil pride" but that also helps "fight 'cultural poverty' and negotiate justice at both national and international levels" (Andah 1995:151). By offering a far greater time depth than document-based historical studies, it is asserted, an archaeology informed by oral history can "create new and socially responsible knowledge unconfined by the colonial library" (Schmidt 1995:136), thereby challenging received notions that precolonial societies were characterized by a lack of economic and technological innovation.

The ambitions and language used at this seminar thus have clear similarities with more recent discussions on related themes (e.g., Atalay 2006; Gnecco and Hernández 2008; Nazarea 2006; Nicholas 2005; Smith and Wobst 2005a; cf. Schmidt 2006:180–183). Indeed, like Andah and Schmidt, several of these more recent discussions attempt to simultaneously tackle what are here described as three distinct projects: the possibility that archaeological interpretations could incorporate local conceptions of time or causation (referred to here as hybrid archaeologies); the use of conventional western historical data to challenge erroneous assumptions or interpretations of the non-western world (the usable past); and archaeological examinations of local technologies or resource-use strategies that may have practical benefits for modern communities (applied archaeology). To do so, however, presents a potential contradiction, because to call for the creation of hybrid archaeologies is to suggest that western archaeology is in some way inadequate, thereby undermining the authority on which the usable past and applied archaeology rely. Or, to put that another way, to call for the incorporation of local conceptions within western historical interpretations is to risk undermining one's authority as a historian, because the historical method requires the rejection of any conception of reality that conflicts with one's own.

This contradiction need not arise provided it is made clear that these conflicting approaches are distinct projects. Yet this is not always the case. Note, for example, that in the quotation that heads this section Schmidt (1995:119) describes this issue as a paradox and raises the issue of epistemological incommensurability by acknowledging the existence of possible conflicts between western and African worldviews. Yet Schmidt (1995:120) also states that "my approach emphasizes the importance of African contexts and distinctive values of time and space in negotiating interpretations of the African past" without making it clear how this has been achieved, whether or how this has avoided compromising the tenets of western historical knowledge, or with whom this negotiation has taken place. Moreover, despite this talk of negotiation, Schmidt's approach to making archaeology more relevant to contemporary African communities also involves a conventional historical critique of the political legacies effecting archaeological practice in former colonial settings (an approach that precludes negotiation and would here be termed the "usable past") and includes a suggestion that archaeological research could further contribute by investigating technical aspects of indigenous knowledge (or applied archaeology), for which Schmidt proposes an example from his own work that helped define unique preheating techniques used by precolonial iron smelters in Tanzania. Similarly, although the quotation from Andah (1995) above explicitly mentions African knowledge systems (note the plural), there is no subsequent discussion of how these will be employed within archaeological projects nor how this will avoid falsely homogenizing a rich diversity of belief systems (though on this point, see Schmidt 1995: 145, citing Andah 1987). Instead, subsequent discussions focus on the less theoretical and more achievable aims of producing usable pasts or contributing to studies of indigenous technical knowledge, for which Andah (1995:165) offers a West African example, stating that "the drought phenomenon in the Sahel . . . either would not exist or would not be so severe if the time-honored conservation programs of local people had been treated with more respect by the 'advanced' technological powers."

The contention here, then, is that archaeology can play a role in issues relevant to contemporary local societies but that this role differs depending on the task at hand, and that it is potentially detrimental to confuse these tasks. This is perhaps most obvious where archaeologists attempt to play to the discipline's strength of defining technological change or continuity through time, since to do so also emphasizes the discipline's weakness in discerning conceptual knowledge. This, in turn, serves to highlight issues of archaeological visibility and illustrates how applied archaeology projects differ from conventional archaeological inquiries. Thus, although Schmidt (1995: 138) may be right in asserting that modern iron production could learn from local technical solutions developed in the precolonial period, archaeological and ethnographic studies of African ironworking demonstrate that this technology is deeply enmeshed within local epistemologies and cosmologies. Conventional archaeological inquires may require this conceptual information; applied archaeology projects may not.

It is noteworthy, therefore, that Rowlands and Warnier's (1993:536) study of African ironworking identified three ethnographic approaches to understanding the cosmological elements to technological processes: the first considers the nonessential "ritual" activities that accompany technical operations as merely a method of protecting trade secrets by interweaving them with arcane and obfuscating behavior; the second regards the nontechnical component as a technology in its own right; the third looks upon the ritual component as providing an explanation for the transformative processes involved in industrial or agricultural production and thus also provides a suite of mnemonic devices that ensure procedures are carried out at the right time and in the right order. In terms of the current discussion, however, it is perhaps more noteworthy that the three approaches identified by Rowlands and Warnier are all archaeologically invisible and are all functionalist explanations: all effectively assert that the local account of behavior is mistaken on the grounds that the true function of some aspects of the process could only be discerned by the external observer. Thus even the interpretation that gives most respect to local conceptions and technologies does so by noting that the "magical" components are necessary to avoid contradicting the wider epistemological framework that produced them. In other words, the *techne* is understood from within the structure provided by a local *episteme* and therefore includes processes that are epistemologically necessary rather than technologically superfluous (for agricultural examples, see Rowlands and Warnier 1993, citing Evans-Pritchard 1937; Sillitoe 1998:228, citing McCall 1995).

Rowlands and Warnier (1993:539) nevertheless later question why "some societies have developed their magical constructs out of proportion, and beyond what seems to be functionally adequate for grasping the technical processes" and thereby could be accused of undermining their own thesis that it is analytically unhelpful to attempt to separate technology from epistemology. Such an assessment, however, would be to confuse two distinct projects: from an ethnographic perspective, separating the ritual and productive elements would indeed be a poor description and thus misrepresent local practices, but recourse to one's own conception of causation is a necessary and inevitable step in translating these processes for presentation to your home audience and is an essential progression in the ethnographer's attempt to reach an understanding of local activities and beliefs (see fig. 3). In other words, a method of verification akin to Collingwood's outline of historical knowledge production is employed: the local conceptual knowledge is overruled by that of the external observer or is translated (however imperfectly) into a form that can be understood by the ethnographer's audience. If one is merely concerned with assessing how the technology functions, in contrast, this cultural data is merely the superfluous paraphernalia that is left over after those behaviors with physical causative outcomes have been defined.

At the risk of repetition, then, there is a clear distinction here between applied and "pure" archaeological approaches, since any project attempting to pursue Schmidt's (1995:138) suggestion that technologically innovative aspects of precolonial smelting practices offer lessons for modern smelters is likely to focus on understanding the physical and chemical transformations that take place in the furnace and is likely to judge the success of its endeavors by whether or not modern smelters accept the benefits of this innovation and adopt these practices. Research projects into gender symbolism in furnace design or sexual abstinence by smelters—however historically and ethnographically interesting in the

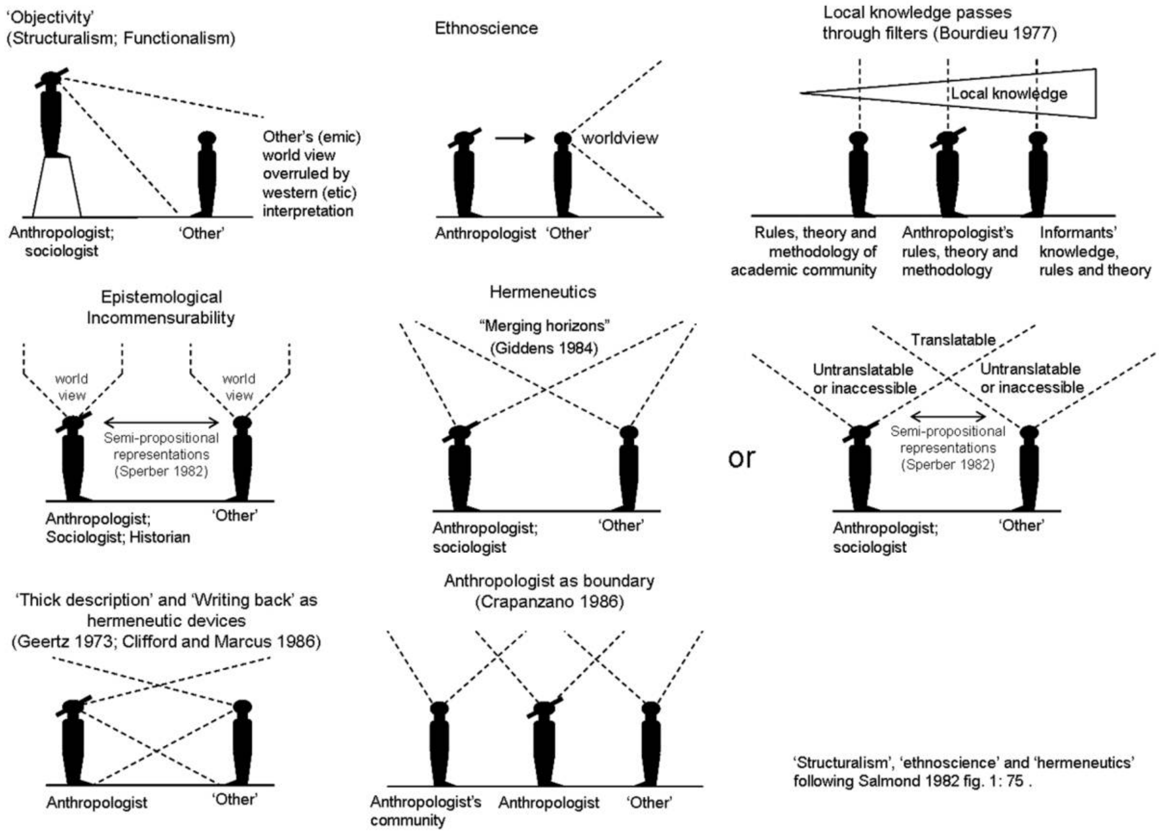

Figure 3. Anthropological and sociological approaches to local knowledge.

context of African traditional ironworking—are thus likely to be ancillary concerns. A more conventional archaeological project, in contrast, is likely to consider that it has failed in some way if it does not at least attempt to account for such symbolism or to consider what this might tell us about the broader society in which these activities take place. An applied archaeology project of this sort would thus fulfill Schmidt's (1995:137) aim of "understanding what 'inherent scientific values' underlie and unify experimentation with the natural world," but it could not be said to emphasize "the importance of African contexts and distinctive values of time and space" (120).

Although there are still no examples of an archaeology-led project that has attempted to learn from and reapply historic technologies of this kind, there have been projects that have tried to rehabilitate abandoned agricultural technologies and techniques in situ (e.g., Erickson 1998 [1992]; Kendall 2005; Spriggs 1981). As one might expect, these projects have paid little or no attention to the epistemological or cosmological frameworks that produced the technologies they seek to replicate, focusing instead on these technologies themselves and on the social and economic practices that built and maintained then. Unlike an applied ethnographic initiative, however, it is not so much that these projects chose to ignore local beliefs that have no western functional correlate but more that the limited archaeological visibility of these conceptions means that applied archaeology projects may simply not encounter them directly. As noted, this does not necessarily pose a problem for an applied project in the way that it would for a more conventional archaeological attempt to reconstruct the past, because applied projects are likely to judge success by an ability to produce positive material outcomes for their host communities. Such projects thus exceed archaeology's aim and function of defining the nature of events in the past by including an additional concern with what could happen in the future. Note, for example, that by the end of Erickson's raised field rehabilitation project in Andean Peru, this initiative had begun to experiment with the cultivation of Old World crop species that would have been unavailable to the communities that first built these structures (Erickson 1994), thereby moving beyond the original objective of defining how the system functioned in the past to assessments of how raised bed agriculture could be most productively employed in the future.

Note, too, that Erickson's (e.g., 1998 [1992]) initial attempts to reconstruct and cultivate abandoned raised fields were undertaken as an exercise in experimental archaeology designed to provide precisely the sort of social and technical details that could not be discerned through the archaeological data alone—in this case, field function, crop yields, fertilization regimes, and labor requirements, though details of irrigation schedules, crop rotations, pest control, crop interplanting, and fallowing cycles are also clearly significant. To turn to experimental evidence and ethnoarchaeological observations to fill these knowledge gaps is entirely pragmatic and is a completely conventional and integral part of historical knowledge production, since all historical interpretations employ indices of the past combined with models of behavior either drawn from the present or seen from the perspective of the present. Equally, as with other historical investigations, such projects assess the relative quantity of data drawn from the past and the present to produce interpretations with varying degrees of historical certainty expressed as either "what happened," "what probably happened," or "what may have happened." However, unlike conventional archaeological research, applied archaeology projects may also reference modern data sources not because these make the resultant models more accurate or authentic (i.e., a better reflection of the past) but solely on the grounds that they make the model function. Their criterion of success is thus quite different from that employed by conventional archaeology, with this difference also prompting a distinct change in their relationship to modern indigenous knowledge: no longer simply a source of analogies to guide interpretation, it is treated instead as a body of accumulated wisdom essential to produce a modern functioning economy.

The two aims of reconstructing the past and informing the present are not mutually exclusive, of course, and indeed Kendall (2005:211) notes that the experience of rehabilitating and using Inca terraces and irrigation channels in Peru "also became a feedback to help in the interpretation of the archaeological data." Moreover, it is clearly in the interest of these projects to gather as much archaeological information as possible and to integrate archaeological and paleoenvironmental evidence, since applied projects substantially strengthen their advocacy of indigenous agricultural technologies if they can demonstrate that these techniques have proved economically and environmentally sustainable in the past (e.g., Minnis 2000). Nevertheless, it is clear that these previous attempts to reapply abandoned agricultural techniques do not represent the reuse of ancient indigenous knowledge but are instead the application of an archaeological interpretation or the application of selected aspects drawn from such an interpretation. By prioritizing success defined through benefits, and by relinquishing the claim that the resultant models are accurate reconstructions of the past, these applied projects are therefore distinct from both conventional archaeology and from what is here termed the "usable past." Perhaps as important, the fact that these applied projects relied so heavily on ethnoarchaeological and experimental data acts to qualify any claim that archaeology can unproblematically see indigenous knowledge in the past. Given that proponents of development and conservation based on indigenous knowledge often implicitly or explicitly reference the longevity of a particular mode of resource use in promoting its extension (Stump 2010), it is therefore worth examining how the archaeological visibility of local practices affects this line of argument.

