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"I'm the Oldest New Archaeologist in Town": The Intellectual Evolution of Lewis R. Binford

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Chapter One: “I’m the Oldest New Archaeologist in Town”: The Intellectual Evolution of Lewis R. Binford

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Abstract

Lewis R. Binford was a hugely significant figure in the archaeology of the 20th century. His prolific publications invigorated the role of anthropology in archaeology, and pioneered the development of processualism, scientific archaeology, middle range theory, ethnoarchaeology, hunter-gatherer studies, and the use of global scales of analysis in constructing conceptual frameworks for understanding the organization and evolution of cultural systems. In this issue, two of Binford’s most important contributions -- middle range research and the construction of frames of reference - - are brought into new relevance with case studies that span time from the Middle Pleistocene to modern-day traditional communities, and global regions from the sub-arctic and temperate to the desert and the tropics. The concluding article considers in detail what makes a truly influential archaeologist in today’s society.

Keywords: Lewis Binford, contributions to archaeology, future research programs

Binford’s First Fifty Years

Lewis R. Binford was the most significant archaeologist in the last century in America, and arguably in the world (Meltzer 2011; Kelly, this issue). He firmly placed science in the practice of archaeology, revolutionized how we think about theory and method, and ignited fundamental debates about the evolution of early humans and the origins of agriculture and complex societies. For 50 years, Binford’s insistence on asking, “What do archaeologists do? and why we do it?” was at the heart of his broad and enduring influence. Binford’s prolific publications included 20 books, 61 journal articles, and 38 chapters in edited volumes (according to his Curriculum Vitae). His writings were catalysts for processualism, Middle Range Theory, ethnoarchaeology, zooarchaeology, site formational processes, hunter-gatherer studies, and global scales of analysis.

Binford’s career evolved over four main phases: his initial assault on culture-historical archaeology in the 1960s; his ethnoarchaeological work among the Nunamiut of north Alaska; the application of those lessons to archaeological processes and human evolution; and a magisterial analysis of foraging peoples to develop a comprehensive predictive framework for the biggest problems in cultural evolution. Lewis Binford’s omnivorous interests, provocative assertions, and zest for a fight gave rise to some of the most interesting debates in the history of archaeology.

Years after his passing, Binford’s ideas about epistemology resonate in the work of his students and in the lessons they pass on to their own students. This special issue of the *Journal of Anthropological Archaeology* sets forth articles that illustrate the reach and utility of Binford’s contributions and his philosophy of maintaining an active posture for learning throughout one’s entire life. Below, we briefly discuss Binford’s education and the contexts in which he developed two of his most important concepts: middle range research and constructing frames of reference (*sensu* Binford 2001), which are the focus of the papers presented here.

Although Binford's ideas were influenced by key thinkers of the day (e.g., Walter Taylor, Leslie White, and many others) this chapter focuses on Binford's contributions *per se*. For more detailed and comprehensive treatments of Binford's life, intellectual heritage, and accomplishments, also see Gamble 2011; Kelly 2011; Meltzer 2011; O'Connell 2011; Paddaya 2011; Rajendran 2011; Straus et al. 2011; and Wilford 2011.

Early Life, 'Archaeology as Anthropology', and the Growth of Middle Range Research

Lew Binford spent much of his childhood roaming the woods, lakes, and rivers of Virginia. His early absorption in natural world nourished a later interest in the natural theater that is the setting for the human story. Binford's military service in post-World War II Okinawa included immersion in Japanese and Ryukyuan languages, movement about the Okinawan countryside, exposure to new foods, skills, and traditions, and exposure to applied anthropology as a means to revitalize war-torn societies. This experience sparked his warm and enduring interest in the world's traditional cultures and peoples.



Figure 1.1. With his gift for languages, Binford was assigned to reconstructive duties in war-torn Okinawa and the Ryukyuan Islands. Photo credit: Courtesy of the Lewis R. Binford Collection, Special Collections Department, Pickler Memorial Library, Truman State University.

These influences were evident early in his career with the founding of the 'New Archaeology', which introduced the premise that archaeology necessarily springs from and informs the larger discipline of anthropology. Binford described the analysis of material remains in the archaeological record as a means -- rather than an end -- for learning about the organization, processes, and narrative of cultural systems. His challenge to archaeologists was to tackle anthropology at the level of theory, developing hypotheses derived from 'what we already know' and testing them using relevant data from the field, laboratory, and museum collections.



