ON THE VANPOOLS' "SCIENTIFIC" POSTPROCESSUALISM

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Recently, VanPool and VanPool (1999) propose that postprocessual archaeology can be construed as a scientific practice if archaeologists would simply adopt a "realistic view" of science. We argue that this "realistic view" actually misrepresents science and we question the VanPools' attempt to reduce the dynamic practice of science to a series of static traits. We also affirm the incompatibility of the respective confirmation strategies employed by the postprocessual and processual programs.

En su publicación reciente, VanPool y VanPool (1999) proponen que se puede considerar como científica la arqueología postprocesual, si sólo los arqueólogos adoptan una "perspectiva realista" de la ciencia. Respondemos que dicha perspectiva, en realidad, falsifica la ciencia. Por eso, su discusión como un vehículo de reconciliación entre la arqueología procesual y la arqueología postprocesual no es productiva. Nuestra respuesta enfatiza algunos problemas de la caracterización de la ciencia avanzada por los autores y niega el valor de presentar la práctica de la ciencia como una serie de características estáticas.

Recently in this journal, VanPool and VanPool (1999) attempt to turn postprocessualism into science. This action is spurred by their concern that archaeology "is no longer a coherent discipline" and is in danger of losing "its intellectual, scientific, and funding credibility" (VanPool and VanPool 1999:34). Fortunately, archaeologists can avoid this pending disaster by adopting a "realistic view of the nature of science" (VanPool and VanPool 1999:48). This "realistic view" (a list of seven traits) transforms postprocessualism into a practice that is "certainly as ‘scientific’ as processual archaeology and other recognized sciences, such as physics" (VanPool and VanPool 1999:42).

We reject the VanPools’ version of epistemic alchemy. We argue below that their trait-list incantation will not transmute the soft ore of humanism into a hard scientific currency. We also suggest that the VanPools’ "realistic" tonic mixes incompatible confirmation strategies. The authors do not distill a more potent elixir of inference; instead, they merely brew an adulterated science-lite. Flavored with this low-cal substitute, the VanPools’ postprocessualism looks more like a "Nutra" Archaeology than the New Archaeology.

The Logic of a Science Trait List

The authors’ trait list enables them to recast postprocessual archaeology as scientific. Thus, they must convince the reader that a trait list, rather than some other mechanism, is the appropriate tool. They make their case by asserting that no single criterion has successfully demarcated science from non-science (VanPool and VanPool 1999:40–42). Nowhere do they defend the assumption that such a demarcation criterion—rather than an explicit definition—is either necessary or desirable.

Warranting the Trait List

VanPool and VanPool (1999:40) first introduce, then vilify, a "legendary view of science." This view states that "scientists are completely rational, objective observers" of the empirical world, who will "readily drop any aspect of their pet theories" when confronted with contradictory evidence (VanPool and VanPool 1999:40). The description is certainly unpalatable; nonetheless, their target is a beleaguered strawman. Sighting on this tired decoy displays all the marksmanship of shooting fish in a barrel.

We challenge the authors’ claim (VanPool and
VanPool 1999:40) that this view of science is “commonly held” and “widely held” within the contemporary archaeological community. It is noteworthy that not a single citation in this section attributes the “legendary view” to an archaeologist. As the authors are later forced to admit (VanPool and VanPool 1999:45), the “legendary view” of science has been dead for decades.

Their presentation dismisses the considerable literature that reformulates the scientific commitments of processualism in the face of postprocessual critiques: specifically, the reconciliation of empirical data with the theory-laden nature of observation (e.g., Binford 1982:128; Hanen and Kelley 1992:215; Renfrew 1989:36; Wylie 1989a:22, 26; 1992a:279; 1992b:25, 27–29). The VanPools’ insistence on dispatching an archaic “legendary view” of science does no service to reformations of contemporary theory in scientific archaeology.