The Usable Past: Historical Ecology, Resilience Theory, and Historical Critiques of Contemporary Narratives

The above outline of historical knowledge production notwithstanding, the majority of people wishing to reference historical information in contemporary settings are unlikely to place any great significance on whether understanding of the past is empirical or a priori. Rather, their interest stems from the fact that time is an essential qualifier for any number of questions of contemporary importance, including climate change, biodiversity conservation, the identification and management of sustainable resource use, and—as touched upon previously—issues surrounding the local ownership of land, technologies, and genetic resources via examinations of when and by whom these were first exploited. Archaeology evidently has a role to play here, not least because it is impossible to invoke concepts such as conservation or sustainability without reference to the need to balance short-term gains against long-term resource maintenance. To say that a particular strategy is sustainable is thus to assert that it is predicted to survive the test or time, or that it has already survived that test. Moreover, to assert that a system has proved sustainable in the past is to invite the subquestions: sustainable for how long; sustainable for what size of population; and sustainable under what economic, environmental, and climatic conditions?

Seen from this perspective, studies aimed at assessing long-term sustainability are essentially examinations of human-environment interactions over time, and it has thus also been argued that archaeology is well placed to take a lead in such research on the grounds that it offers great temporal depth and straddles the physical, social, and environmental sciences (e.g., van der Leeuw and Redman 2002:599). Indeed, it is arguably essential to integrate long-term social, technological, and ecological data into assessment of sustainability since few if any modern environments can be described as unaffected by previous periods of human exploitation, a point that forms a founding hypothesis of historical ecology (Balée 2006) and is also highlighted by proponents of reliance theory (e.g., Costanza et al. 2007; Holling, Berkes, and Folke 1998). It is unsurprising, then, that in seeking to identify examples of sustainable and biodiverse indigenous agronomies, a current UN project examining what it calls "Globally Important Agricultural Heritage Systems" recommends the undertaking of a "historical and archaeological description of the system or site" (FAO 2004, annex 17) and notes that "a clear understanding of their history and current trends . . . is essential to identify pathways of evolution that will maintain their resilience and options for the future" (1). The past thus appears to represent a ready-made testing ground for hypotheses regarding the sustainability of local technologies and to offer insights regarding their future resilience by examining how such systems have adapted to previous periods of environmental, economic, or social change.

In the terms used above, archaeology's apparent strength in this area arises from its ability to incorporate the empiricism of physical and environmental science while at the same time engaging in the process of empathetic imagination necessary to re-enact the motivations of human actors in the past. As an aspect of conventional historical knowledge, it has therefore long practiced the process of comparing social data with physical evidence pertaining to technologies, economies, and the environment. Andah's (1995) term the "usable past" thus seems appropriate for projects that reference data about the past to inform the present, since the only thing that distinguishes these projects from conventional archaeological research is that they target questions that may be of use to contemporary societies. Unlike applied archaeology, such projects do not overtly present amalgams of historical and modern sources of data, and unlike discussions of hybrid archaeology, they always present the past as unproblematically singular and objective. The approach thus conforms to the conventional historical method in that although it produces a priori knowledge about the past, this form of inquiry approximates empiricism. Indeed, it is pivotal to the success of this approach that these projects are seen as empirical, because it is from this empiricism that they draw their authority and their ability to communicate with and influence modern policy. Since international policy makers, development organizations, and donor agencies use the same conceptions of causation, logical coherence, and evidential constraint employed with conventional history, it is the command of the historical method and an ability to reconstruct an "authentic" history that gives proponents of the usable past their authority.

This too has been touched upon above in reference to the rejection of local conceptions of time and causation in land rights cases (e.g., Kuper 2003:391–392; Nicholas and Bannister 2004:331, 334; Sillar 2005:77). It is therefore unsurprising that the majority of archaeologists who propose using archaeological data and techniques in assessments of sustainability treat aspects of indigenous knowledge that are incommensurate with their own in the same way: employing these conceptions to explain local actions but rejecting them in favor of their own view when producing accounts of past events. Note, however, that while archaeologists involved in property rights cases are faced with the dilemma of how to give adequate respect to potentially incommensurate views held by communities in the present, proponents of the usable past are primarily concerned with the knowledge systems of societies in the past. Attempts to study the sustainability of local practices will therefore confront the same archaeological visibility issues encountered by applied archaeology projects and arguably face a tougher challenge, since any examination of the resilience of a modern functioning economy by reference to its longevity needs to be confident that the practices evidenced today are not radically different from those employed in the past (e.g., Stump 2010:1256, and references therein).

As with applied archaeology, archaeological contributors to historical ecology or resilience projects may simply not see cosmological, conceptual, or managerial aspects of local knowledge, but it is clear from the ethnographic components to such projects that these elements may be extremely significant. To take an example from one of my own field sites in the Pare mountains of Tanzania, interviews regarding local forest management repeatedly drew the response that the Tanzanian government actively encouraged the conducting of traditional ceremonies and initiation schools within local sacred groves. In reality, however, the government's primary interest is not in conserving the local belief system itself but stems from the recognition that the sacred status of these forest patches protects them from farm encroachment and thus helps maintain habitats within what is regarded as a global biodiversity hot spot (cf. Sheridan 2002). Through an ability to observe local practices in their entirety, an ethnographically informed indigenous knowledge project may therefore be in a position to recognize and support local practices where these are judged to perform some useful function. A purely archaeological project, in contrast, would struggle to perceive such practices and, to stay with the Pare example, would be unable to discern this link between local beliefs, sumptuary laws, and forest conservation. Thus, although paleoenvironmental and geoarchaeological data can demonstrate the longevity of these forests, it is difficult for an archaeological project to distinguish active conservation from mere lack of exploitation.

Discussing the potential role of archaeobotanical research in identifying formerly important crop species that may offer opportunities for future exploitation, Minnis (2004:254) makes a similar observation, noting that reliance on analogies with modern communities may act to limit interpretations of historic societies by masking novel behavior. Of perhaps greater concern, the dependence on ethnographic analogies within archaeological approaches to historic local knowledge risks producing what Stahl (2001:22, 25) refers to as "ethnographic pasts": misleading and circular arguments whereby observations of modern communities inform archaeological interpretations that may then be cited within ethnographic, economic, or developmental discussions as evidence of the continuity of local practices. Stahl's concern here is that this process reinforces stereotypes that indigenous groups are technological and economically static, but this same process also risks giving the false impression that the history of local resource-use strategies are well understood, long-lived, and hence both economically and environmentally sustainable. Archaeologists may be well aware of the problems inherent in such lines of argumentation and be keen to distance themselves from the implication that the communities that form the source of these analogies are themselves "primitive" or relics of some "ancient" way of life, but the danger of these circular arguments might need to be emphasized to those outside the discipline, not least because the act of doing so will also serve to highlight the limited archaeological visibility of many aspects of indigenous knowledge.

To say that "the past" contains data pivotal for sustainability assessments is thus not the same as saying that the historical disciplines are capable of retrieving it at the resolution that assessments of resilience would require, a point made by Dearing (2007:51, 55), who also notes that anomalies in models based on historic data tend to be accounted for as resulting from culturally specific human actions, the exact nature of which may be historically unknown and archaeologically invisible (51). Indeed, despite asserting that archaeologists should take the lead in multidisciplinary projects of this type, van der Leeuw and Redman partially justify this conclusion by noting that "the incompleteness and complexity of the data have led us to rely on others because we know we cannot solve most of the significant problems about the human past with data from our discipline alone" (2002:604).

Although not couched in precisely these terms, concerns regarding archaeological visibility and issues of temporal resolution appear to lie behind Pluciennik's (2009) conclusion that archaeology is not useful or, rather, that archaeologists should not seek out situations where the discipline can be usefully employed, since in most areas other disciplines are better equipped to provide the pertinent information. "I cannot see," he argues, "that it takes an archaeological project to inform us . . . that extensive building on floodplains is likely to end in mishap" (Pluciennik 2009:156). This argument is forcefully and cogently put, but it nevertheless ignores the fact that the past—or perceptions of the past—continue to be marshaled to legitimize modern interventions, most obviously where conservationist projects present landscapes as "untamed" or "virgin" territory despite centuries of human occupation (e.g., Meskell 2009b) or where local exploitation strategies are presented variously as paradigms of long-term resource husbandry or as salutary lessons of disastrous mismanagement (e.g., Lambin et al. 2001). Whether presented from archaeological, historical, paleoenvironmental, or ethnographic perspectives, research that demonstrates the role of historical data in these arguments can reasonably be described as an aspect of the usable past, even if this contribution is simply to point out current deficiencies in our historical understanding of a particular economy or landscape.

There are now numerous examples of contributions of this kind ranging from, at one extreme, critiques of the notion that indigenous societies generally live in harmony with their environments (e.g., Redman et al. 2004) to, at the other, critiques of the assumption that small-scale slash-and-burn agriculture is necessarily environmentally destructive in the long term (e.g., Fairhead and Leach 1996; Sillitoe 1998:224–225). Rather than taking leading roles in projects designed to assess the sustainability of local practices, archaeologists and historiographers may therefore best serve their disciplines and society in general by acting to check the inappropriate, rhetorical, or speculative use of historical arguments within developmental or conservationist debates (Hayashida 2005:57). These usable pasts need not necessarily include an archaeological contribution, of course, as is the case where studies of nonequilibrial dynamics have critiqued attempts to define ecological baselines or to restore landscapes to an imagined predisturbed state (e.g., Behnke, Scoones, and Kerven 1993), or where historians and others have produced what are, in effect, discourse analyses that highlight the political motivations that underlie changing attitudes to indigenous practices through time (e.g., Beinart 1984). However, archaeologists have made—and continue to make—contributions of this type and indeed may do so without any direct engagement with these broader debates, as is the case where archaeological research challenges or supports models of social or economic change that have themselves been employed within developmental narratives (see, e.g., Morrison 1996 on Boserup's influential model of agricultural intensification).

These various historical critiques thus form aspects of the usable past and, moreover, can have a direct influence on modern policies without the complex networking of human and environmental histories envisaged and required by resilience theory and historical ecology. Lyman (2006), for example, notes the potential role that zooarchaeological data could play in the management of national parks through identifying extinctions of native species and by recognizing introductions of exotic fauna but argues too that archaeologists can also contribute to these land management debates by highlighting the current lack of such data, thereby demonstrating the falsity of arguments that seek to eradicate or reintroduce specific species in the name of ecological restoration (for a similar point on forest management, see Hayashida 2005:56; cf. Willis, Gillson, and Brncic 2004).

By way of summary, then, Pluciennik (2009) is no doubt right to be skeptical about archaeology's ability to see indigenous knowledge as the resolution required for complete and unambiguous assessments of sustainability, but acknowledging that the available historical data is presently insufficient to decide between conflicting hypotheses may also represent a significant and honest intercession to debates regarding development or conservation. Highlighting the complexity of social and ecological interactions, the embedded nature of local knowledge, and the propensity of all these factors to change through time would act to counter the sometimes simplistic equations of cause and effect (or problem and solution) contained within the crisis narratives used to justify developmental or conservationist interventions. This approach nevertheless remains distinct from applied archaeology in that advocates of the usable past cannot simply import data from modern observations to fill gaps in the historical knowledge, since to do so risks damaging the claim to authenticity on which their authority relies. This recourse to authenticity also means that although the success of usable pasts may be partially gauged by their ability to influence modern debates and policies, success is ultimately measured by whether their historical conclusions would be reached by another individual faced with the same set of historical and archaeological data. Crucially, however, this assumes that this second individual shares the historian's conception of such fundamental criteria as causation and the nature of time. Unlike hybrid archaeologies, there is thus no attempt to accommodate, negotiate with, or "blend" indigenous conceptions, though these may be employed to contextualize, explain, or predict the actions of local actors.

Hybrid Archaeologies and the Conflation of Debates

As with the ambitions expressed by Andah (1995) and Schmidt (1995) quoted above, several more recent archaeological discussions have attempted to simultaneously tackle the issue of how to learn from both technical and epistemological aspects of local knowledge, while noting that to do so shows respect for local practices, property, and beliefs, and potentially has the advantage of making archaeology more inclusive and relevant. Smith and Wobst (2005c:394), for example, argue that "an archaeology shaped by Indigenous knowledges" is capable of "decolonizing archaeological theory and practice" (Smith and Wobst 2005a:5ff.); that the approach they endorse "moves Indigenous concerns and values from the 'outside' to the 'centre,' orientating archaeology towards Indigenous systems of knowledge and power" (15); and conclude that all the papers within the volume under their editorship promote "archaeological research that contributes to social justice" (394), thereby echoing Andah's (1995:151) call for archaeological research that will "help negotiate justice at both national and international levels" and Schmidt's (1995: 136) call for "socially responsible knowledge." Similarly, in an article entitled "Indigenous Archaeology as Decolonizing Practice," Atalay refers to the need to adapt current procedures to ensure that archaeology becomes "ethically and socially just" (2006:284, 297), calls for a "collaborative approach that blends the strengths of western archaeological science with the knowledge and epistemologies of Indigenous peoples" (301), and suggests that such research could lead to the definition of precolonial indigenous practices that, "once adapted to our contemporary world, can be important for our health and well-being" (295). Typically presented under the very broad heading of indigenous archaeology, these approaches thus share the objectives of applied archaeology and the usable past but introduce the additional aim of producing syncretic histories and hybrid epistemologies—that is, histories that combine local and western accounts of past events or methodologies that incorporate local conceptions as to the nature of reality: these two approaches being inseparable where local accounts of history rely on conceptions of time or causation not recognized within western science. As is no doubt already clear, it is the position here that this project is intrinsically difficult given that hybridity requires a departure from the process of historical knowledge production as outlined above. However, it will also be argued that there is a lack of clarity within the existing literature regarding the aims of hybrid archaeologies, in part because it is in discussions of this topic that we see the most obvious conflation of ideas. This lack of clarity risks opening many of the authors writing on this issue to charges of inconsistency.

Although Colwell-Chanthaphonh et al. (2010) are therefore right to stress that hybridity is by no means a feature of all indigenous archaeology and that the objective of producing syncretic archaeologies should be regarded as an ambitious and ongoing project, it nevertheless has to be acknowledged that this ambition has yet to be realized. Just as Andah and Schmidt do not fully explore how they propose to incorporate "African knowledge systems" (Andah 1995:173) or African "ways of structuring time and space" (Schmidt 1995:119), so Smith and Wobst (2005a) never reach a working model for how "Indigenous systems of knowledge and power" can be adequately incorporated within archaeological inquiries. Atalay (2006:297), similarly, gives little indication of the means by which "Indigenous forms of science [and] history" could be "blended with Western concepts." At the risk of repetition, the fact they have thus far failed to do so is because a historian working within the western tradition is obliged to reject accounts or concepts that are incommensurate with their own: if the local conception is incommensurate, then it must be rejected; if it is not incommensurate, then there is no need to create a hybrid archaeology.