Figure 1.2. Young Lewis Binford in the U.S. Army. Photo credit: Courtesy of the Lewis R. Binford Collection, Special Collections Department, Pickler Memorial Library, Truman State University.

The scientific approach may seem common enough today (and has taken its share of criticism; see below), but it's important to remember that at the time of Binford's education the archaeological enterprise was largely descriptive. In the 1950s, students were trained to excavate sites that (preferably) contained rich, well-stratified arrays of material remains, then describe the stylistic elements of formal artifact types, trace their distribution through time and space, identify readily bounded, co-occurring sets of types as archaeological "cultures," and account for changes in composition and distribution by invoking past movements of people, ideas, or both (O'Connell 2011:2). Binford's dissertation advisor -- and later intellectual sparring partner -- James B. Griffin was the chief architect of this approach.

By the 1960s the archaeological world, influenced by larger intellectual and societal upheavals, was ripe for new endeavors that would transcend traditional culture history. A series of articles by Binford (1962; 1964; 1965) laid the groundwork for the "New Archaeology," now better known as processual archaeology. His argument that the accuracy of knowledge about the past could be tested using rigorous scientific methods was a radical departure from culture-historical archaeology (Meltzer 2011). The thrust of "Archaeology IS Anthropology" was that archaeologists should be participating in anthropology at a theoretical level by building general theory, testing it in the field, and making refinements based on test results.

The New Archaeology aimed to push the limits of archaeology, taking as its goal no less than understanding the laws of human cultural behavior. Archaeologists often ask some of the broadest and most fundamental questions in anthropology, seeking to understand processes that play out over very long periods and at regional or even global scales. These broad research problems include the role of culture and technology in the adaptive success of past and recent hominins, the adoption of agriculture and other means of food production, and the growth of hierarchically organized societies toward state-level civilizations.

Critical reaction to the New Archaeology was swift, and many skeptics sought to falsify any grand conclusions that aspired to be law-like generalizations. Certainly such generalizations were big targets, and it became clear that improving our ability to discern patterning in the archaeological record doesn't automatically reveal explanations for that patterning. The record was not as clear or unambiguous as it might appear, or as researchers might wish.

At this point Binford took an innovative and more productive direction – a quieter methodological revolution. He perceived that we could not pursue ambitious programs to build and test general anthropological theories without appropriate tools to structure our observations, tools that needed to be epistemologically robust. The result was Middle Range Theory, which centered on methods to make inferences about the archaeological record independently of the bigger theoretical ideas being argued for or against.

The ‘theory’ arises from a theoretically-based understanding derived from germane aspects of another discipline unrelated to anthropology (rather like understanding optics to use telescopes to explore cosmic theory). The main point is to develop ways of making archaeological observations that can reliably draw anthropologically important inferences, based on information derived independently from those archaeological observations.

The complexity and phased nature of this task is well described by Steve Lekson: “A scientist has an insight and develops (strategy) for its evaluation or demonstration; a humanist can have an insight and go straight to press” (1996:887). For archaeologists, developing middle range theory or methodology means meeting the epistemological challenge of “How do I know what I think I know?” in order to reliably and assessably draw inferences about behavior from observations of material remains in the archaeological record.

This series of realizations launched the next important phase in Binford’s career, in which he studied artifacts from the Mousterian site of Combe Grenal. Binford questioned François Bordes’s premise that different stone tool assemblages in alternating stratigraphic levels represented distinct tribal groups. At that time, most literature about the Paleolithic consisted of competing explanations about differences in lithic industries, ranging from variable cognitive capacity to ethnic identity. Yet there was no sound inferential means for choosing between these competing models: the strength of an idea was predicated on the stature or reputation of whoever advocated for it.

Clearly this didn’t meet the replicability standards of science, even for a ‘soft’ social science like archaeology. Binford suspected that the role and function of artifacts in the larger theater of behavior and environment was affecting assemblage patterning -- but the intellectual tools to evaluate his (or anyone else’s) interpretations simply did not exist. Binford saw an opportunity to develop Middle Range Theory through faunal analysis that explored how faunal remains can provide a scientifically valid means for accessing information relevant to theoretical ideas about Paleolithic archaeological assemblages.