Next, the authors repudiate the demarcation criteria of induction and falsification set forth by Bacon and Popper, respectively. Bacon’s work formed the basis of the “legendary view,” which the authors later concede has been passé for almost fifty years. Thus, their rebuke of Bacon is irrelevant. All the while the VanPools ignore more recent discussions of induction in archaeological research (e.g., Hanen and Kelley [1989] and Kelley and Hanen’s [1988:360–368] treatment of inference to the best explanation). The authors fail to note that inductive reasoning is a prerequisite for explanation—a statement that is explanatory must be ampliative (i.e., inductive). Deductive reasoning simply invokes the original premise through rules of logic and provides no additional explanatory power.

As for their critique of Popper’s (1959) well-established falsification program, the authors mistakenly equate refutation with rejection (e.g., Lakatos 1970:177). For example, they suggest that, according to a Popperian program, the contributions of Copernicus and Newton “would have been rejected and a great amount of scientific knowledge would have been lost” (VanPool and VanPool 1999:42).

Unlike the authors, most philosophers of science readily distinguish between the logic of refutation, or disconfirmation of a hypothesis, and the methodological issue of the rejection of that hypothesis (e.g., Losee 1993:228; Popper 1974:1009). Refutation of a hypothesis does not, and should not, necessarily lead to its rejection. Falsification is an empirical method of evaluation used to assess the consequences of competing hypotheses. Ironically, falsification was inherent in Newton’s method; it can be seen when one reduces mechanical principles to mathematical equivalences (i.e., to a calculus) and then tests these expectations empirically (Burtt 1989:207–226).

To debunk Popper’s views, VanPool and VanPool (1999:40–42) cite such self-described science anarchists as Feyerabend (1975). It is unfortunate that the authors ignore the works of Bell (1982, 1987, 1991, 1992), a philosopher of science who explicitly advocates the Popperian program with reference to archaeology. These, as well as other relevant omissions (e.g., Embree 1992), seriously undermine the balance and value of the VanPools’ discussion.

Based on their review of Bacon and Popper, VanPool and VanPool (1999:42) conclude that “there is simply no distinction between science and non-science.” Were this statement valid, then the remainder of their exercise becomes pointless: with no difference between science and non-science, then the “scientific” status of either postprocessualism or processualism is moot. That the authors proceed suggests that they are more interested in polemics than the logic of their own argument (see Watson’s [1990] discussion of such rhetorical strategies in postprocessual archaeology).

Trait Lists Are Not Classifications

Given their determination to present postprocessual archaeology as science, two strategies come quickly to mind. First, one might create a classification that stipulates the necessary and sufficient conditions for membership in the class “science,” and then determine whether postprocessualism meets those conditions (e.g., Dunnell 1971:43–47; Voorrips 1982). VanPool and VanPool (1999:42) eschew this approach. The second strategy would provide an explicit definition of “science,” and then evaluate postprocessual archaeology in terms of that definition (for a parallel example, see Dunnell’s [1971:113–127] discussion of “prehistory”). The authors flirt with this option when they characterize science as a “method of inquiry in which knowledge is subject to revision” (VanPool and VanPool 1999:40). Unfortunately, they do not explain the particulars of this “method of inquiry,” nor do they discuss appropriate revision tactics. Their characterization would be enriched by Richard Wat-
son’s (1991:276) stipulation that, “what is claimed as knowledge be both testable and attainable by everybody . . . [this] rules out the claims of mystics, intuitionists, and faddists to transcendental knowledge based on special experiences, capacities, or faith.” Further explanation might include the fact that philosophers of science as well as archaeologists assess the scientific method in terms of the logical independence between the knowledge claims that link data with inference, and the hypothesis evaluated by means of those inferences (e.g., Binford 1982:127–128; Cowgill 1993:554; Wylie 1992b:25, 2000:231–234).