The project these archaeologists have set for themselves is therefore not a simple assertion that many, if not all, societies employ material indices in constructing histories and hence that indigenous archaeologies already exist (for which, see Lane 1996:729), nor is it merely the recognition that these preexisting epistemologies cannot be definitively invalidated by the western account: the former position being purely an ethnographic observation, while the latter is no more than a restatement of the relativistic nature of western historical knowledge production. Indeed, it is interesting to note that although discussions of hybridity often explicitly or implicitly draw upon poststructuralist and antifoundationalist aspects of postprocessualism in order to question how and by whom archaeological interpretations are constructed and validated (e.g. Atalay 2006:291), few overtly discuss cultural relativism (though for exceptions, see Zimmerman 2005:309, 313; cf. Atalay 2006:283). This may reflect archaeology's long-standing ambivalence to relativism and a desire to avoid the often highly polemic disputes surrounding it (e.g., Johnson 2000), but it may also result from a concern that endorsing relativism would undermine the disciplinary authority required by the usable past and applied archaeology.[3]

3. It should be stressed that this is an introductory text and is written in a deliberately polemic style. Nevertheless, comments such as "relativism undercuts the value of archaeology as a form of knowledge about the past" (Johnson 2000:172) and "relativism . . . destroys our ability to speak out about politically undesirable and even obnoxious views of the past, the classic example being Holocaust denial groups" (172) do at least

This concern is misplaced, since relativism does not preclude an individual from expressing a preference for a particular method of knowledge production or the resulting conclusions (and in fact require it) and is not in itself a mode of inquiry so much as a recognition of context and a statement regarding comparability and translatability. McGhee's (2008: 595) concern that proponents of indigenous archaeology espouse "extreme forms of cultural relativism, equivocality among diverse approaches to knowledge, and the impossibility of relatively objective historical research" is thus also misplaced, in part because few advocates of archaeological hybridity or of the broader project of indigenous archaeology actually take this view, and in part because relativism is not the trump card in the hands of advocates of indigenous archaeology that McGhee seems to believe. Asserting that a minority view is as valid as that held by one's richer and more influential neighbor is not in itself a particularly empowering position. More to the point, if relativism was really as "extreme" as McGhee implies, then advocates of hybridity could simply assert that their experiments had been a success. They have not done so, and they have not done so because they evidently intend to judge the success of this project on the basis of logical coherence and internal consistency—precisely the same imperative that gives rise to relativism.

This is perhaps clearest when it is considered that culturally specific epistemologies and the alternative historical accounts they produce are akin to Kuhn's (1970) competing scientific paradigms: mutually contradictory positions whose adherents enter into circular arguments that defend their respective standpoints in their own terms, with the result that the criteria for choosing between them may involve subjective value judgments such as a culturally conditioned preference for a particular underlying concept or a subjective assessment as to which paradigm addresses the most significant question. Employing the analogy of political revolutions, Kuhn (1970:269) notes that these conflicts between paradigms are characterized by a subsection of a community questioning the ability of existing frameworks to cope with contemporary problems, while the proponents of these established institutions often entrench their position in defense; this situation being most likely when the reformist movement seeks to change institutions in ways prohibited by these institutions themselves. In a thesis that is essentially a historical critique (or usable past, if you will), Kuhn thus argues that the process of scientific knowledge production is constrained by sets of presuppositions that are only dropped when the case against them becomes overwhelming, thereby bringing about a "paradigm shift." This shift need not entirely overturn what has gone before, but the shift will involve radical reform. Proponents of hybridity are thus not merely arguing for the existence or validity of local approaches to history, and they are not denying that the western process of historical knowledge production is the current dominant paradigm. They are, however, pointing out that this situation could change.

Note, for example, that in responding to McGhee's critique, Colwell-Chanthaphonh et al. (2010:233, citing Wylie 2008) emphasize that to continually challenge the veracity of the western process of knowledge production and to be skeptical regarding the context of previous observations is itself an inherent feature of empirical science, and as such there is nothing controversial or intrinsically "nonempirical" in exploring whether local concepts can improve western understandings of either reality or history. They are thus envisioning a situation whereby a non-western conception could lead to an amendment or radical overhaul of the dominant paradigm. Smith and Wobst (2005b), in contrast, refer to indigenous archaeologies in the plural and evidently envisage that experiments with hybridity will lead to changes within the dominant paradigm and to changes within local approaches to the past (see also Nicholas 2005:96).

Both of these situations are, of course, theoretically possible. It is thus not the position here that the ambition of producing hybrid archaeologies is intrinsically unrealistic, it being in the nature of paradigm shifts that they are impossible to predict in advance. However, given that these alternative paradigms do not yet exist, it is premature to claim that a conventional western archaeological approach can incorporate indigenous conceptions or negotiate historical interpretations, since the current dominant paradigm prohibits such processes. To talk of the inclusion of local concepts as "democratizing" archaeological knowledge production (e.g., Atalay 2006:298, 302; Colwell-Chanthaphonh et al. 2010:232–233; cf. Feyerabend (1993 [1975]) faces the same problem and might be regarded as little more than rhetoric or as a poorly chosen metaphor, given that the dominant paradigm gives no weight whatsoever to the number of people who support a particular historical interpretation.

The difficulty here, perhaps, is that until the ambition of hybridity is achieved, it is hard to define what its benefits might actually be, hence the vague talk of "democracy" and "justice" and of a postcolonial challenge to western epistemological hegemony. Applied archaeology, the usable past, property rights, cultural resource management, and education, in contrast, all offer at least the potential for tangible benefits to local communities, prompting discussions of hybridity to shift focus to these less theoretical approaches. Note, for instance, that despite repeatedly referring to the potential advantages of blending indigenous and western forms of science and history, the example offered by Atalay (2006:296–299) of the Anishinaabe concept of *gikinawaabi* (the passing of communally owned historical knowledge through oral tradition and daily practices) would seem to be readily translatable to a western audience, apparently requires little in the way of blending, and appears to relate solely to archaeology's ancillary roles within cultural resource management and education.

This rapid tacking between related but distinct projects

succinctly and honestly summarize the dangers that some archaeologists feel a claim to positivist objectivity keeps at bay.

produces apparent internal inconsistencies and gives the impression that individual writers wish to act as both advocates and arbiters of both local and western knowledge. Thus, from the perspective of applied archaeology or the usable past, it is reasonable to conclude that local interpretations of history should be "tested" empirically (Andah 1995:174; see also Harris 2005:37; Nicholas and Bannister 2004:334; Schmidt 1995: 146, 2006:5–6, and cf. 27–28; Wylie 1995:266), but this same conclusion is a glaring inconsistency when seen alongside claims that these interpretations will be arrived at through negotiation or will incorporate aspects of local epistemologies (Andah 1995; Atalay 2006; Damm 2005:78–85; Schmidt 1995: 120; Smith and Wobst 2005a; cf. Schmidt 2006:180–183).

Variants on this same apparent inconsistency have been cited throughout this paper and arise, in essence, because to call for new paradigms that challenge the dominance of western science might be seen as undermining the authority on which applied archaeology and the usable past rely. Put in these terms, the inherent difference between these approaches seems self-evident, but this is often far from clear within the current literature. As one final example, then, several of the writers referenced here suggest that archaeology could contribute to indigenous societies by helping to repair or restore lost local histories or resource-use strategies where these have been disrupted by "war, disease, and forced relocation" (Nicholas 2005:82) or by "repression" and "colonialism" (Nazarea 2006:329), for which Atalay (2006:295) lists potential subjects of study as including "foodways and harvesting, spiritual practices and ceremonial knowledge, methods of education and reproduction of knowledge, and land use and conservation practices" (for similar statements, see Issacson and Ford 2005; Nicholas 2005:82; Smith and Wobst 2005a:15; Wobst 2005: 27–28; see also Nazarea 2006:235–237). With or without this emphasis on the reasons that may have led to the disruption of local activities, it is noteworthy that this list includes not just technical knowledge but also conceptual, historical, and religious beliefs, and is referring not to modern local knowledge but to the knowledge held by communities *in the past*. Proponents of the usable past may choose to highlight how and why this knowledge was lost, and advocates of hybridity may choose to experiment with combining modern approaches to education from diverse epistemologies, but is it reasonable to suggest that archaeology can recover lost methods of education employed in (pre)historic communities? Applied archaeology projects may indeed to able to reconstruct *aspects* of agricultural or industrial knowledge, but given that issues of archaeological visibility of local practices impact upon what archaeology can hope to achieve even in relation to technical knowledge, the addition of a conceptual element to these restoration projects risks simply projecting the beliefs of modern or historic communities into the deeper past (Gnecco and Hernández 2008:462; Lane 1996:728; Stahl 2001: 21–22). It would certainly be difficult to claim that doing so for archaeologically invisible practices like methods of education produces an authentic past or an authentic reconstruction of the knowledge employed by historic communities. But is authenticity a defining characteristic of success in this instance? It is simply not clear, and it is not clear because the issue is discussed without drawing an overt distinction between the usable past (where a claim to authenticity is essential), applied archaeology (where proponents may relinquish a claim to authenticity in favor of producing functional modern solutions), and hybrid archaeologies (where a desire to create a new paradigm might conceivably involve a reconsideration of what constitutes authenticity).

Conclusion

Responding to the suggestion that his account of competing scientific paradigms was relativist, Kuhn argued that this impression arose from his analogy between incommensurable paradigms and different cultures. Conceding that in the case of two cultures "both groups may be right" and thus that "applied to culture and its development that position is relativistic" (1970:205), Kuhn nevertheless argued that the same cannot be said of conflicting scientific paradigms because the history of science illustrates that later theories or technical solutions are more effective than earlier ones. Kuhn accepts, however, that this is a partial answer because it might be accused of removing any concept of "truth" from the judgment of a paradigm's success: that is, the criterion of success is not based on a claim that each new paradigm is a more complete or accurate reflection of nature or of some other object of study, and, instead, paradigms are judged simply in reference to whether they are pragmatically useful. Writing in 1956, the archaeologist V. Gordon Childe (cited by Spriggs 1981:1) made a similar point, expressing the hope that "even archaeological knowledge may someday prove useful to some society," asserting that "knowledge is not to be contemplated but to guide action," and that "the practical results, however long delayed, provide the sole conclusive test of the truth of the discovery." With the obvious caveat that the terms "success," "usefulness," and "truth" are no less context dependent than any others employed here, they are nevertheless helpful in summarizing the differences between the three archaeological approaches to local knowledge under discussion.

Starting with the usable past, it was argued above that proponents of this approach would judge success by the extent to which they influence policy or, in Childe's phrase, "guide action." This is nevertheless an incomplete answer because, unlike in Childe's formulation of this issue, advocates of the usable past are not arguing that an interpretation is true because it is useful; they are arguing that it is useful because it is true. In other words, the usefulness of this approach is dependent on a claim to the authenticity of a historical interpretation, with the success of an interpretation being based on an ability to account for both what is known about the material world and what is known about how an individual or community in the past perceived and reacted to their world. At heart, then, the criterion of success employed within the usable past is the same as that employed within the western process of historical knowledge production.

Although applied archaeology projects share this faith in the success of the western process of historical knowledge production and draw authority from their command of this method, the few projects that have attempted this approach have evidently relinquished a claim to authenticity in favor of prioritizing functional modern solutions: not simply the use of archaeological interpretations within some wider discourse but the application of archaeological data and techniques to achieve a function beyond archaeology's role of producing knowledge about the past. This might seem to be a somewhat pedantic distinction, but to group these two approaches together (e.g., as Dawdy 2009 does under the term "futurist archaeology") is to ignore the fact that an individual project could succeed in one while failing in the other. Indeed, my own research on the abandoned agricultural landscape at Engaruka, Tanzania, serves as an example of this: the original aim being to explore the feasibility and desirability of rehabilitating the former irrigation system and associated agricultural terraces, yet the result was to demonstrate that this historic agronomy relied on hydrological conditions that are no longer present. A self-evident failure as an exercise in applied archaeology, the project nevertheless represents a modest success in terms of the usable past, because even proponents of the view that development projects in Africa can learn from indigenous knowledge have referenced the abandonment of the site as an example of disastrous land husbandry, a hypothesis not supported by the available archaeological data (Stump 2010).

Applied archaeology projects thus still rely on the conventional western process of historical knowledge production, but projects of the sort described by Erickson (1998 [1992]) and Kendall (2005) might also choose to contribute to the aim of multivocality as endorsed by some proponents of indigenous archaeology: the focus on functionality within applied projects conceivably permitting them to drop any claim to producing a past that is more accurate than those produced locally. However, to do so would remain distinct from the aim of producing hybrids of western and local knowledge, the as-yet unfulfilled ambition of which would appear to require a paradigm shift of the type described by Kuhn. Given that it is uncertain what forms these shifts will take it is difficult to predict how success will be defined, but it would seem unlikely that Kuhn's purely pragmatic criteria would be applied, the proponents of hybrid archaeologies reviewed here having set themselves the ambitious aim of improving on the process of historical knowledge production employed in the West and perhaps also on those employed in local communities worldwide.

In the meantime, archaeologists should be wary of claims for the incorporation of aspects of indigenous knowledge in the absence of a methodology for doing so; should be skeptical of assertions that archaeology can unproblematically repair or restore lost local knowledge; should be critical regarding the archaeological visibility of local knowledge; and should be aware of the conflations of methodologies and nomenclatures that treat indigenous knowledge in the past and indigenous knowledge in the present as if these are susceptible to the same methods of inquiry. Doing so will act to avoid unnecessary internal inconsistencies created by grouping together all archaeological approaches that seek to learn from and benefit local communities.

Acknowledgments

Many of the ideas discussed here were first presented within a PhD thesis supported by the Arts and Humanities Research Board of the British Academy and have been explored further as an aspect of the Historical Ecologies of East African Landscapes project (HEEAL) funded by a European Union Marie Curie Excellence Grant. An additional case study in Ethiopia exploring these issues is funded by the British Academy and the Wenner-Gren Foundation. The discussion has benefited from comments and critiques by numerous people, for which particular thanks are due to Bill Adams, Maureen Bennell, Paul Lane, Federica Sulas, John Wainwright, and Roger Echo-Hawk, the latter of whom waived his right to anonymity in reviewing the first draft of this paper, thus permitting a more in-depth exchange of ideas. The insightful comments on the first draft made by five anonymous reviewers are also gratefully acknowledged and have done much to improve the structure of the paper.

