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Robert Chapman and Alison Wylie. *Evidential Reasoning in Archaeology* (London: Bloomsbury Academic, 2016, 254 pp., 19 illustr., hbk, ISBN 978-1-4725-2527-7)

By Gavin Lucas

In times when archaeological theory seems to largely revolve around different -isms about how to approach material culture— from post-colonialism to the new materialism —it is refreshing to read a book which grapples with the nuts and bolts of archaeological reasoning. As Chapman and Wylie point out, despite the collapse of the processual- post-processual wars of the 1980s and early 1990s, epistemological issues of knowledge production have not been resolved so much as buried underground. Theoretical pluralism may reign on the surface, yet the tacit consensus of knowledge being not-quite- relative yet not-fully-objective either, probably survives only through lack of scrutiny. The acceptance by processualists that data is always theoretically laden, while for post-processualists a guarded objectivity has to be retained, seemed to melt together in a middle ground where both sides could agree—so long as neither probed the matter much further. Rather than resurrect this old debate between pure, untainted objective knowledge and rampant relativism or the associated dilemma between safe but dull interpretation versus unwarranted but exciting speculation, Chapman and Wylie accept that archaeological knowledge is always imperfect. They see their task as to build from this recognition and ask how such knowledge is nonetheless still successfully developed in practice. Central to their approach is the concept of scaffolding, which does what it would seem to imply: hold an argument together. The opening, introductory chapter ('Introduction: The Paradox of Material Evidence') presents an outline of their position and a summary of the book itself, which is essentially an extended essay offering three case study chapters where they illustrate the way this scaffolding operates through real life, archaeological examples.

In Chapter 1 ('Archaeological Evidence in Question: Working between the Horns of a Dilemma'), the authors review the long-term history of epistemology in archaeology through a series of 'crisis debates' that took place in North America every decade or so over the course of the twentieth century, occasionally cross-linking them to similar issues that emerged in Britain. It is a very engaging history whose importance perhaps lies most of all in reminding us that such issues have always been with us and are not a product of some ostensible theoretical revolution that occurred in the 1960s. However, the main moral of the story for them is that these debates were set up in exaggerated oppositional terms in the first place. They critique two key assumptions underpinning these debates: the either/or nature of positions taken; and the presumption that all archaeological claims are subject to the same degree of certainty—or uncertainty. In reaction, they argue that interpretation always operates under probabilities or shades of certainty and that there will be intrinsic variation in the certainty we can expect, depending on the nature of the claim. However, I do wonder if the authors have not themselves caricatured this history in citing these assumptions; one of the obvious pieces of history missing here is Hawkes' famous ladder of inference, which seemed to acknowledge precisely the problems arising from the second assumption (Hawkes, 1954). The omission of Hawkes' ladder is even stranger considering the space the authors give to discussing his student Margaret

Smith's famous paper on the limits of inference (Smith, 1955).

In response to what they see as the oppositional stance taken by these crisis debates, founded as they are on idealized and rarefied accounts of scientific reasoning, Chapman and Wylie turn to the work of philosopher Stephen Toulmin, specifically his book *The Uses of Argument* from 1958, which provides the classic account of 'logic in use' (Toulmin, 1958). They give an outline of Toulmin's approach, especially how he breaks down the elements of an argument into primary and secondary components, and then employ his 'argument diagram' in subsequent chapters when discussing particular case studies. The concept of scaffolding, which plays such a key role, comes from another philosopher, William Wimsatt (1981), but resembles closely what Toulmin calls warrants—namely, that part of an argument which secures the connection or inference between a claim and its evidence. The message of Chapman and Wylie is made very clear: let us look at how archaeologists actually do reason, not how they should do it according to some abstract philosophy, whether that is positivism or hermeneutics. What is interesting however is that they do not take what might seem the obvious or fashionable route to do this; although they acknowledge the 'practice turn' in science studies, the likes of Bruno Latour, Michael Lynch, Karin Knorr-Cetina, Steven Shapin, or Steve Woolgar do not appear in these pages, not even in the bibliography. One cannot help but think this omission is deliberate. Indeed, the approach they do take very much draws on a more conventional epistemological platform within the traditions of analytical philosophy and pragmatism in the philosophy of science, albeit one very critical of earlier classic work in this field.