The authors present neither an explicit definition of science nor a means to classify diverse approaches as scientific or non-scientific. Instead, postprocessualism and processualism are offered as examples of science—that is, both are treated as members of the group “science.” This grouping borders on tautology, because it assumes the very characteristics that should be the subject of investigation. A reliance on grouping instead of classification (see Dunnell 1971:44) makes evaluation of group membership particularly problematic:

Lacking a formal analytic step, groups cannot provide intensionally [sic] defined units which are capable of evaluation—the features upon which groups are based are assumed rather than treated as hypotheses with the resulting organization providing a test of the hypotheses as is the case with classification [Dunnell 1971:91; emphasis added].

The VanPools describe their version of postprocessual archaeology, but provide no means to link it to a definition of—or a classification as—science (e.g., Dunnell 1971:15–18). Consequently, the scale of comparison (e.g., Dunnell 1971:48–49) between the processual and postprocessual programs is compromised. Given the authors’ logic, a $50,000 Mercedes and a $5 Matchbox toy belong in the same group because both exhibit the same traits: a steering wheel, four tires, and a windshield. As a result, the VanPools’ trait-list presentation fails to persuade us that postprocessualism can be equated with either processualism or science (e.g., Dunnell 1971:44, 90).

Two Criteria: Objectivity and “Some Component of Evaluation”

Even if one were to suggest a limited heuristic value in the VanPools’ “science trait list,” any such value is severely undercut by the muddled nature of the authors’ criteria. We do not devote space to the difficulties that mar all seven traits, but make our point by focusing attention on only two criteria.

The authors seem confused by and treat inconsistently their fourth and fifth criteria: that “science must be objective” (VanPool and VanPool 1999:44), and that science must “include some component of evaluation” (VanPool and VanPool 1999:44–45), respectively. Citing Popper, they define objectivity as meaning “intersubjectively testable and verifiable” (VanPool and VanPool 1999:44). So defined, however, criterion four is presented as a means to evaluate alternative propositions and thus subsumes criterion five.

The authors’ fourth and fifth criteria turn on a single issue: confirmation. The VanPools gloss the point that most philosophers of science (and archaeologists) are not satisfied with just any manner of confirmation; rather, they advocate particular evaluation procedures. Scientific confirmation, as noted above, is commonly assessed as a function of the independence between the hypothesis being evaluated, and the methods/knowledge claims used to render that evaluation. It is through such independence that anomalies are recognized. The recognition of anomalies is a fundamental part of scientific practice (Kuhn 1962:121; Laudan 1977:13–24; Toulmin 1961).³

Most postprocessual confirmation strategies do not conform to the VanPools’ criterion of intersubjective testability. Here the authors’ confusion is palpable. For example, VanPool and VanPool (1999:45) claim that postprocessualists have “created a strawman” by suggesting that objectivity means “free from bias or ‘true’ in an absolute sense” (see our comments above). They cite Hodder (1991:10) as a particular culprit. But in the authors’ very next paragraph, Hodder’s (1991:10) same call for a “guarded objectivity” is used as an example of how postprocessualism meets the criterion of intersubjective testability!⁴

Fortunately, Hodder’s (1991) own position on postprocessualism and hypothesis testing is considerably clearer than the VanPools’ treatment of it. Hodder (1991) notes that the processual and hermeneutic methods of evaluation “of course differ in their approach to the validation of hypotheses” (1991:12), the former “through external sources” while the latter is evaluated “through internal meaning” (1991:13). Hodder (1991) thus articulates the
position shared by other postprocessualists, namely that hermeneutics provides a way to improve “understanding” and “internal meaning” in contrast to the emphasis on “explanation,” which is said to characterize scientific pursuits (Johnsen and Olsen 1992:421; Preucel 1995).