Binford’s focus (and that of several of his students) thus moved from variability in stone tools toward faunal analysis for purely methodological reasons: there existed a body of robust, independently derived reference information about faunal material that could be framed for archaeological questions. For example, food studies are germane to potential nutritional value that could be assigned to various anatomical segments of animal carcasses. Studies for aging and sexing of animal populations were already being developed from direct observations of modern control samples in veterinary and wildlife science including reindeer, the species present in the Mousterian levels at Combe Grenal and frequently cited as instrumental in the evolutionary success of the Upper Paleolithic.

Wildlife ethology is another robust source of observations with a soundly based theoretical knowledge about the behavior of many species. The migratory behavior of reindeer results in substantial differences in their nutritional utility throughout the year, which offers many potential modes of exploitation by humans. Knowledge of that behavior and ways to infer it from the archaeological record are essential to interpretation of archaeological remains. Another body of meaningful reference information about faunal assemblages called for original ethnoarchaeological data relevant to the behavior of Pleistocene France: that of Arctic caribou-hunting foragers.



Figure 1.3. Crew from Tulugak Lake, 1970. From left to right: Richard Workman, Charles Amsden, Lewis Binford, Don Campbell. Photographer unknown. Photo Courtesy of the Lewis R. Binford Collection, Special Collections Department, Pickler Memorial Library, Truman State University

Binford next embarked on a multi-year study of the Nunamiut people of northern Alaska, generating a body of data and publications (Binford 1976; 1978; 1979; 1980, 1981b, among others) and training a generation of students that would together change the way that archaeologists think about foraging peoples and the ways that the archaeological record is formed. Binford's models for people's movements about the landscape; the manufacture, use, repair, and discard of tools; techniques for processing and transporting carcasses of prey; and scientifically rigorous methods for inferring these processes from the archaeological record remain among the most-cited works in our field today (also see Kelly, this issue).

A freshly-minted archaeology student might not realize that concepts such as forager and collector, residential and logistical mobility, embedded and direct procurement, curated and expedient technologies, gearing up, site furniture, drop and toss zones, and meat utility index — were all born of Lewis Binford's "education" among the Nunamiut (1983a) and later, the foraging peoples of Australia, South Africa, and the Philippines. These terms are now in common use among archaeologists worldwide, although Binford sometimes voiced regret that a lack of intellectual rigor could lead to their uncritical use for rapid diagnostic assignment of site and technology types.

Today, middle range theory archaeology continues to seek out linkages between dynamic present-day observations and the material remains observed in the 'static' archaeological record. Formulating testable hypotheses requires information that is independent of, but germane to, the phenomena we wish to explain. Some of most productive frames of reference are drawn from ethnoarchaeological data, and Binford inspired a whole generation of archaeologists to observe day-to-day life and work among traditional communities in places like South Africa, Australia, and South America, where foraging was still practiced (or at least remembered).

Ethnoarchaeological methods can be used at all levels of social organization to explore topics ranging from the social role of ceramics to material expressions of symbolic and spiritual behaviors, craft specialization, post-disaster subsistence, and beyond (see David and Cramer 2001); yet the initial and essential linkage between ethnoarchaeology and middle-range research about foraging peoples remains particularly strong today. Admittedly the application of middle range theory to specific data-sets has not always been straightforward, as shown by Binford's lively published debates with intellectual heavyweights of the time (Bunn and Kroll 1988; Freeman 1983; Gould 1985; Hodder 1992; Isaac 1984; Sackett 1986).

Most of these debates are required reading in graduate curricula today. An important example is a series of alternating articles with former student Michael Schiffer (Binford, 1981a, Schiffer 1981), where Binford asserted that the archaeological record is not a functional reflection of past behavior, nor do we need miniature "Pompeii" to make useful inferences about the past. Rather, the archaeological record is a contemporary phenomenon that reflects cumulative, superimposed, and partially effaced dynamic processes: a palimpsest. To sort out this complexity, Binford called for archaeologists to distinguish between processes that create versus modify the archaeological record – that is, to engage in middle range theory building.