Comments

Chip Colwell-Chanthaphonh
Department of Anthropology, Denver Museum of Nature and Science, 2001 Colorado Boulevard, Denver, Colorado 80205, U.S.A. (chip.c-c@dmns.org). 30 XI 12

To help in the task of disentangling the terms examined in this article, several clarifications are in order. Stump is right to note my coauthored *American Antiquity* article sketchily defines "Indigenous" (see Colwell-Chanthaphonh et al. 2010: 230), but I am not "content" to uncritically employ such a tangled term. We should be clear that the cited article was a brief reply amid other replies; the editor gave us limited space (like here). But more, reading the range of publications covering this nascent concept shows that conversations about the complexities of defining "Indigeneity" have not been elided (e.g., Colwell-Chanthaphonh 2012; Echo-Hawk and Zimmerman 2006).

Stump suggests that talk about "democratizing" the field's knowledge production system is mere "rhetoric" or "a poorly chosen metaphor," which futilely seeks a kind of popular vote to determine a majority view for historical interpretations. This is sophistic. Democratic ideals applied to archaeology help frame the themes of equality and inclusiveness, which are a means "to enlarge the discipline's philosophical commitments and methodological practices" (Colwell-Chanthaphonh et al. 2010:233). This is an argument about diversity and participation—not an interpretive majority. Others similarly have used the language of democracy to imagine novel possibilities when scholars invite the involvement of historically excluded peoples in order to expand our concepts of material and social worlds (e.g., Preucel and Cipolla 2008).

Further, our article specifically emphasizes that "Giving *equal consideration* is categorically different from giving *equal weight* to Indigenous views, concerns, and needs" (Colwell-Chanthaphonh et al. 2010:232). We recommend an approach of "critical multivocality," to build a participatory form of research that provides scholars the opportunity to analytically consider the maximum range of viewpoints and values that exist for the historical record. This is one method by which negotiating commensurability unfolds (Colwell-Chanthaphonh 2007:11–14). As Stump seemingly concurs, being open to all possible insights—all potential sources for hypotheses, data, and explanation—is not a rejection of scientific principles but a key feature of them.

Stump writes that "given that these alternative paradigms do not yet exist, it is premature" to suggest Indigenous conceptions can be blended with conventional western archaeology. If, as Stump continues, "the current dominant paradigm prohibits such processes," then it is unclear who allowed so many archaeologists to publish their on-the-ground case studies that work to ascertain the viability of so-called hybrid archaeologies (e.g., Atalay 2007; Million 2005; Silliman 2008; Wilcox 2009). Perhaps the dominant paradigm is more elastic than some imagine.

Perhaps Stump could have looked at the San Pedro Ethnohistory Project, which used traditional knowledge among four Native American tribes to rethink the archaeological history of Arizona's San Pedro Valley (Ferguson and Colwell-Chanthaphonh 2006). Stump would likely label this research "hybrid archaeology" for its collaborative methods to incorporate Native viewpoints, as well as a "usable past" for challenging previous understandings of the valley's history.

Yet, this work did not produce riotous cognitive dissonance. In fact, strangely at first glance, this project has been lauded by both critics and advocates of Indigenous archaeologies (Atalay 2012:197; McGhee 2008:591). Why? One reason might be that this project shows that creating a hybrid archaeology does not diminish our authority to create a "usable past" but, on the contrary, enhances it. When archaeologists drop the pretense that they are exclusively positioned to interpret the past—and dictate the value of the past in the present—they can construct a "shared authority" that elevates their influence, because of their avowed openness as much as their newfound sources of data (Colwell-Chanthaphonh and Ferguson 2010).

Collaboration does not produce a single result, as we discovered in the San Pedro Valley. Apache oral narratives provided new alternative interpretations of an 1871 massacre. Tohono O'odham conceptions of identity encouraged us to reassess conceptions of archaeological cultures. While Zuni origin histories did not always fully align with archaeological theories, these narratives nonetheless provided anthropological insights into Zuni values for the archaeological record and a shared conceptual framework for a Pueblo southward migration documented archaeologically and explained by Zuni traditionalists as those who journeyed to the land of the everlasting sun.

Is there always a perfect commensurability among these viewpoints? No. But is there enough common ground to engage in a respectful dialogue, which ultimately broadens both scientific and traditional knowledge? Yes. And for me, this points one way to Stump's elusive "success."

Collaboration is hardly an answer to every question (Colwell-Chanthaphonh and Ferguson 2008; Dewbury and Broadrose 2011; La Salle 2010), but it does establish a process of "working through" that somewhat paradoxically improves archaeological authority by loosening it. When archaeologists approach their craft with openness, that is liable to give them more respect among both local and scholarly communities, not less. Employing hybrid archaeologies to meet the needs of a usable past is difficult but not impossible.

William E. Doolittle
Department of Geography and the Environment, University of Texas, Austin, Texas 78712, U.S.A. (dolitl@austin.utexas.edu). 17 XII 12

Forward to the Past

Stump's paper is an excellent contribution to understanding the age-old dilemma of western science, "local" knowledge, and the past. What people knew and how they thought about it are puzzling questions. How we think about them and communicate it is another. Language, after all, is a relatively simple mechanism we use to express relatively complex thoughts. Modern archaeologists face a monumental problem of trying to understand, and communicate effectively about, the thoughts of people of other cultures in other times. This paper is, accordingly, a gallant attempt to untangle the seemingly intractable interwoven tentacles of recent thoughts from various disciplines. The first of the three approaches outlined by Stump to understand the process of knowledge production is historical and originated with Collingwood (1940); it is the least current of his sources. The second approach incorporates insights from archaeology to better understand both local knowledge and the past. The final approach focuses only on local knowledge as sought though anthropology and sociology.

With such a strong emphasis on anthropology, I was struck by the lack of credit afforded some prominent scholars from earlier decades. Addressed in chronological order, Steward

(1955), the father of cultural ecology, argued that those aspects of culture most closely connected to the biophysical environment constituted the "core." The "usable past," as borrowed from Andah (1995), does not seem that different to me. As for "applied archaeology," it is curious that the notion of "action anthropology" as proffered by Tax (1964), the founder of *Current Anthropology*, was not included. Taking the idea of archaeological knowledge someday being useful to society, Bennett's (1976) insistence on policy relevance seems to merit consideration. Finally, tying all of these factors together in the then-emerging subdiscipline of geoarchaeology is Butzer's (1982) *Archaeology as Human Ecology*.

In concert, the ideas expressed in these four, admittedly noncurrent, works alone are not much different than the underpinnings of what Stump is proffering. To be sure, he builds on them significantly and in the process outlines a more detailed and sophisticated approach to understanding the production of knowledge, while sorting out the conflations created by various writers, blending local conceptions of history within archaeological interpretations rooted in western science. As scholars we create our own language for dealing with concepts we construct that are not the realities of others, especially in other places and centuries gone by. Whitehead's (1925) fallacy of misplaced concreteness applies here.

One issue not addressed by Stump, and most other archaeologists, involves the possibility that some material remains of human activities were the result of actions involving neither deliberation nor thought. An example is from my own discovery of agricultural change as an incremental process (Doolittle 1984) and illustrates the advantages of thinking outside the confines of normative thought (Cordell and Plog 1979). I became well acquainted with a group of individual farmers in Mexico over a 2-year period. I listened to what they said, and I watched what they did. I saw them "dig" irrigation canals by simply plowing furrows from a normally dry stream channel to individual fields upstream of older fields. Flash floods then scoured the furrows into small canals that looked as if they were dug with a backhoe. As additional fields were added, the channel became increasingly incised such that the canals extending from the channel to older fields became inoperable. Farmers then stopped acting as individuals and started cooperating, first in pairs, then in groups of three, then four, and so on, connecting short individual canals into what eventually became a community irrigation network. No complex technology, social organization, or knowledge was involved. It came about as the result of "unintended consequences" (Merton 1936). The same thing doubtless happened numerous times in the past, and there is no way, at least today, that the process could be detected archaeologically.

There are more archaeologists today than there were in decades past. There is also a greater body of literature. It is easy to overlook or dismiss earlier writings as being out of date, but oversights should be rare, given the proliferation of online sources. The amount of information currently available is almost overwhelming, such that it is easy to conflate unwittingly the ideas of others with our own thoughts as we read. It behooves us, therefore, to pause occasionally and reconsider works that are not current and think outside the proverbial box.

Cristóbal Gnecco
Departamento de Antropología, Universidad del Cauca, Popayán, Colombia (cgnecco@unicauca.edu.co). 5 XII 12

This is a well-argued and timely paper about how archaeologists relate to local knowledge and communities. It is original and relevant. The author fleshes out how three different approaches (applied archaeology, usable past, and hybrid archaeology) are normally conflated and how this conflation is problematic on several grounds, the minor of which is not the widespread ambivalence toward relativism and non-Western cosmologies. A strong argument of the paper is that claims to interdiscoursive understanding (or even hybridity, whatever that is) have been mostly rhetorical, with no practical consequences. I agree with that. To get such claims on the move requires more than good intentions, more than empty declarations. For that reason, it is precisely the point that "new paradigms that challenge the dominance of western science might be seen as undermining the authority on which applied archaeology and the usable past rely [I would also add most strands of indigenous archaeologies to the list.]" What we need in order to understand and take seriously indigenous and local knowledge is not a methodology to incorporate it, as Stump claims by noting that it is absent, but a different relationship and a genuine willingness to understand and decenter. The methodological incorporation of indigenous knowledge Stump writes about is no more than a scientific recapture of what has gone astray, a statement about how to pass the scientific filter through the proof of usefulness—leaving aside beliefs and cosmologies, part and parcel of ethnographic understanding but not of the "real life" of archaeology, where they seem to be simple noise.

The separation of utility and beliefs, by which the latter become cumbersome residues, stimulates the reproduction of positivism, apparently fading in archaeological reasoning in the last 3 decades but really under a consistent overhaul in current multicultural times. For instance, affirming that "statements that are incommensurate with the historian's conception of reality have to be treated merely as contextual information rather than as factual statements pertaining to past events" is Stump's way to separate purely rational choices (scientific) from nonmodern ones (ethnographic), in which the definition of "factual" belongs to the cosmology of the West; it also is the tool he offers to split the conflation he deems so harmful. But is it really possible to separate functional and ethnographic perspectives? Moreover, is it something we really want to pursue, were it possible? Such a conundrum is tantamount to saying that one can be scientific for some things (the really important ones?) and not so much for others while operating in contexts in which the very status of conventional, modern-based archaeology is at stake. Such a possibility is not only doomed to fail for the very philosophical inconsistences Stump points out; it also is a deliberate convolution by virtue of which alternatives to archaeology are patronized, neutralized, and eventually ignored by downplaying their facticity. What the people working in alternative approaches in archaeology are trying to do is to avoid falling in the multicultural rhetoric that promises relativistic openness at the same time that it embraces the orthodoxy of science. Thus, the separation championed by Stump echoes the inherent ambivalence of certain "postcolonial" debates in archaeology, exemplified by the quote from Schmidt he refers to; it does not solve it.

At the end what are truly missing in the paper are power relations. The sophisticated arguments of the author fly over a bucolic landscape of epistemological equals in which politics is absent. For him the interpreter of history just does interpretation, which in turn is availed and backed (or not) according to the rule of usefulness. But that is not the real world, in which cultural domination makes one interpretation *the* interpretation. For instance, his discussion of relativism (albeit cursorily) lacks an important ingredient, long highlighted by heterodoxies within the West itself, such as feminism: the idea that everything goes pretends that all interpretations are equal, which is not the case if we bring in political considerations.

This paper may stir much needed discussions in archaeology, especially because most "postcolonial" approaches in the discipline are naive, when not overtly aligned with the western recapture of potential disruptions. I concur that there is a fundamental problem, philosophical and otherwise, when people advocate the "'blending' of local conceptions of history within archaeological interpretations . . . while simultaneously attempting to draw on the authority of archaeology as a "western" science." Stump's critique points to an important issue, one which will have a fundamental bearing in the years to come: so-called alternative archaeologies may not be that alternative after all because most clinch to the main tenets of conventional archaeology, to the modern ontology and metaphysics on which it rests.

Alexander Herrera
Departamento de Antropología, Universidad de los Andes, Carrera 1, No. 18A-10, Bogotá, DC, Colombia (alherrer@uniandes.edu.co). 11 XII 12

Since Walter Mignolo (1995:28) suggested that Latin Americans should "think from the ruins," not of Greece and Rome, but of the Inca and the Aztec, our national archaeologies have been challenged to look again at the historical debt of colonialism, rethink their contemporary roles, and assess their allegiances with local, national, and global forces. Unlike in Europe, where archaeology initially came into being and developed close to the palaces of nobility, national development has been the stated goal of archaeology in most parts of the world since its formal inception in the twentieth century. In the context of increasing North-South (and East-South) bilateral trade agreements and the current surge of extractivist industries, the geopolitical context in which the study of the past exists as a field of discourse is also being reshaped from outside. This double movement is giving rise to critical reassessments of the intentions, practices, and outcomes of development, as well as of the roles of archaeology in this process (e.g., papers in Herrera 2013). As a vantage point to scrutinize the motivations for applying archaeological knowledge, making the materiality of archaeology useful, or appropriating elements of indigenous technologies in development policy, I will locate my comment on Stump's cartography of the relationship between archaeology and development in the central Andes.

The enunciation of a growing field of academic discourse is a timely exercise in the cartography of knowledge production, consumption, and appropriation, a bold attempt to define terms and concepts, and order prevailing paradigms, debates, and arguments on a global scale. It succeeds in sketching a world map of the current and possible future relationships between archaeology and development, from the geopolitical vantage point of the cartographer. And in this, it addresses a palpable shift in the discipline that is global in scope: away from the past as something inspiring to behold and toward a more pragmatic, even utilitarian, "past for now." My main concern pertains to the historically contingent locality of the diverse and sometimes congruent motivations for knowing that shape current debates on the economic and political grounding of archaeological practice and theory.

Considerable effort and care is deployed by Stump to tease apart issues, debates, and themes because it is argued that conflation is dangerous, as indeed it is for "traditional" disciplinary practice. To ask how research into deploying indigenous knowledge in development practice compares to the extraction of mineral ores may, for example, conflate the geopolitics of knowledge (issue 1), archaeological ethics (issue 2), and development policy (issue 3), but it seems a necessary question if we are to move the evident methodological parallels between mining, enlightened looting, and archaeology in the eighteenth-century Spanish colonies into the present. The other's knowledge—dead or alive—can be mined like a rock, but what when the scholar declares him- or herself a part of that other?