VanPool and VanPool (1999:44–45) also suggest that intersubjective testability requires a “scale of measurement” and “acceptable instruments of measurement,” providing the example of a thermometer used to determine room temperature. We agree that the practice of science calls for independent measures, but we strongly dispute the suggestion that postprocessual archaeology commonly employs such indices to evaluate hypotheses. It is noteworthy that, apart from their own assertions, Van Pool and VanPool (1999:45) offer no examples of postprocessual research that employs independent scales and instruments as part of a confirmation strategy. Moreover, it is difficult to reconcile the requirement for these independent, external measurements with statements made by postprocessual archaeologists: “It is only when we make assumptions about the subjective meaning in the minds of people long dead that we can begin to do archaeology” (Hodder 1986:79). Yet this statement is drawn from a postprocessual discussion that VanPool and VanPool (1999:36) approvingly characterize as “moderate”!

In their account of criterion five, VanPool and VanPool (1999:46) equate the “plausibility and critique” of postprocessualism with the process of justification practiced by processual archaeologists. They contend that “the role of hermeneutics . . . is exactly the same process that [positivist] scientists undergo when comparing their explanations or descriptions” (VanPool and VanPool 1999:46). We will not belabor the record showing that most archaeological practitioners of hermeneutics dispute such claims. Nor can we contest specific examples presented by the VanPools because, once again, none is provided. Instead, the authors justify their assertion by citing Kosso (1991). Hence, we must briefly consider Kosso’s (1991) discussion of hermeneutics and middle-range theory (MRT).

Kosso’s (1991) task is not unlike the VanPools’ own charge: namely, to show that the MRT of processualists and the hermeneutics of postprocessualists “are fundamentally the same method” (Kosso 1991:625). He supports this claim by arguing for a “kind of circularity” in MRT because such theories “are confirmed and understood through an appeal to observations, and observations in general are understood and verified with the support of theories” (Kosso 1991:625). Rather than the scientific criterion of independence, the acceptability of MRT “is governed by a requirement of consistency and coherence” (Kosso 1991:626). Thus, “[m]iddle-range theories are hermeneutic tools” (Kosso 1991:625).

Although compelling, the validity of Kosso’s position rests on the supposed “circularity” of reasoning. Coherence is the ultimate arbiter of MRT, so goes the logic, because MRT both informs and is informed by observations. The circularity, however, is more apparent than real. MRT is developed through actualistic research that establishes causal linkages between observed behavior and its material consequence (e.g., Binford 1982:129). MRT, however, is used to interpret the archaeological remnants of unobserved behavior. Thus, while on a general level it is true that “observations” inform MRT, the observations on which MRT is built are not the same as those that MRT evaluates. The observations are, in fact, independent. Kosso’s (1991:625) “kind of circularity” as related to MRT is a chimera.

Other philosophers of science appreciate this distinction. For example, Wylie (1989b:108) notes that “it is evident that actualistic research provides not only the linking principles necessary for reconstructive inference, but also the basis for a nuanced assessment of the relative security of the explanatory-interpretive claims based on these principles.” Furthermore, she argues that any “circularity and arbitrariness . . . is decisively broken when researchers exploit a concatenation of inferences that are based on principles drawn from a range of collateral (independent) fields” (Wylie 1989b:99; also 2000:231–234). Concern with the independence between data interpretation and the expectations of theories is very much a part of the processual program (e.g., Binford 1982; Cowgill 1993; Redman 1991). Despite the VanPools’ (1999) account, such independence has not been incorporated into the hermeneutics of postprocessualism (e.g., Hodder 1986, 1991; Leone 1986).

Conclusion

In sum, we remain unconvinced by the VanPools’ trait-list characterization of science, and we challenge their assertion that postprocessualism is a scientific pursuit based on “any reasonable criteria or
characteristic of science one wishes to use” (Van-Pool and VanPool 1999:48; emphasis in original). As we have indicated, an independence between the hypothesis being evaluated and the knowledge claims that underwrite that evaluation qualifies as a “reasonable” criterion of science. The VanPools have not shown that postprocessualism meets this criterion.