In recognition of Binford's enduring legacy of middle range research, the first set of papers in this issue highlight new data and analytical results from Asia, the Middle East, and the Americas.

Papers on Current Research in Middle Range Theory

The scope and reach of the middle range approach spans from Middle-Pleistocene hominins to fully modern, well-documented societies that you can visit today. This issue's article by Kuhn and Clark develops models to explain changes in stone artifact assemblage formation rates and types at Tabun Cave, Israel. Evidence for varying discard rates for different classes of artifacts at Tabun suggest that Middle Pleistocene hominins employed a land-use system organized around brief, redundant occupations where activities were tied to particular places for thousands of years. The authors conclude with a caution against using *H. sapiens* foragers as simple analogies for hominins with no modern-day equivalent, as Binford often cautioned.

The focus then shifts to micro-analytic scales of analysis, in which Akoshima and Kanomata examine use wear in microlithic technology of late Pleistocene Japan. Using an organizational approach to microwear, they seek to diminish the gap between experimental wear patterns and patterns observed on archaeological tools. After assessing methods for evaluating aspects of lithic organization from use-wear data including curation and expediency, local and non-local raw materials, multiple-stage surface alteration and multiple-stage edge rounding, Akoshima and Kanomata conclude that accumulation, overprinting, and partial effacement of use-wear on stone surfaces offer similar challenges and opportunities to micro-analysis of tools as studies of site formation: both are palimpsests. Unpacking these palimpsests requires reliable reference information about behaviors that are themselves reflective of the organization of cultural systems.

Schmader and Graham's paper segues into an interesting exploration of the relationship between formation processes and site structure in ancestral puebloan households of the American Southwest. Employing ethnoarchaeological data about the use of space among the Rarámuri (Tarahumara), the authors find a linkage between seasonal and long-term changes in mobility and intensity of site occupation, a useful observation for puebloan cases. They also examine the distribution and condition of household items in terms of use, storage, re-use, and discard to sort out cultural from post-depositional processes. Like Akoshima and Kanomata, the authors offer a valid argument for using ethnoarchaeological data as reference information to address complex, overprinted traces of behavior rather than as simplistic analogies for observed patterning in archaeological remains.

At the multi-household level, Longacre and Hermes apply ethnoarchaeological methods to explore the relationship between local ecology, subsistence, craft specialization, and social networks. New data from the Kalinga Ethnoarchaeological Project show that households with the highest rate of rice productivity received pots from households with lower productivity. Inequalities in rice landholdings and yields are offset by household ceramic specialization and exchange, highlighting an inverse relationship between specialization in rice farming and ceramic production. The authors conclude that this may represent non-uniform emergent complexity.

These articles are excellent examples of what Binford called ‘working from what you know’ to investigate ‘what you don’t know,’ at the level of individual sites and site complexes. Yet from his earliest writings, Binford yearned to tackle larger questions of change from one type of cultural system to another through the use of large data-sets. In his landmark and most accessible book *In Pursuit of the Past* (1983b), Binford argued that cultural evolution can’t be attributed to simple uni-directional causes (e.g., ‘progress,’ ‘revolution,’ ‘diffusion,’ ‘climate change’). Rather, he challenged archaeologists to make bold and scientifically-derived predictions about when those changes may — or may not — occur.

Constructing Frames of Reference for Global Scales of Inquiry and Analysis

As Binford’s inquiries broadened in scope and ambition in the 1980s, new intellectual movements in archaeology were questioning the founding premises of scientific archaeology. Post-processualism and its subsidiaries (e.g., neo-Marxist, neo-gendered, hermeneutic, critical, and poststructuralist perspectives) challenged positivist, determinist, and indeed colonialist influences in scientific approaches that usually emphasized evolutionary concepts.

Post-processualist scholars argued instead for a more particularist interpretation of unique intrinsic aspects of individual cultures or even individuals themselves, viewed through the subjective lens of the researcher. These critiques found ready audiences in archaeologists wary – and weary – of what they perceived as clinical and over-generalizing scientific approaches. In Binford’s busy decade between the 1970s and the 1980s, the New Archaeologists had somehow gone from the ‘young Turks’ to ‘the Establishment’ (Meltzer 2011:18).