Splitting indigenous knowledge into elements that are usable and amenable to the development of mercantile relations, and those which are useless in this regard, is a fetishizing distinction, which may be objected to as reductionist from a local perspective (inside out). From a globalist perspective (outside in), it may be countered by referring to broader issues surrounding the valuation and ownership of heritage, such as the negative environmental impacts of current practices of landscape management (Herrera 2011). Thinking critically from ruins, however, is a political decision to challenge endocolonialism, itself an expression of the condition of hybridity that has long characterized anthropological practice, and the production of modernity (Castro Gómez 2011), in Latin America.

The particular hybrid condition of the mestizo (de la Cadena 2005) as researcher is not only shaped by the smoke of burning ancestral *mallki* bundles, as may be romantically remembered through the archaeological study of looted tombs, but by the endocolonial habitus that essentializes and relegates the existence of the indigenous, then chooses to forget the anthropogenic shaping of the landscape when discussing the enshrinement of heritage protection in law. Archaeologists, heritage practitioners, and administrators may choose (not) to label certain aspects of the landscape as "archaeological," "traditional," or "indigenous," but they remain historical contingencies existing in the present force field of development policies. How are individuals, communities, and national and transnational institutions and organizations allowed, encouraged, or empowered to develop or bring forth the dormant capacities of others agents—dead or alive, human or nonhuman, colonized or independent—by recourse to which temporality and reason? Engaging with development does not imply extending the traditional realm of archaeology as an academic discipline, at least in the Andes. It does, however, require addressing its own history critically to be clear on the principles toward which situated archaeological practices may decide to jointly contribute, such as extending liberties and redressing injustice or, at the very least, avoid doing harm.

Innocent Pikirayi
Department of Anthropology and Archaeology, Humanities Building HB 8-14, Lynnwood and University Roads, Hatfield 0083, South Africa (innocent.pikirayi@up.ac.za). 4 XII 12

All Archaeology Is Applied, Based on Local Knowledge, and Is Usable

Every archaeologist is concerned about the future of archaeology and its relevance beyond academic and professional communities to address broader contemporary concerns. Given its extractive nature archaeology for much of the twentieth century, the involvement of the general public and specific communities is pivotal for its survival, not just as measure in archaeological heritage conservation but also as restitution. The question remains whether archaeology can really benefit communities. In much of Africa archaeology has dismally failed because of its inability to articulate relevance and to communicate the value of local knowledge. This is due to the "applied" nature of conventional archaeology, which always attempted to understand African and other non-western pasts using "templated" western academic traditions. Thus such archaeologies have not succeeded in describing and "translating local practices to an external audience," since they did not prioritize local knowledge. Stump's thesis makes a useful theoretical contribution to the state and future of archaeology as we enter the second decade of the twenty-first century.

My concern is the continuing "othering" of archaeology through terms such as "indigenous," "applied," and "usable," which Stump rightly points out, are problematic. Such terms give the impression that archaeologies are either localized or used selectively for the benefit of modern society. The challenge is how these archaeologies and pasts relate to the global and how they fit into the more "conventional" practices that have been the hallmark of western scholarship. Despite the many projects on promoting indigenous knowledge systems in southern Africa, one cannot dare refer to archaeological practice as "indigenous." Archaeologies that emphasize, for example, community ownership of sites and indigenous knowledge are largely shunned because they are perceived as "unscientific" and of lesser value, often relegated to "heritage studies." What the critics fail to confront in this case is archaeological or historical knowledge production.

On historical knowledge production, it may not suffice to cite Collingwood's (1946) demonstration of the lack of radical difference between archaeological knowledge and knowledge of the past based on linguistic sources, Collingwood being an early exponent of the use of oral traditions and testimonies within conventional western historical interpretations. The issue is not on the novelty of the idea but rather what has changed in methodology since. Anthony Grafton's (2007) *What Was History* provides very useful insights in this regard. Inclusion of local histories in archaeological interpretations is not simply a means of showing respect for indigenous conceptions but rather the production of narratives that resonate with local communities. "Confirm*ing*" (my emphasis) oral histories in this case is acknowledging the existence of alternative pasts where such sources are used, but beyond this, what role should archaeology serve?

Archaeology should continue to reveal and explain the past, in ways that serve the present (see, e.g., Little 2009). The need to understand past human environmental interactions and how some of the processes have resulted in complex social systems, early forms of urbanism, and differentiated scales of human modifications of the landscape is perhaps the prime goal of archaeology. While applied archaeology would address these in terms of "lessons learned" from the past, it is also important to understand the past in its own terms by addressing system failure or collapse. Was failure a personal choice (Diamond 2005)? Studies of sustainability and resilience provide most refreshing reading, especially in presenting a long-term view of the past and its link to the present. Experimental archaeology should tell the human costs and environmental impacts associated with past human successes (see Costanza, Graumlich, and Steffen 2007; Crumley 2007; Gunderson and Holling 2002; Manyanga 2007; McAnany and Yoffee 2010; Miller and Page 2007). An interesting focus lies in global studies of urbanism, since these landscapes are rapidly changing faster than we can understand the diverse forces that are conditioning these changes (Sinclair et al. 2010).

Although archaeology has relevance, this does not mean all archaeology must necessarily have an applied component or be referred to as such (see Erickson 1998 [1992]; Kendall 2005; Lozny 2006). Discussions on usable pasts in archaeology aim toward articulating tangible social and economic values, rather than merely instilling cultural pride among local communities. In many societies, however, when the concept of a "usable past" is invoked, history provides a firm ground to stand on, especially in situations of profound economic, political, and technological changes. Identity construction, in such contexts, becomes a matter of how groups manipulate tradition. Usable pasts are also a public empowering tool where those in positions of control take advantage of the public to dominate them (Tuleja 1997; Zamora 1997). They are ultimately politicized pasts (see Pikirayi 2006) and perhaps of limited applicability to archaeology.

The way forward is to unify western and non-western approaches to generate universal knowledge. Archaeology is not just about the future, but also the past, and how current approaches may help understand what happened.

Bill Sillar
Institute of Archaeology, University College London, 31–34 Gordon Square, London WC1H 0PY, United Kingdom (b.sillar@ucl.ac.uk). 5 XII 12

Daryl Stump has written a pertinent article that I found very useful. He argues that an integration of archaeological methods and indigenous understandings of the past (what he terms "hybrid archaeology") would only be possible if the two groups can agree on their understanding of causation. However, as he acknowledges, collaboration can take place without such agreement. Many archaeologists work successfully with indigenous groups by respecting local concerns about human remains, material culture, and site access. Frequently acceptable compromises can be found between indigenous concerns and the research interests of the archaeologists (and other stakeholders such as land owners or heritage organizations) without recourse to "hybrid" archaeology. Stump's concern over the mismatch between empiricist views of causation and alternative concepts seems overstated, focusing too much on the "otherness" of indigenous concepts. Many of us harbor incommensurate ideas about the forces that shape the social and material world (Bird-David 1999; Hornborg 2006). Although we apply empiricism and logic in our writing, we may adopt a more relational and morally driven attitude to our personal life and express diverse religious beliefs. Similarly, house builders in the Andes can provide detailed technological and material explanations for how their construction work creates stable structures at the same time as preparing ritual offerings for the strength and well being of the building. The expectation that a unified empirical logic should be used to explain a situation is a prerequisite of academic writing, but this is not always the full story. Stump uses Kendall (2005) as an example of how applied archaeology projects have "paid little . . . attention to the epistemological or cosmological frameworks that produced the technologies they seek to replicate." But offerings have been prepared by the participants in these projects for the construction and maintenance of the canals, and the deified mountain have been appealed to for their support (personal observation 1985; Ann Kendall, personal communication, 2010). What is expressed in animistic beliefs, such as those practiced in the Andes, is a social relationship with the land and material world, where people, places, and things are considered interconnected (Allen 1988; Ingold 2006; Sillar 2009; Van den Berg 1990). These animistic ideas may be at odds with empiricist or cost-benefit analysis, but they can fit well with the ideals of social and economic sustainability.

Stump expresses a concern that archaeologists might abandon empirical analysis and thus undermine the logical coherence of our research and the authority of our discipline. This seems an unnecessary anxiety. I am not aware of anyone asking us to relinquish an empiricist approach but rather to evaluate it with a clearer consideration of local cultural values. Archaeologists use empirical methods and contextualize these findings by drawing on a wider comparative anthropology. An awareness of alternative beliefs does not require us to abandon empirical evaluation of material remains or prevent us from assessing the environmental impact of ancient technologies. But, technologies are not adopted or abandoned purely on the basis of their physical effects or energy efficiency. The uptake and rejection of technologies is a social process where decisions are made about who does the work and who benefits, and ideological and moral concerns become entangled in technical acts (Latour 1993, 1996). There is a need to consider the social and economic context within which past technologies (such as agricultural infrastructure) were created and the degree to which current indigenous practices such as labor exchange and communal land ownership are being affected by national policies and global economic practices. For instance, the value and availability of human labor is dependent on wider ideologies that persuade people to work on construction projects (e.g., through coercion, obligation, reciprocity, or payment). Most pre-Hispanic terrace systems in the Andes were built by hand with *corveé* labor and were designed to be used by work teams using foot plows. The continuing input of such demanding manual labor may become less feasible as valuations of labor as well as the ability of communities to organize such projects change. Ann Kendall's work with the Cusichaca Trust has drawn upon sustained archaeological research to identify sequential changes in the construction of pre-Hispanic canals and terrace systems in relation to previous eras of state intervention and collapse as well as climate change. At the same time the Cusichaca Trust has worked with present-day communities to gain a better understanding of current agriculture and labor practices and encourage communities to share their best practice (Kendall and Rodríguez 2009). This collaborative blending of archaeological research with indigenous knowledge and social practice has been a large reason for the Cusichaca Trust's successes. I agree with Stump that the benefits of using archaeological research to revive past technologies needs to be assessed. But there are very few examples of this kind of applied archaeology, and we need much fuller evaluations of them in relation to the social and economic realities and the cultural values of the people involved.

Matthew Spriggs
School of Archaeology and Anthropology, AD Hope Building, Australian National University, Canberra, ACT 0200, Australia (matthew.spriggs@anu.edu.au). 23 XI 12

Gordon Childe (1933) asked the question, "Is Prehistory Practical?" rephrased here as "is archaeology useful?" But, the begged question is "useful for whom"? What are the audiences being addressed beyond the academy of archaeologists themselves? Stump's paper is about "the ways in which archaeologists attempt to define, explain, translate, and incorporate local practices and conceptions," but one has to ask: explain to whom? Translate for whom?

Another area worthy of expansion is consideration of the history of these different conceptions of archaeology's utilitarian value. The changing economic context in which archaeology operates as an academic discipline is clearly a factor in the rise of these "practical" archaeologies, as were the civil rights movements of the 1960s and those for decolonization. The flowering of nondoctrinaire Marxism at the same time, and archaeology's flirtation with it before becoming mired in postprocessualism, also helped instill a desire to see the discipline as contributing to the betterment of humankind.

Stump's characterization of indigenous archaeology does not necessarily capture the range of practices potentially encompassed by that term. If it is largely what is also called here "hybrid archaeology," then I would agree with the impossibility within western science of incorporating indigenous conceptions or negotiating the basis for historical interpretations and thus "democratizing" archaeological knowledge production. Such a project slides seamlessly into New Age philosophies, from whence it gains much of its supposed moral authority.

In my experience, however, this is not usually how the archaeologist *as* archaeologist, whether indigenous to the place in question or not, attempts to work among indigenous communities. People want their stories told and their interpretations respected, but they enjoy the intellectual challenge that the practice of the often new-to-them skilled craft of archaeology throws up. What they do not want is the archaeologist to deny or belittle her or his own expertise in investigating and interpreting what is found. A blacksmith is not ashamed of his or her skill in shoeing horses, and if the archaeologist does not bring anything new to the table, then why bother to allow him or her to sup?

To me what is more interesting than archaeologists professing to be completely community directed in their practice—Stump rightly notices the self-interest involved in this usually neocolonialist project—is the independent use made by indigenous peoples and nations of archaeological knowledge, once that knowledge has been hard-won by the archaeologist. This is the prime audience missing from Stump's account.

In the relatively new nation of Vanuatu, independent since 1980, archaeology has become important in instilling a sense of national pride in a country with the greatest number of distinct languages per head of population on earth. The unifying symbol of the Lapita culture of the initial human settlers of Vanuatu 3,000 years ago, whose remains have been found in every part of the archipelago, has entered the political discourse of national unity at many levels. It is referred to in political speeches given at independence anniversary celebrations, scenes of Lapita life are found on postage stamps, and the designs on Lapita pottery are being rediscovered by contemporary artists working in a range of media and from various of Vanuatu's 80 inhabited islands. Various foodstuffs are marketed under the trademark of "Lapita Café," and recently I saw a bus with Lapita pottery designs printed on its sides. This archaeologically induced cultural pride is a long way from the Mission and Church trope internalized by many during the colonial period of a "time of darkness" before Christianity brought light and civilization.

Armed with good Marxist intentions and an almost complete lack of business acumen in 1980, I initiated an applied archaeology project on the island of Aneityum to revitalize traditional taro agriculture (Spriggs 1981, 1989, 1993). Canal-fed taro irrigation was an almost moribund agricultural practice in the wake of massive depopulation. Archaeological surveys revealed a largely intact stone agricultural infrastructure across the island that had the potential to be brought back into use as the population grew again. Yield trials suggested that high yields could be obtained from irrigated fields. For a variety of reasons the project was a failure (Spriggs, forthcoming) and was abandoned soon after development funding ended (cf. Swartley 2002 for another such applied archaeological failure in Bolivia).

Some 30 years later I was contacted by Aneityumese colleagues and chiefly representatives to be involved in a new taro revitalization project, conceived by the island community in order to teach traditional gardening skills to schoolchildren. In 2012 when this NGS-funded project commenced, there were several canal-fed gardens in use on the island. The gardeners had all either learned their craft in the 1980 project or had been taught by someone who had. Once community ownership and interest are mobilized, even a failed applied archaeology project can have a second life. The lesson is perhaps just to put our archaeology out there, and if it is of practical use to indigenous communities, then in their own time they will pick up on it.