The authors’ “realistic view” simply allows postprocessual archaeology to masquerade as science. VanPool and VanPool (1999) obscure the practice of science by invoking static and inconsistently abstracted character traits. Moreover, they fail to demonstrate that postprocessualism concords with science by invoking static and inconsistently abstracted character traits. Furthermore, they fail to demonstrate that postprocessualism concords with their own chosen criteria: hermeneutics (validation through internal meaning) cannot be equated with evaluation via independent (external) sources.

Thomas Patterson (1990:197) warns against attempts to unify postprocessual and processual archaeologies through “[e]clectic combinations, drawing inspiration and unwanted baggage from diverse sources.” He goes on to say that if “clarification, resolution, and synthesis are goals, then . . . the unacknowledged elimination of elements from the various analytical frameworks do[es] not appear to be [a] useful strategy for achieving them” (Patterson 1990:197; also see Redman 1991:303). We concur. Despite the rhetoric and occasional brash claims, the VanPools’ paper does not present a convincing case that postprocessual archaeology is, can be, or should be, scientific. Rather, in terms of the ongoing dialogue between processual and postprocessual archaeologists, it simply offers a striking example of what Wylie (1992a) colorfully calls a “heavily decomposing red herring.”

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References Cited

Arnold, P. J., III
2000 Back to Basics: The Middle Range Program as Pragmatic Archaeology. Manuscript on file, Department of Sociology and Anthropology, Loyola University, Chicago.

Bell, J. A.


Binford, L. R.

Burt, E. A.

Cowgill, G. L.

Dunnell, R. C.

Embree, L. (editor)

Feyerabend, P.

Hanen, M. P., and J. H. Kelley


Hodder, I.


Johnsen, H., and B. Olsen

Kelley, J. H, and M. P. Hanen

Kosso, P.

Kuhn, T.

Lakatos, I.

Laudan, L.

Leone, M. P.
sonian Institution Press, Washington, D.C.

Losee, J.

Patterson, T. C.

Popper, K.

Preucel, R. W.

Preucel, R. W. (editor)
1991 *Processual and Postprocessual Archaeologies: Multiple Ways of Knowing the Past*. Center For Archaeological Investigations, Carbondale, IL.

Redman, C.

Renfrew, C.

Toulmin, S.

VanPool, C. S., and T. L. VanPool

Voonips, A.

Watson, R. A.

Wylie, A.

Notes
1. The failure to cite Bell (1991) is particularly surprising. His chapter in Preucel’s (1991) edited volume specifically addresses Feyerabend's brand of anarchy; yet the authors cite five other contributions in Preucel’s (1991) publication. Such uneven referencing is just one difficulty with the VanPools’ citation style; even more discouraging is the lack of specified page numbers. For example, in their trait list discussion (VanPool and VanPool 1999:42–48), we counted 164 citations, but only 26 (15%) of these actually provide page numbers.

2. For the sake of argument, we ignore the VanPools’ abuse of Popper’s particular statement. As their own citation demonstrates, Popper’s discussion of objectivity involves scientific statements, not science in general. Logically, Popper’s position on objectivity is relevant only with reference to a trait list that characterizes types of statements, not as a distinction between science and non-science.


4. The VanPools’ inconsistent treatment of this passage is only part of the problem. Other postprocessual archaeologists would strongly disagree that Hodder’s (1991:10) call for "guarded objectivity" approximates scientific method (e.g., Johnsen and Olsen 1992:434).

5. While our discussion does not touch on the subject, the inconsistency of separating postprocessualists into extreme and moderate camps should be noted. While moderate postprocessualists are allowed to join in the science games, hyperrelative postprocessualists are marginalized. We would like to believe that a true synthesis of humanists and scientists would be more inclusive and would make room for those VanPool and VanPool (1999:36) dismiss as “extreme postmodernists.”

6. For an expanded discussion of the issues surround middle-range theory and hermeneutics see Arnold (2000).

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