Binford took up the gauntlet, arguing long and vigorously against post-processual approaches. He particularly disagreed with the assertion that it is possible for anyone today to gaze at the world through the eyes of a past person: say, a Neandertal. But he always acknowledged that real-time observations from actual people can help to overturn normative assumptions and inspire new research questions. His famous citation of a Nunamiut hunter who was always on the move because “When I’m here in one place, I don’t know what’s going on over there” (1983:204) beautifully sums up the desirable qualities of mobility to foragers themselves. This flies in the face of simplistic evolutionary presumptions about sedentized food production, and brings into focus specific, predictable reasons that foraging peoples might resist the agricultural transition or reverse its course.

Binford’s views of the scientific enterprise became more sophisticated over the years, moving from Hempel’s positivist agenda toward a more sophisticated Popperian falsification. But his emphasis on testable hypotheses remained, as did the need for sufficient data to identify provocative patterning for use in hypothesis development. Tackling big-picture questions about cultural change called for data, and plenty of it. Early on, Binford had chosen to study hunter-gatherers after a fellow graduate student remarked that anyone interested in cultural evolution such as the rise of agricultural systems had better know something about what went before: namely, hunter-gatherers (Sabloff 1998:22). Thus Binford’s new project, launched in the late 1970s and continuing to the end of his life, took as its scope no less than assembling a global ethnographic record of foraging peoples as a means for tackling archaeology’s biggest questions.

Binford began to collate and organize ethnographic information about ‘initial conditions,’ as he called them, in the 1970s. By the early 1990s he was investing in the global project in earnest, working with graduate students to collect and encode enormous quantities of data about climates, environments, and the foraging peoples who live in them. These were to serve as building blocks for frames of reference that would address those big problems of cultural change. Binford began to publish preliminary articles using versions of this approach (1990, 1997) and assigned his graduate classes to work with the data-sets that would culminate in his last major book: *Constructing Frames of Reference: An Analytical Method for Archaeological Theory Building Using Ethnographic and Environmental Data Sets* (2001).

Some archaeologists have felt that *Frames* is less accessible than Binford’s earlier works. It is certainly ponderous (more than 500 pages), building gradually from detailed characterizations about the environmental ‘theater’ of cultural change that may not immediately seem useful or significant to anthropologists. The pay-off comes with Binford’s construction of the case for the tactical role of mobility as insurance for hunter-gatherers when local environmental conditions deteriorate. Using this premise, the final chapter describes foraging groups ‘packing’ a region, which forces the use of ever-smaller segments of the habitat. The reduction of mobility options triggers selective pressure to

intensify food resources. Binford then predicts that the probability, tempo, and mode of change in foraging systems will vary according to the capacity of the relationship between the foraging group and their home habitat to accommodate increases in density of populations (Binford 2001:189).

Though this process may sound mechanical in plain description, the global frame of reference allows the process to play out in fascinating ways when factoring in characteristics of local environment, climate, and foraging societies. Key to this approach is describing the use of frames of reference clearly and scientifically so that they are transferable. Binford's great challenge to archaeologists at all scales of inquiry is to ask questions about our unique data in such a way that results can be understood and tested by other archaeologists working in other settings.

Papers on Current Research Using Frames of Reference to Explore Changes in Cultural Systems

The second set of papers in this issue take inspiration from this comprehensive phase of Binford's research. These papers use large regional datasets to formulate hypotheses to explain controversial cultural events in South America, showcasing Binford's collaborations with colleagues and graduate students working there in the 1990s through 2000s. Borrero seeks to move beyond competing models of the peopling of southern South America by applying ethnographically-known patterning in mobility and knowledge transfer among foraging groups moving into new environments. The different modes of movement described by Binford in his Nunamiut research play an important role in suggesting alternatives to the 'standard' Patagonian colonization mode: e.g., slow movements into unfamiliar territory using routes of least effort with non-optimal use of places. Ranking of habitats and displacement modes similar to what Binford called the "complete-radius leapfrog" pattern may be the best way to develop a testable explanation for the process of human exploration of Patagonia.