Reply

This paper has had a long and somewhat tortuous history, and although this is no doubt true of many papers, it nevertheless seems relevant in the light of the thought-provoking and insightful comments published above, for which I would like to sincerely thank the respective authors. At the risk of some repetition or reiteration, it is therefore perhaps worth outlining the derivation of the argument presented.

In brief, the paper was originally intended as an examination of the feasibility and desirability of archaeological contributions to development projects (at the outset specifically in east Africa) that seek to learn from so-called indigenous knowledge, a term that few anthropologists are comfortable with but one that soon became an established shorthand within the developmental and conservationist literature, where it is still used in this context today. The early versions of the paper thus focused on what is here termed "applied archaeology" (a term borrowed from Erickson 1998 [1992]) and the "usable past" (following Andah 1995) and argued that archaeological research had the potential to contribute to development initiatives and to broader developmental and conservationist debates provided several key caveats were made clear. The first of these are essentially methodological: (1) that the fixed and portable technologies employed by any given resource exploitation strategy will have differing degrees of archaeological visibility and temporal resolution, and (2) that these technologies will have been supported and perhaps derived from a range of socioeconomic practices and epistemological/cosmological concepts that are not only subject to spatial and temporal variation but that may also be very hard or impossible to see archaeologically, thus perhaps necessitating the "importation" of data derived from other (e.g., ethnographic) sources. These two qualifying statements highlighted two general concerns that would perhaps be implicitly understood by archaeologists but that might need to be made more explicit to other audiences: (1) that interpretations of the past made by archaeologists might differ markedly from local historical accounts and that, as a consequence, sensitivity would be required if aspects of the archaeological data were employed to guide modern actions; (2) demonstrating that certain practices or technologies that have been maintained for prolonged periods in the past does not conclusively demonstrate that they would be sustainable in the future—in essence because it may be difficult to define, interpret, or replicate the complex web of social, economic, and environmental interactions that support (or formerly supported) a particular resource management strategy.

This relatively simply conclusion can, of course, be summarized in many ways, but one way of doing so is to stress that the term "indigenous knowledge" (particularly within the developmental trope of the same name) is generally shorthand for "local knowledge as defined and validated by western knowledge" (i.e., that ethnographic knowledge cannot be simply equated with the local knowledge employed by ethnography's subject communities) and that, similarly, archaeology never produces an "indigenous past," merely a "past of the indigenous." There is nothing controversial about this conclusion, and, indeed, as Doolittle's comments make clear, this point has been made from a variety of different anthropological perspectives throughout the discipline's history. However, since the original focus of the discussion concerned archaeological engagement with developmental initiatives and debates, it nevertheless seemed important to highlight one further implication of the above conclusions—namely, that previous attempts to employ archaeological data to extend or restore historic resource exploitation strategies (e.g., Erickson 1998 [1992]; Kendall 2005; Spriggs 1981, and current comments; see also Denevan 1982; Gómez-Pompa et al. 1982; cf. Evenari, Shanan, and Tadmor 1971) are methodologically distinct from historical research that seeks to engage with contemporary issues by challenging or refining the historical preconceptions behind specific developmental narratives and models.

Judging from the comments published above, this too is not contentious, and indeed many discussions from a range of disciplinary standpoints acknowledge this distinction, albeit often less explicitly (see, e.g., Balée 2006; Crumley 1994; Davies 2012; Hayashida 2005; Sillitoe 1998). The fact that some do not (e.g., Dawdy 2009; Nazarea 2006; Smith and Wobst 2005b, 2005c) can thus be reasonably described as a conflation, but this conflation is not particularly "harmful" (to use a term employed in a slightly different context by Gnecco) and was thus highlighted in the current paper for exactly the same reason that any archaeological or anthropological research publication would both outline the strengths and weaknesses of its chosen research methodology and take care to summarize any potential data deficiencies or evidential constraints. In other words, if the aim of your project is to initiate, engage with, or influence a developmental or conservationist program or debate, then acknowledging that there are distinct ways of achieving this actually improves your chances of success. Indeed, it is precisely for this reason that agricultural restoration projects of the type described by Spriggs (1981 and comments above), Erickson (e.g., 1998 [1992]) and Kendall (e.g., 2005) do not claim to be creating "living museums" that exactly replicate the technologies, activities, and socioeconomic conditions in the past and, instead, attempt (or attempted) to draw upon a variety of data sources and experiences to create systems that could function in the present. It is thus important that this distinction is made clear to archaeologists and nonarchaeologists alike (see Stump 2010).

What appears to be more contentious, however, is the attempt within the current paper to extend this line of argument to point to a further distinction between projects that focus on technical aspects of local knowledge and those that aim to incorporate local epistemological concepts. Colwell-Chanthaphonh, Gnecco, and Sillar all object to aspects of this discussion, albeit to differing degrees and for different reasons. All apparently detect some antipathy to this ambition, with Sillar interpreting the paper as expressing an "anxiety" and a "concern" that attempts to create hybrid archaeologies will undermine the authority of "conventional" archaeology (the phrase "conventional archaeology" being less than ideal, but having experimented with "mainstream," "western," "scientific," "empirical," "pure," "orthodox," and "archaeology proper," it is clear that all—quite legitimately—offend someone). No such antipathy or anxiety was expressed. On the contrary, if an emotive turn of phrase can be forgiven, I would cling like a drowning sailor to any approach that offered the faintest possibility of demonstrating a direct benefit of archaeological research to any community at any scale. As is acknowledged within the paper, hybrid archaeologies may one day produce such benefits, and indeed the fact that they have not yet done so and that it is not yet clear how they will do so, could be regarded as presently largely immaterial (see Gnecco's comments and Colwell-Chanthaphonh et al. 2010:232–233).

What the paper does argue, in contrast, is that the ambition of producing hybrid archaeologies is methodologically different from those employed within applied archaeology and the usable past—a conclusion that seems to be endorsed by both Colwell-Chanthaphonh and Gnecco—and that consequently it is in the best interests of proponents of hybridity to acknowledge this rather than potentially to undermine their own position by conflating distinct approaches and thereby introducing what appear to be internal inconsistencies and contradictions (e.g., Schmidt 1995:119). Gnecco is right, therefore, to point out that the paper does not solve Schmidt's paradox, but explicitly separating the paradox into its component parts makes the individual aims of applied archaeology, the usable past, and hybrid archaeology far clearer and would thus—hopefully—mitigate the danger that ambitions will be misread as rhetoric, or that success within one of these components will be interpreted as of direct relevance to the aims of another. This in itself is potentially important, particularly where archaeologists seek to collaborate within research and developmental initiatives whose multidisciplinary components are linked only by a shared commitment to the broad precepts of empiricist science (see, e.g., van der Leeuw et al. 2011).

Terminology and language is clearly a problem here, and it should perhaps therefore be stressed one last time that none of the terms used are perfect, all were drawn from the existing literature, and all were chosen primarily for clarity and internal consistency rather than in the belief that these should become the norm. This attempt at clarity may not have been an unmitigated success. Sillar, for example, argues that the suggested distinction between conventional archaeology and hybrid archaeologies is false, because individuals may employ potentially contrasting conceptions of causation in different circumstances (a point made several times in the current paper, most obviously through reference to Collingwood's outline of different senses of the word "cause" in English) and because the applied archaeology project on which Sillar collaborates has included the preparation of animistic offerings by participants and involved the "collaborative blending of archaeological research with indigenous knowledge and social practice." Sillar's point is a good one, but it rests on the very vague term "blend," a term that was used in the current paper only in reference to Atalay's call for a "collaborative approach that blends the strengths of western archaeological science with the knowledge and *epistemologies* of Indigenous peoples" (Atalay 2006:301, emphasis added; capitalization in original). Sillar's example would not seem to meet this test, since no evidence is presented that the archaeologists working on the project—whether local to the area or visiting from elsewhere—revised their own epistemological presuppositions. Did the visiting project members participate in the animistic ceremonies in the earnest belief that these would have a causational outcome? Did the use of archaeological techniques to discern technical aspects of the agronomy, or the process of sharing and gathering of data on labor management, force local participants to revise their epistemologies? If not, then the project employed the conventional approach to historical knowledge construction outlined by Collingwood 80 years ago and cannot be regarded as an example of epistemological hybridity.

This last point applies equally to several of Colwell-Chanthaphonh's comments, since the cited example of the San Pedro Ethnohistory Project (Ferguson and Colwell-Chanthaphonh 2006) may have been highly politically sensitive and an exemplar of collaborative community engagement, but it would not appear to be an attempt to produce a hybrid archaeology because there is nothing in this project's use of local oral historical or cosmological beliefs that diverges from the western approach to historical knowledge production. The San Pedro Ethnohistory Project is thus perhaps best characterized as a conventional exercise in historical archaeology (the prefix "ethno" being superfluous) that included a commitment to multivocality when collating data and reporting its results (the term "multivocal" also being the one preferred by Colwell-Chanthaphonh and Ferguson 2006). Colwell-Chanthaphonh does, however, cite several examples of experiments that have attempted such a divergence in the comments above (Atalay 2007; Million 2005; Silliman 2008; Wilcox 2009), but it is perhaps overly literal to conclude from this that the dominant paradigm is therefore "more elastic than some imagine," because the authority of this paradigm is drawn from its ability to refute or incorporate such challenges, and because—if the personification of a concept can be forgiven—the dominant paradigm currently has nothing to fear from such experiments.

In discussing this issue in references to Kuhn's (1970) concept of paradigm shifts, and via passing references to Feyerabend's "anarchistic theory of knowledge" (1993 [1975]) and

Foucault's (1974) notion that knowledge and power are inseparable, the paper acknowledges that local epistemologies may be deliberately marginalized and belittled for political, territorial, or economic gain. Gnecco and Herrera (and in different ways Pikirayi and Spriggs) are therefore right to draw attention to wider sociopolitical factors, with Herrera highlighting the geopolitics of knowledge and wider issues of globalization via Virilio's concept of endocolonialism, while Gnecco covers similar ground, using the term "postcolonial" as both a historical locative and in reference to a theoretical standpoint. These points are highly relevant, not least because the history of colonial and postindependence interventions demonstrate that the promotion of development programs (whether through "improvement," "modernization," "mechanization," or "structural adjustment") frequently included the denigration of local practices and beliefs. Highlighting the political and economic interests that underlie or deliberately manipulate these narratives has been an important contribution of what is here termed the "usable past," but the various reviewers who raise this issue nevertheless broaden the scope of the discussion considerably.

In some ways related to this question of knowledge and power, both Herrera and Gnecco also ask whether it is useful, desirable, or even possible to separate epistemological knowledge from technical knowledge, to which the answer offered in the current paper is, perhaps inevitably: yes and no. In terms of "pure" historical or ethnographic research, it is certainly not desirable (hence the effort spent attempting to achieve cross-cultural understandings and to mitigate the effects of mutually incommensurate conceptions), but it remains true that some development and conservation projects do deliberately focus only on technical aspects of local knowledge (often with good reason), and issues of archaeological visibility mean that many archaeology projects (whether applied or not) do the same. Doolittle's comments on intentionality are highly pertinent here, because although archaeological research may be able to define the development and refinement of a particular technology or practice, it may not be possible to discern the precise reasons why a particular community developed or later adapted these techniques. Doolittle's example of this is observational evidence of what might be termed the "gradual" accumulation of an irrigation system (temporary artificial irrigation furrows erode into streams that may be later canalized into ditches), but even apparently entirely functional technologies may have cosmologically specific origins or elements: for example, the suggestion that the extensive network of irrigation channels constructed from at least the sixteenth century AD on the slopes of Kilimanjaro in Tanzania may have been undertaken to allow ritual and political leaders to discharge their responsibilities as rainmakers (see Stump and Tagseth 2009 and references therein; cf. Endfield and Nash 2002 for an example of colonial attempts to co-opt similar beliefs in southern Africa). Such a hypothesis is archaeologically untestable, no matter how much it derives from firm evidence of local beliefs held currently or historically. In answer to the question posed by Gnecco and Herrera, then: yes, it may be both possible and practical to separate *episteme* from *techne*, and, indeed, given the focus of the current paper, it is noteworthy that development projects based on "indigenous knowledge" do so routinely. Numerous development initiatives have attempted to extend and learn from the local irrigation system on Kilimanjaro and the surrounding highlands, but little or no attention has been paid to the cosmological beliefs that surround these technologies (Grove 1993; Sheridan 2002).

As Spriggs points out, however, the onus for assessing how best to employ archaeological evidence of local technologies need not lie entirely with the archaeologists themselves, a point previously highlighted by Herrera (2008). Some aspects of Spriggs's discussion fall outside the scope of this paper, primarily because the "archaeologically induced cultural pride" Spriggs refers to raises Pikirayi's concern that "politicized pasts" involve the manipulation of tradition and thus may place little importance on whether or not archaeologists regard this past as "authentic." Nevertheless, Spriggs is right to note that archaeological contributions to applied archaeology projects may end at the data collection or experimental stage and, with this in mind, perhaps archaeologists should just "put our archaeology out there, and if it is of practical use to indigenous communities, then [. . .] they will pick up on it." The point is well made, but it also serves to reinforce the conclusions to the current paper that archaeologists should be frank about the strengths and weaknesses of the data they produce and should take care to avoid conflating approaches that are undoubtedly related but ultimately distinct.

—Daryl Stump

References Cited

Agrawal, A. 1995. Dismantling the divide between indigenous and scientific knowledge. *Development and Change* 26:413–439.
Allen, C. J. 1988. *The hold life has: coca and cultural identity in an Andean community*. Washington, DC: Smithsonian Institution Press. [BS]
Andah, B. W. 1987. Foundations of civilizations in tropical Africa. *West African Journal of Archaeology* 17:vii–x.
———. 1995. Studying African societies in cultural context. In *Making alternative histories: the practice of archaeology and history in non-western settings*. P. R. Schmidt and T. C. Patterson, eds. Pp. 149–181. Santa Fe, NM: School of American Research Press.
Appadurai, A. 1981. The past as a scarce resource. *MAN*, n.s., 16(2):201–219.
Atalay, Sonya. 2006. Indigenous archaeology as decolonizing practice. *American Indian Quarterly* 30(3/4):280–310.
———. 2007. Global application of indigenous archaeology: community based participatory research in Turkey. *Archaeologies* 3(3):249–270.
———. 2012. *Community-based archaeology: research with, by, and for indigenous and local communities*. Berkeley: University of California Press. [CC-C]
Balée, W. 2006. The research program of historical ecology. *Annual Review of Anthropology* 35:75–98.
Behnke, R. H, I. Scoones, and C. Kerven, eds. 1993. *Range ecology and disequilibrium: new models of natural variability and pastoral adaptation in African savannahs*. London: Overseas Development Institute.
Beinart, W. 1984. Soil erosion, conservation, and ideas about development: a Southern African exploration, 1900–1960. *Journal of Southern African Studies* 11:52–83.