The next three chapters all attempt to illustrate how this practical, logic-in-use operates in various archaeological contexts. No claim is made to be exhaustive here, but the contexts they do choose to discuss are all fairly central to the discipline. Thus Chapter 2 ('Archaeology Fieldwork: Scaffolding in Practice') looks at fieldwork and how knowledge is constructed during excavation; Chapter 3 ('Working with Old Evidence') examines the issues surrounding work on legacy archives, i.e. old data; while Chapter 4 ('External Resources: Archaeology as a Trading Zone') addresses the area of inter-disciplinary exchange, specifically archaeological uses of methods and techniques developed in other disciplines. All three chapters make for very engaging reading and offer detailed case studies as exemplars of Chapman and Wylie's approach to the subject. Moreover, each of these chapters get successively better; thus the fieldwork chapter is perhaps the least original and insightful as it seems to say much that has been said elsewhere and in fact is largely a summary of this literature. One learns more from the chapter on legacy archives, but especially the last one on trading zones. This last chapter is another good example of Chapman and Wylie avoiding the obvious; instead of looking at anthropology and the role of analogy as a case of archaeology trading with another discipline, they tackle the world of archaeological science and explore different examples where real bridges were established (i.e. radiocarbon dating) and where they weren't (i.e. lead isotope analysis). For me, this is also where the concept of scaffolding really seemed to work best.

Indeed, in many ways the concept of scaffolding as used in this book is both its strength and weakness. As a way to develop the idea of building up secure arguments, it has great purchase and it also aligns very well with Toulmin's model of arguments, in terms of the idea of warrants. Once you adopt the idea of scaffolding, clearly what matters is how well it performs, i.e. does what it is supposed to do. To measure this, Chapman and Wylie use the concept of 'robustness' (after Wimsatt, 1981) which they define in some detail, drawing also on the work of

philosopher Helen Longino (2002) and linking it to one of Wylie's famous metaphors of cabling (Wylie, 1989). Arguments work best not as linear chains, but multiple strands which work to triangulate around the same claim. All this is very convincing; but it is also only really expanded upon in the last case study on trading zones (Ch. 4). Although they use the term scaffolding throughout, I actually found it hard to see how this concept really applied in the chapter on fieldwork (Ch. 2) for example; indeed, although an argument structure can be identified in some aspects of field- work reasoning, it is questionable how central it is to knowledge production in the field. My feeling was that the authors were stretching the concept of scaffolding too far and, as a result, diminishing somewhat its utility.

The question of how widely applicable the concept of scaffolding is to archaeological reasoning in different contexts raises the larger question of how widely applicable an argument structure in general is to knowledge claims. Perhaps the chief blind- spot of the book is that it never really addresses the question of what knowledge is and whether it can take different forms; is, for example, knowledge based on argument the same as knowledge based on observation?

Recording in the field to create data certainly uses conventions and these conventions are subject to critique and revision as they show in Chapter 2; but can these conventions really be regarded as scaffolding in the same way as warrants are in an argument? It seems to me that the idea of scaffolding is linked to a particular mode of knowledge construction rather than a universal feature of all knowledge and subsuming such diverse practices as excavation and lead isotope analysis under the same mode of reasoning may be glossing over too much epistemic diversity. It is also arguable that the reason for this gloss comes precisely because the authors do follow a conventional epistemological line of thought rather than consider what a more embodied or material approach to archaeology might yield. One of the advantages of using the work of those in science studies like Latour is the attention drawn to the different configurations and translations that 'evidence' undergoes as it moves from fieldwork to publication (e.g. Latour, 1999). As a consequence, knowledge in these different contexts also takes on very different forms and surely requires different epistemic norms. Can we use the same criteria to evaluate a context sheet as a monograph?

In the final chapter ('Conclusions: Reflexivity Made Concrete'), the authors do in fact address this question of epistemic norms in some detail as part of a critical review of the concept of objectivity. I found this a very important part of the book, drawing as it does on the work of philosophers Peter Galison (who also originated the idea of trading zones used to frame Chapter 4) and Lorraine Daston (Daston & Galison, 1997), as well as adding further support against the rather simplistic reductions and binaries which they critique. Rather than oppose objectivity to subjectivity, not only are the two closely related but, more than that, objectivity has multiple dimensions and what we mean by objectivity varies greatly depending on what aspect we are thinking about. They highlight four different facets— objectivity as what really exists (realism), objectivity as the removal of bias (impartiality or neutrality), objectivity as what a community agrees upon (consensus), and finally objectivity as an epistemic virtue. It is this last one they discuss the most and quite rightly, as in many ways this itself contains a multitude of positions, some of which may conflict. What would have been good however was if they had considered how this diversity might intersect with different modes of knowledge construction and whether different epistemic practices require quite different epistemic norms.

Let me end by saying that this is an important book which revives a discussion which has

remained dormant too long, at least within mainstream archaeological theory. It deserves to be widely read and engaged with because its message is simple. Evidence cannot speak for itself, it needs interpretation, but at the same time we cannot make it say whatever we want; it always has the power to resist our interpretations. Instead of chasing our tails trying to find a way to refute one or the other side of this paradox, we should drop the whole quest for certainty which underpins it and instead focus on how to improve the robustness of our interpretations and the scaffolding that holds them together. Even if this solution does not work for everything that we call archaeological knowledge, it certainly applies to a large section of it and, for that reason, this book offers an invaluable guide for all archaeologists concerned with the epistemic status of their work.

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