Johnson et al. move forward on the cultural evolutionary clock to plant-based intensification, using ethnographic data to frame the conditions under which foragers would most likely develop maize production in the complex habitats of central-western Argentina. Interestingly, comparisons between modern foragers and maize agriculturalists reveal that, in places where rainfall peaks during the winter and fall, maize cultivation is generally constrained. This pattern anticipates the absence of maize at certain study area sites, and the authors recommend next steps to explore variation in the pace of maize adoption in nearby habitats.

In another example of examining historic events to explore cultural evolutionary processes, Yu applies ethnoarchaeological reference data about neo-tropical foraging to tackle the apparent controversy between intensive, sedentary prehistoric farming versus mobile foraging in the Amazon Basin. Yu's explanatory framework for the relationship between aquatic intensification and maize agriculture suggests a minimum threshold of population density (and available labor) for agriculture and sedentism to be feasible in the Amazon Basin. This also implicates the disruptions and chaos of European colonization in the apparent disparity between archaeological evidence for large-scale prehistoric Amazonian agriculture and more recent observations of small, mobile foraging groups.

These approaches offer hope for archaeologists trying to make sense of apparent conflicts and inconsistencies in cultural evolution through a mutually intelligible process of testing, and refining, hypotheses derived from ethnographic and experimental frames of reference.

Talking with New Generations of Archaeologists

The geographic and chronological reach of the papers in this issue embody the global application of Binford's use of reference knowledge to tackle archaeological problems. But in this day and age, when words like 'place' give way to 'place-based', 'material' becomes 'materiality', and 'processual' evolves to 'processual-plus' — what dialogs should archaeologists be having with students in pursuit of their own research agendas?

We propose that, first of all, well thought-out science remains fundamental to our ability to understand the past. Obviously there are many ways of acquiring knowledge: personal learning and growth come from a wide variety of experiences, and we feel that neither Binford nor his students would reject this premise. Thus our second assertion is that good science can contribute directly to the health and well-being of cultural heritage and values: expanding the repertory of research questions about the past for the application of scientific methods offers another tool in the toolkit that complements traditional knowledge, and helps connect today's peoples with the skills and experiences of the ancestors.

Yet, wish as we might, we as individuals cannot directly experience the past. So thirdly, archaeologists must concern ourselves with learning and drawing reliable inferences from the material remains that are experienced right here, right now. To evaluate competing ideas we need a strong methodological basis. Given the immense scale of the human experience, we agree with Binford's assertion that archaeology and *only* archaeology has the capacity to "understand humankind in a way that no participant, or no social scientist addressing the quick time events of direct social experience, could ever imagine" (1986:474).

Can Binford's Influence in Archaeology Be Measured?

It's fitting to close this introduction with the question: "Just how much can one individual influence the field of archaeology?" Certainly the passing of Lewis Binford on April 11, 2011 sent shock-waves through the world of anthropology. Phone calls, e-mails, and postings in social media flew back and forth across the globe from Binford's friends, students, colleagues, and intellectual sparring partners. A phalanx of significant obituaries appeared seemingly overnight, resembling histories of theoretical and methodological thought in post-World War II anthropology (Gamble 2011; Kelly 2011; Meltzer 2011; O'Connell 2011; Rajendran 2011; Straus et al. 2011; and Wilford 2011, among others).

But it's easy to say that this-or-that archaeologist was important: and just as easy for new generations of archaeologists to consign the 'old order' to the dumpster of theoretical history. After all, young Lewis Binford himself did no less. For this reason, the editors of this issue invited Robert Kelly to conclude with a thoughtful evaluation of what makes a truly influential archaeologist. From the question: 'Who was more influential: V. Gordon Childe or Lewis Binford?' Kelly explores diverse measures of intellectual impact (and, yes, popular culture and social media) to arrive at a fascinating conclusion that speaks to new directions in the next century of archaeology and the future of Binford's contributions.

Figure 1.4 about here.

We conclude with the hope that the papers in this special issue of the JAA and the concepts that they explore are evocative of Lew's pioneering spirit and his alertness to opportunities for learning, including those arising from controversy generated by his work. The authors of this essay deeply regret that Lew will not be able to sit down and open this journal issue, but we feel that he would enjoy the papers and mark them up vigorously -- using them as pedagogical examples -- if he could.

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