Bennett, J. W. 1976. *The ecological transition: Cultural anthropology and human adaptation*. New York: Pergamon. [WED]

Bird-David, N. 1999. "Animism" revisited: personhood, environment, and relational epistemology. *Current Anthropology* 40:67–91. [BS]

Briggs, J. 2005. The use of indigenous knowledge in development: problems and challenges. *Progress in Development Studies* 5(2):99–114.

Brody, H. 2001. *The other side of Eden: hunter-gatherers, farmers, and the shaping of the world*. London: Faber & Faber.

Brown, M. F. 2008. Cultural relativism 2.0. *Current Anthropology* 49(3):363–383.

Bourdieu, Pierre. 1977. *Outline of a theory of practice*. Cambridge: Cambridge University Press.

Butzer, K. W. 1982. *Archaeology as human ecology: method and theory for a contextual approach*. New York: Cambridge University Press. [WED]

Carr, E. H. 1961. *What is history?* Cambridge: Cambridge University Press.

Caseldine, C. J., and C. Turney. 2010. The bigger picture: towards integrating palaeoclimate and environmental data with a history of societal change. *Journal of Quaternary Science* 25(1):88–93.

Castro Gómez, S. 2011. *Crítica de la razón latinoamericana*. Bogotá: Editorial Javeriana. [AH]

Childe, V. Gordon. 1933. Is prehistory practical? *Antiquity* 7:410–418. [MS]

Chirikure, S., and G. Pwiti. 2008. Community involvement in archaeology and cultural heritage management: An assessment from case studies in Southern Africa and elsewhere. *Current Anthropology* 49(3):467–485.

Clifford, J. 1988. *The predicament of culture: twentieth-century ethnography, literature and art*. Cambridge, MA: Harvard University Press.

Clifford, J. and G. E. Marcus, eds. *Writing culture: the poetics and politics of ethnography*. London: University of California Press.

Collingwood, R. G. 1940. *An essay on metaphysics*. Oxford: Oxford University Press.

———. 1946. *The idea of history*. Oxford: Oxford University Press.

———. 1999. *The principles of history and other writings in philosophy of history*. Edited and with an introduction by W. H. Dray and W. J. van der Dussen. Oxford: Oxford University Press.

Colwell-Chanthaphonh, Chip. 2007. *Massacre at Camp Grant: forgetting and remembering Apache history*. Tucson: University of Arizona Press. [CC-C]

———. 2012. Archaeology and indigenous collaboration. In *Archaeological theory today*. I. Hodder, ed. Pp. 267–291. Cambridge: Polity. [CC-C]

Colwell-Chanthaphonh, Chip, and T. J. Ferguson. 2006. Memory pieces and footprints: multivocality and the meanings of ancient times and ancestral places among the Zuni and Hopi. *American Anthropologist* 108(1):1–271.

———, eds. 2008. *Collaboration in archaeological practice: engaging descendant communities*. Lanham, MD: AltaMira. [CC-C]

———. 2010. Intersecting magisteria: bridging archaeological science and traditional knowledge. *Journal of Social Archaeology* 10(3):325–346. [CC-C]

Colwell-Chanthaphonh, Chip, T. J. Ferguson, D. Lippert, R. H. McGuire, G. P. Nicholas, J. E. Watkins, and L. J. Zimmerman. 2010. The premise and promise of indigenous archaeology. *American Antiquity* 75(2):228–238.

Cordell, L. S., and F. Plog. 1979. Escaping the confines of normative thought: a reevaluation of Puebloan prehistory. *American Antiquity* 44(3):405–429. [WED]

Costanza, R., L. Graumlich, and W. Steffen, eds. 2007. *Sustainability or collapse? an integrated history and future of people on Earth*. Cambridge, MA: MIT Press. [IP]

Costanza, R., L. Graumlich, W. Steffen, C. Crumley, J. Dearing, K. Hibbard, R. Leemans, C. Redman, and D. Schimel. 2007. Sustainability or collapse: what can we learn from integrating the history of humans and the rest of nature? *Ambio* 36(7):522–527.

Crapanzano, V. 1986. Hermes' dilemma: the masking of subversion in ethnographic description. In *Writing culture: the poetics and politics of ethnography*. J. Clifford and G. E. Marcus, eds. Pp. 51–76. London: University of California Press.

Crate, S. A. 2008. Gone the bull of winter? grappling with the cultural implications of and anthropology's role(s) in global climate change. *Current Anthropology* 49(4):569–595.

Crumley, C. L. 2007. Historical ecology: integrated thinking at multiple temporal and spatial scales. In *The world system and the Earth system: global socioenvironmental change and sustainability since the Neolithic*. A. Hornborg and C. Crumley, eds. Pp. 15–28. Walnut Creek, CA: Left Coast Press.

———. 1994. *Historical ecology: cultural knowledge and changing landscapes*. Santa Fe, NM: School of American Research Press.

Damm, C. 2005. Archaeology, ethnohistory, and oral traditions: approaches to the indigenous past. *Norwegian Archaeological Review* 38(2):73–87.

Davies, M. I. J. 2012. Some thoughts on a "useable" African archaeology: settlement, population and intensive farming among the Pokot of Northwest Kenya. *African Archaeological Review* 29(4):319–353.

Dawdy, S. L. 2009. Millennial archaeology: locating the discipline in the age of insecurity. *Archaeological Dialogues* 16(2):131–142.

De la Cadena, M. 2005. Are "Mestizos" hybrids? the conceptual politics of Andean identities. *Journal of Latin American Studies* 37:259–284. [AH]

Dearing, J. A. 2007. Integration of world and Earth systems: heritage and foresight. In *The world system and the Earth system: global socioenvironmental change and sustainability since the Neolithic*. A. Hornborg and C. Crumley, eds. Pp. 38–55. Walnut Creek, CA: Left Coast Press.

Denevan, W. M. 1982. Hydraulic agriculture in the American tropics: forms, measures and recent research. In *Maya Subsistence*. K. V. Flannery, ed. Pp. 181–203. New York: Academic Press.

Derrida, Jacques. 1982 (1972). *Margins: of philosophy*. A. Bass, trans. Chicago: University of Chicago Press.

Dewbury, Adam G., and Brian T. Broadrose. 2011. Structural barriers to collaboration: lessons from the field. *Archaeological Review from Cambridge* 26(2):11–30. [CC-C]

Diamond, Jared. 2005. *Collapse: how societies choose to fail or succeed*. New York: Viking. [IP]

Doolittle, W. E. 1984. Agricultural change as an incremental process. *Annals of the Association of American Geographers* 74(1):124–137. [WED]

Dove, M. R. 2006. Indigenous people and environmental politics. *Annual Review of Anthropology* 35:191–208.

Echo-Hawk, Roger C. 2000. Ancient history in the New World: integrating oral traditions and the archaeological record in deep time. *American Antiquity* 65 (2): 267–90.

Echo-Hawk, Roger C., and Larry J. Zimmerman. 2006. Beyond racism: some opinions about racialism and American archaeology. *American Indian Quarterly* 30(3/4):461–485. [CC-C]

Endfield, G. H., and D. J. Nash. 2002. Missionaries and morals: climatic discourse in nineteenth-century Central Southern Africa. *Annals of the Association of American Geographers* 92(4):727–742.

Erickson, C. L. 1994. Methodological considerations in the study of ancient Andean field systems. In *The archaeology of garden and field*. N. L. Miller and K. L. Gleason, eds. 111–152. Philadelphia: University of Pennsylvania Press.

———. 1998 (1992). Applied archaeology and rural development: archaeology's potential contribution to the future. In *Crossing currents: continuity and change in Latin America*. M. B. Whiteford and S. Whiteford, eds. Pp. 34–45. Upper Saddle River, NJ: Prentice-Hall. Reprinted from the *Journal of the Steward Anthropological Society* 20(1–2):1–16.

———. 2006. Intensification, political economy, and the farming community: in defence of a bottom-up perspective of the past. In *Agricultural strategies*. J. Marcus and C. Stanish, eds. Pp. 334–363. Los Angeles: Cotsen Institute of Archaeology, University of California.

Evans-Pritchard, E. E. 1937. *Witchcraft, oracles and magic among the Azande*. Oxford: Oxford University Press.

Evenari, M., L. Shanan, and N. Tadmor. 1971. *The Negev: the challenge of a desert*. Cambridge, MA: Harvard University Press.

Fairhead, J., and M. Leach. 1996. *Misreading the African landscape: society and ecology in a forest-savannah mosaic*. Cambridge: Cambridge University Press.

Feierman, S. 1990. *Peasant intellectuals: anthropology and history in Tanzania*. Madison: University of Wisconsin Press.

Ferguson, T. J., and Chip Colwell-Chanthaphonh. 2006. *History is in the land: multivocal tribal traditions in Arizona's San Pedro Valley*. Tucson: University of Arizona Press.

Feyerabend, P. 1993 (1975). *Against method: outline of an anarchistic theory of knowledge*. London: Verso.

Fisher, C. T., J. Brett Hill, and G. M. Feinman. 2009. *The archaeology of environmental change: socionatural legacies of degradation and resilience*. Tucson: University of Arizona Press.

FAO (Food and Agriculture Organization of the United Nations). 2004. *Globally important agricultural heritage systems*. Rome: FAO. http://www.fao.org/sd/giahs/documents.asp.

Foucault, Michel. 1974. *The archaeology of knowledge*. A. M. Sheridan-Smith, trans. London: Tavistock.

Geertz, C. 1973. *The interpretation of culture: selected essays*. New York: Basic Books.

Giddens, A. 1984. *The constitution of society*. Berkeley: University of California Press.

Gnecco, C., and C. Hernández. 2008. History and its discontents: stone statues, native histories, and archaeologists. *Current Anthropology* 49(3):439–466.

Gómez-Pompa, A., H. L. Morales, E. J. Avilla, and J. J. Avilla. 1982. Experiences in traditional hydraulic agriculture. In *Maya subsistence.* K. V. Flannery, ed. Pp. 327–342. New York: Academic Press.
Grafton, A. 2007. *What was history? the art of history in early modern Europe.* Cambridge: Cambridge University Press. [IP]
Grove, A. 1993. Water use by the Chagga on Kilimanjaro. *African Affairs* 92: 431–448.
Gunderson, L. H., and C. S. Holling, eds. 2002. *Panarchy: understanding transformations in human and natural systems.* Washington, DC: Island Press. [IP]
Harris, H. 2005. Indigenous worldviews and ways of knowing as theoretical and methodological foundations for archaeological research. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 33–41. London: Routledge.
Harrop, S. R. 2007. Traditional agricultural landscapes as protected areas in international law and policy. *Agriculture, ecosystems and environment* 121: 296–307.
Hayashida, F. M. 2005. Archaeology, ecological history, and conservation. *Annual Review of Anthropology* 34:43–65.
Heimo, M., A. H. Siemens, and R. Hebda. 2004. Prehispanic changes in wetland topography and their implications to past and future wetland agriculture at Laguna Mandinga, Veracruz, Mexico. *Agriculture and Human Values* 21:313–327.
Herrera, Alexander. 2008. Archaeology, technology and rural development in the Andes. Paper presented at the World Archaeology Congress (WAC-6), Dublin, Ireland, June 29–July 4, 2008.
———. 2011. *La recuperación de tecnologías indígenas: arqueología, tecnología y desarrollo.* Bogotá and Lima: Universidad de los Andes, Instituto de Estudios Peruanos and CLACSO. [AH]
———, ed. 2013. *Arqueología y desarrollo en América del Sur: de la práctica a la teoría.* Bogotá: Universidad de los Andes. [AH]
Holling, C. S., F. Berkes, and C. Folke. 1998. Science, sustainability and resource management. In *Linking social and ecological systems.* F. Berkes and C. Folke, eds. Pp. 242–263. Cambridge: Cambridge University Press.
Hornborg, A. 2006. Animism, fetishism, and objectivism as strategies for knowing (or not knowing) the world. *Ethnos* 71(1):21–32. [BS]
Ingold, T. 2000. *The perception of the environment: essays on livelihood, dwelling and skill.* London: Routledge.
———. 2006. Rethinking the animate, re-animating thought. *Ethnos* 71(1): 9–20. [BS]
Issacson, K., and S. Ford. 2005. Looking forward—looking back: shaping a shared future. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 354–367. London: Routledge.
Johnson, M. 2000. *Archaeological theory: an introduction.* Oxford: Blackwell.
Kant, Immanuel. 1993 (1781). *Critique of pure reason.* London: Everyman.
Keesing, R. M. 1990. Colonial history as contested ground: the Bell Massacre in the Solomons. *History and Anthropology* 4(2):279–301.
Kendall, A. 2005. Applied archaeology: revitalising indigenous agricultural technology within an Andean community. In *Conservation, identity and ownership in indigenous archaeology.* B. Sillar and C. Fforde, eds. Special issue, *Public Archaeology* 4:205–221.
Kendall A., and A. Rodríguez. 2009. *Desarrollo y perspectivas de los sistemas de andenería en los Andes Centrales del Perú.* Cuzco: Centro Bartolome de las Casas, and Lima: Institut Francais des Etudes Andines. [BS]
Kuhn, T. S. 1970. *The structure of scientific revolutions.* 2nd edition. Chicago: University of Chicago Press.
Kuper, A. 2003. The return of the native. *Current Anthropology* 44(3):389–402.
Lambin, E. F., B. L. Turner, H. J. Geista, S. B. Agbola, A. Angelsen, J. W. Bruce, O. T. Coomes, et al. 2001. The causes of land-use and land-cover change: moving beyond the myths. *Global Environmental Change* 11:261–269.
La Salle, Marina J. 2010. Community collaboration and other good intentions. *Archaeologies* 6(3):401–422. [CC-C]
Lane, Paul J. 1996. Rethinking ethnoarchaeology. In *Aspects of African archaeology: papers from the 10th PanAfrican Association for Prehistory and Related Studies.* G. Pwiti and R. Soper, eds. Pp. 727–732. Harare: University of Zimbabwe Press.
———. 2006. Comments on Damm (2005) archaeology, ethnohistory, and oral traditions: approaches to the indigenous past. *Norwegian Archaeological Review* 39:70–79.
———. 2011. Possibilities for a postcolonial archaeology in sub-Saharan Africa: indigenous and usable pasts. *World Archaeology* 43(1):7–25.
Latour, B. 1993. *We have never been modern.* Cambridge, MA: Harvard University Press. [BS]
———. 1996. *Aramis, or the love of technology.* Cambridge, MA: Harvard University Press. [BS]
Layton, R. 1994. Introduction: who needs the past? In *Who needs the past? indigenous values in archaeology.* R. Layton, ed. Pp. 1–20. London: Routledge.
Little, B. 2009. What can archaeology do for justice, peace, community, and the Earth? *Historical Archaeology* 43(4):115–119. [IP]
Lozny, L. 2006. Place, historical ecology and cultural landscapes: new directions for applied archaeology. In *Landscapes under pressure: theory and practice of cultural heritage research and preservation.* L. Lozny, ed. Pp. 15–25. New York: Springer.
Lyman, R. L. 2006. Paleozoology in the service of conservation biology. *Evolutionary Anthropology* 15:11–19.
Manyanga, M. 2007. *Resilient landscapes: socio-environmental dynamics in the Shashi-Limpopo Basin, southern Zimbabwe, c. AD 800 to the present.* Studies in Global Archaeology 11. Uppsala: Uppsala University, African and Comparative Archaeology, Department of Archaeology and Ancient History. [IP]
McAnany, P. A., and N. Yoffee, eds. 2010. *Questioning collapse: human resilience, ecological vulnerability and the aftermath of empire.* Cambridge: Cambridge University Press. [IP]
McCall, M. 1995. ITK [indigenous technical knowledge] in East African farming systems. *Indigenous Knowledge and Development Monitor* 4(1):20–22.
McGhee, R. 2008. Aboriginalism and the problems of indigenous archaeology. *American Antiquity* 73(4):579–597.
Merton, R. K. 1936. The unanticipated consequences of purposive social action. *American Sociological Review* 1(6):894–904. [WED]
Meskell, L., ed. 2009a. *Cosmopolitan archaeologies.* Durham, NC: Duke University Press.
———. 2009b. The nature of culture in Kruger National Park. In *Cosmopolitan archaeologies.* L. Meskell, ed. Pp. 89–112. Durham, NC: Duke University Press.
Mignolo, Walter. 1995. Decires fuera de lugar: sujetos dicentes, roles sociales y formas de inscripción. *Revista de Crítica Literaria Latinoamericana* 21:9–31. [AH]
Miller, J. H., and E. P. Page. 2007. *Complex adaptive systems: an introduction to computational models of social life.* Princeton, NJ: Princeton University Press. [IP]
Million, Tara. 2005. Developing an aboriginal archaeology: receiving gifts from White Buffalo Calf Woman. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 43–55. London: Routledge.
Minnis, P. E. 2000. Prehistoric agriculture and anthropogenic ecology of the North American Southwest. In *The archaeology of drylands: living at the margin.* G. Barker and D. Gilbertson, eds. Pp. 271–287. London: Routledge.
———. 2004. Extinction isn't always forever: biodiversity and prehistory. In *The archaeology of global change.* S. R. Redman, P. R. Fish, and J. D. Rogers, eds. Pp. 249–256. Washington, DC: Smithsonian Books.
Morrison, K. 1996. Typological schemes and agricultural change: beyond Boserup in precolonial South India. *Current Anthropology* 37:583–608.
Nazarea, V. D. 2006. Local knowledge and memory in biodiversity conservation. *Annual Review of Anthropology* 35:317–335.
Needham, R. 1976. Skulls and causality. *MAN*, n.s., 11(1):71–88.
Nicholas, G. P. 2005. The persistence of memory; the politics of desire: archaeological impacts on Aboriginal people and their response. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 81–103. London: Routledge.
Nicholas, G. P. and K. P. Bannister. 2004. Copyrighting the past? emerging intellectual property rights issues in archaeology. *Current Anthropology* 45(3):327–350.
Nygren, A. 1999. Local knowledge in the environment-development discourse: from dichotomies to situated knowledges. *Critique of Anthropology* 19(3): 267–288.
Ouzman, S. 2005. Silencing and sharing Southern African indigenous and embedded knowledge. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 208–225. London: Routledge.
Phillips, C. 2008. Comment on Chirikure and Pwiti (2008) community involvement in archaeology and cultural heritage management: an assessment from case studies in Southern Africa and elsewhere. *Current Anthropology* 49(3):479–480.
Pikirayi, I. 2006. The kingdom, the power and forevermore: Zimbabwe culture in contemporary art and architecture. *Journal of Southern African Studies* 32(4):755–770. [IP]

Pluciennik, M. 2009. Fortuitous and wasteful mitigations. *Archaeological Dialogues* 16(2):152–157.
Preucel, Robert W., and Craig N. Cipolla. 2008. Indigenous and postcolonial archaeologies. In *Archaeology and the postcolonial critique.* M. Liebmann and U. Z. Rizvi, eds. Pp. 129–140. Lanham, MD: AltaMira. [CC-C]
Rappaport, J. 2008. Comment on Gnecco and Hernández (2008) history and its discontents: stone statues, native histories, and archaeologists. *Current Anthropology* 49(3):459.
Redman, C. L., S. R. James, P. R. Fish, and J. D. Rogers, eds. 2004. *The archaeology of global change: the impact of humans on their environment.* Washington: Smithsonian Books.
Redman, C. L., and A. P. Kinzig. 2003. Resilience of past landscapes: resilience theory, society, and the longue durée. *Conservation Ecology* 7(1):14. http://www.consecol.org/vol7/iss1/art14.
Rowlands, M., and J.-P. Warnier. 1993. The magical production of iron in the Cameroon grassfields. In *The archaeology of Africa: food, metals and towns.* T. Shaw, P. Sinclair, B. Andah, and A. Opoko, eds. Pp. 512–550. London: Routledge.
Rylko-Bauer, B., M. Singer, and J. van Willigen. 2006. Reclaiming applied anthropology: its past, present and future. *American Anthropologist* 108(1): 178–190.
Salmond, A. 1982. Theoretical landscapes: on cross-cultural conceptions of knowledge. In *Semantic anthropology*. D. J. Parkin, ed. Pp. 65–85. London: Academic Press.
Schmidt, P. R. 1995. Using archaeology to remake history in Africa. In *Making alternative histories: the practice of archaeology and history in non-western settings.* P. R. Schmidt and T. C. Patterson, eds. Pp. 119–147. Santa Fe, NM: School of American Research Press.
———. 2006. *Historical archaeology in Africa: representation, social memory, and oral traditions.* Walnut Creek, CA: AltaMira.
Shanks, M., and I. Hodder. 1995. Processual, postprocessual and interpretive archaeologies. In *Interpreting archaeology: finding meaning in the past.* I. Hodder, M. Shanks, A. Alexandri, V. Buchli, J. Carmen, J. Last, and G. Lucas, eds. Pp. 3–29. London: Routledge.
Shanks, M., and C. Tilley. 1987. *Re-constructing archaeology: theory and practice.* Cambridge: Cambridge University Press.
Sheridan, M. J. 2002. An irrigation intake is like a uterus: culture and agriculture in precolonial North Pare, Tanzania. *American Anthropologist* 104(1):79–92.
Sillar, B. 2005. Who's indigenous? whose archaeology? In *Conservation, identity and ownership in indigenous archaeology*. B. Sillar and C. Fforde, eds. Special issue, *Public Archaeology* 4(2–3):71–94.
———. 2009. The social agency of things? animism and materiality in the Andes. *Cambridge Archaeological Journal* 19(3):367–377. [BS]
Silliman, Stephen W., ed. 2008. *Collaborating at the trowel's edge: teaching and learning in indigenous archaeology.* Tucson: University of Arizona Press.
Sillitoe, P. 1998. The development of indigenous knowledge: a new applied anthropology. *Current Anthropology* 38(2):223–252.
———. 2006. Ethnobiology and applied anthropology: rapprochement of the academic with the practical. In *Ethnobiology and the science of humankind.* R. Ellen, ed. Special issue, *Journal of the Royal Anthropological Institute incorporating man* 12(suppl.):S119–S142.
Sinclair, P. J. J., N. Gullög, F. Herschend, and C. Isendahl, eds. 2010. *The urban mind: cultural and environmental dynamics.* Uppsala: African and Comparative Archaeology, Department of Archaeology and Ancient History, Uppsala University. [IP]
Smith, C., and H. M. Wobst. 2005a. Decolonizing archaeological theory and practice. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 5–16. London: Routledge.
———, eds. 2005b. *Indigenous archaeologies: decolonizing theory and practice.* London: Routledge.
———. 2005c. The Next Step: an archaeology for social justice. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 392–394. London: Routledge.
Sperber, D. 1982. *On anthropological knowledge.* Cambridge: Cambridge University Press.
Spriggs, M. 1981. *"Bombs and Butter," the revival of ancient irrigation techniques for a market economy: a Pacific example.* Occasional Papers in Prehistory 2. Canberra: Department of Prehistory, RSPacS, Australian National University.
———. 1989. *The past, present and future of traditional taro irrigation in the Pacific: an example of traditional ecological knowledge.* SPREP Occasional Paper 3. Nouméa: South Pacific Commission. [MS]
———. 1993. The current relevance of ethnohistorical and archaeological systems. In *Traditional ecological knowledge: wisdom for sustainable development.* N. M. Williams and G. Baines, eds. Pp. 109–114. Canberra: Centre for Resource and Environmental Studies, ANU. [MS]
———. Forthcoming. A 1980 attempt at reviving ancient irrigation practices in the Pacific: rationale, failure and success. In *The Oxford handbook of historical ecology and applied archaeology.* C. Isendahl and D. Stump, eds. Oxford: Oxford University Press. [MS]
Stahl, A. B. 2001. *Making history in Banda: anthropological visions of Africa's past.* Cambridge: Cambridge University Press.
Steward, J. H. 1955. *Theory of culture change: the methodology of multilinear evolution.* Urbana: University of Illinois Press. [WED]
Stump, D. 2010. "Ancient and backward or long-lived and sustainable": the role of the past in debates concerning rural livelihoods and resource conservation in eastern Africa. *World Development* 38(9):1251–1262.
Stump, D., and M. Tagseth. 2009. The history of precolonial and early colonial agriculture on Kilimanjaro: a review. In *Culture, history and identity: landscapes of inhabitation in the Mount Kilimanjaro area, Tanzania.* T. Clack, ed. Pp. 107–124. BAR International Series 1966. Oxford: Archaeopress.
Swartley, L. 2002. *Inventing indigenous knowledge: archaeology, rural development and the raised field rehabilitation project in Bolivia.* London: Routledge. [MS]
Tax, S. 1964. *Horizons of anthropology.* Chicago: Aldine. [WED]
Trigger, B. 1997. Foreword. In *At a crossroads: archaeology and First Peoples in Canada.* G. P. Nicholas and T. D. Andrews, eds. Pp. vii–xiii. Burnaby, BC: Archaeology Press.
Tuleja, T. 1997. *Usable pasts: traditions and group expressions in North America.* London: Utah State University Press. [IP]
UN (United Nations). 1992. *Agenda 21: the United Nations plan for action from Rio.* New York: United Nations.
UNESCO (United Nations Educational, Scientific, and Cultural Organization). 2003. *Convention for the safeguarding of the intangible cultural heritage.* http://unesdoc.unesco.org/images/0013/001325/132540e.pdf.
Van den Berg, H. 1990. *La tierra no da asi nomas: los ritos agrícolas en la religion de los aymara-cristianos.* Yachay Temas Monograficos no. 5. Cochabamaba: Universidad Catolica Boliviana. [BS]
Van der Leeuw, S., and C. L. Redman. 2002. Placing archaeology at the center of socio-natural studies. *American Antiquity* 67(4):597–605.
Van der Leeuw, S., R. Costanza, S. Aulenbach, S. Brewer, M. Burek, S. Cornell, C. Crumley, et al. 2011. Toward an integrated history to guide the future. *Ecology and Society* 16(4):2. http://dx.doi.org/10.5751/ES-04341-160402.
Vansina, J. 1985. *Oral tradition as history.* Madison: University of Wisconsin Press.
Watkins, J. 2005. Through wary eyes: indigenous perspectives on archaeology. *Annual Review of Anthropology* 34:429–449.
———. 2006. Comment on Strang (2006) a happy coincidence? symbiosis and synthesis in anthropological and indigenous knowledges. *Current Anthropology* 47(6):999–1000.
Whitehead, A. N. 1925. *Science and the modern world.* New York: Free Press. [WED]
Wilcox, Michael V. 2009. *The Pueblo revolt and the mythology of conquest: an indigenous archaeology of contact.* Berkeley: University of California Press.
Willis, K. J., L. Gillson, and T. M. Brncic. 2004. How "virgin" is virgin forest? *Science* 304:402–403.
Wobst, H. M. 2005. Power to the (indigenous) past and present! or, the theory and method behind archaeological theory and method. In *Indigenous archaeologies: decolonizing theory and practice.* C. Smith and H. M. Wobst, eds. Pp. 17–32. London: Routledge.
Wylie, A. 1995. Alternative histories: epistemic disunity and political integrity. In *Making alternative histories: the practice of archaeology and history in non-western settings.* P. R. Schmidt and T. C. Patterson, eds. Pp. 225–272. Santa Fe, NM: School of American Research Press.
———. 2005. The promise and perils of an ethic of stewardship. In *Embedding ethics: shifting boundaries of the anthropological profession.* L. Meskell and P. Pells, eds. Pp. 47–68. Oxford: Berg.
———. 2008. Legacies of collaboration: transformative criticism in archaeology. Paper presented at the Archaeology Division Distinguished Lecture, American Anthropological Association, San Francisco.
Zamora, L. P. 1997. *The usable past: the imagination of history in recent fiction of the Americas.* Cambridge: Cambridge University Press. [IP]

Zimmerman, L. J. 1997. Remythologizing the relationship between Indians and archaeologists. In *Native Americans and archaeologists. stepping stones to common ground*. N. Swidler, K. E. Dongoske, R. Anyon, and A. S. Downer, eds. Pp. 44–56. Walnut Creek, CA: AltaMira.

———. 2005. First, be humble: working with indigenous peoples and other descendant communities. In *Indigenous archaeologies: decolonizing theory and practice*. C. Smith and H. M. Wobst, eds. Pp. 301–314. London: Routledge.