

***The Paleoindian Occupation of the Americas: The Archaeological Record
and What It Can Tell Us About the Early Inhabitants of the New World.***

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Introduction

Anyone who attempts to get to the bottom of the matter of human antiquity in the Americas will see for himself upon the briefest of literature surveys that the topic is characterized by many opinions based on relatively few facts, the former ever changing and reinterpreting the latter. Furthermore, the literature on both sides of the debate—“Clovis First” or “Clovis Late”—is loaded with accusations of faulty science and flawed methodology. Indeed, one would be hard-pressed to find any two authors in total agreement. Objectivity thus being a task of the greatest difficulty in a summary such as this, concession to the conservative side of the issue (e.g. ‘Clovis First’) seems to be the most appropriate approach.

In this paper, I address the American archaeological record and its implications for behavioral reconstructions of early Paleoindian populations. I am concerned primarily with the facts as derived from the known archaeological record that informs scientific inquiry into the prehistory of human occupation of the Americas. Consequently, I will necessarily omit, or at least limit, much discussion of historiographic reminiscence and speculation on American prehistory (*if the reader desires historiographic discussion, see Meltzer 1994; 1985*). Further narrowing the scope of my discussion is concentration largely on archaeological evidence and theories widely accepted by the present-day scientific community. In short, the Folsom and Clovis lithic traditions and associated non-lithic evidence will be considered along with their implications for the development of coherent reconstructive models of the Pleistocene human occupation of the Americas.

Before this, a short but important caveat must be presented. According to Haynes, some linguists and physical anthropologists are increasingly finding their interpretations of variability in Native American language and biology hard to reconcile with a Clovis-First model of human migration to the Americas about 12,000 radiocarbon years (or 14,000 calendar years) ago, and this “dynamic interplay of data and opinions from different scientific disciplines is reshaping the debate about America’s earliest people” (Haynes 2002:1). The contributions of physical and linguistic anthropology, however, have yielded nothing conclusive and much that seems speculative. Based on linguistic data from modern Native American populations and models of language

divergence, estimates of a human presence in the New World for the last 35,000 to 40,000 years have been made (Nichols 1990). But it must be noted that rates of linguistic divergence are not constant and “given present knowledge of language change and probability... descent and reconstruction will never be traceable beyond approximately 10,000 years” (Nichols 1990). Regarding evidence from physical anthropology, the most recent attempts at an answer to American antiquity have been from DNA analyses of modern Native American populations. These studies have been unproductive: “There are just too many different histories compatible with present-day patterns of genetic variation” (Goldstein 2000: 62). Following from this, the best evidence we can rely on to reconstruct Paleoindian prehistory in the New World comes from the archaeological record, to which I now turn.

The American Paleolithic Debate and its Resolution

After the 1859 discovery of human remains in association with extinct Pleistocene mammals in Europe, it was only natural that American prehistorians would begin a serious inquiry into the prehistory of human inhabitation on their own continent. As a result, a heated and protracted debate in American archaeology and physical anthropology ensued, characterized by over 60 years of archaeological discoveries both lithic and skeletal, assertions of Pleistocene age, and a rallying of ardent supports and vehement refuters (Meltzer 1994; Powell 2005). Four early discoveries of note that should be given brief attention were those of Koch, Abbott, Volk, and E.H. Sellards.

In 1839, Koch, working in Missouri, discovered stone points associated with mastodon remains. This discovery, however, seems to have gone unnoticed—or more likely, ignored (Howard 1936; *for updated information on Kimmswick Clovis site see* Graham et al.1981). In 1873, Abbott’s excavation of gravel pits at Trenton, New Jersey turned up hundreds of what he considered to be Paleolithic tools (Howard 1936; Wilmsen 1965; Meltzer 1994). In 1899, in the same Trenton deposits that Abbott had made his finds, Ernest Volk came upon a human femur, which he granted Paleolithic status (Meltzer 1994). Sellards, who in 1917 reported the presence of Pleistocene age human remains in a site at Vero, Florida, helped keep the American Paleolithic debate—which was

beginning to run out of steam—alive (Wilmsen 1965). Although in retrospect all four of these discoveries are considered important events in the history of American archaeology, none of them in their day was uncritically accepted by the scientific community. None carried enough force to sway the unbending skeptics led by Ales Hrdlka, who was something of a virtuoso in countering arguments in favor of an early date for man in America.

The debate was finally settled in 1927 with the discovery by Director of the Denver Museum of Natural History, J.D. Figgins in Folsom, New Mexico, of a projectile point *in situ* with the associated remains of an extinct species of bison (*Bison antiquus* Haynes 2002), thus providing irrefutable evidence of “antiquity as great but not earlier than late Pleistocene” (Bryan to Wetmore, August 3, 1928, USNM/SIA; *in* Meltzer 1994: 16) for humans in North America (Macgowan 1950). With the acceptance of the 1927 Folsom discovery, a Paleolithic era in the New World became fact (Howard 1936; Wilmsen 1965), although the calendric date of the New Mexico site and subsequently discovered sites containing the same style of points and associated extinct fauna remained unknown until the 1950’s.

The date of Folsom man is uncertain. Some believe he lived during the last years of the Great Ice Age. Some place him a little later than the melting of the glaciers...One thing is certain, however: the Folsom point won the battle for early man in the Americas because it proved that he had hunted extinct bison, camels, peccaries, and horses. Hitherto every find of human artifacts with fossils had been thrown out of court on the argument that the artifacts might be intrusive (Macgowan 1950: 115).

With the introduction of radiocarbon dating (Taylor 1995) the year before Macgowan was writing of the unknown age of Folsom points, it was their age that became knowable. Indeed, according to Wilmsen: “[n]ext to the Folsom find, the most important contribution to Paleo-Indian [sic] studies was the application of radiocarbon dating to these early materials” (1965: 185). Before radiocarbon technology, the only indication of an artifact’s antiquity was stratigraphic depth and association with extinct fauna. With such an ordinal scale/low resolution time dimension, proposed dates of

arrival for the first Americans varied considerably and were not always based on the archaeological record. For example A. V. Kidder suggested an arrival date of 3,500 to 4,000 years ago, Roberts estimated a more recent date of 3,000 to 3,500 years ago. (Howard 1936). Perhaps the most amusing date was given by Frank Bryan. Bryan proposed that some artifacts excavated from a gravel pit between Clovis and Portales, Arizona were two million years old (Howard 1939)!

Today, the lithic tradition known as Folsom, named after the location of this point type's most famous discovery (although 1927 was not the first discovery of a Folsom point, see Macgowan 1950: 109-110), characterizes a Paleoindian culture complex emerging between 10,900 and 10,600 BP (Powell 2005). More specifically, according to Boldurian and Cotter (1999), the time frame recognized for Folsom in the Southern Plains ranges roughly between 10,490 and 10,170 years ago and the temporal span demonstrated for Folsom in the Northwest Plains falls between 10,930 and 10,260 BP as assessed by radiocarbon assays. Folsom is defined by a characteristic basally fluted spear point with delicate parallel flaking (Powell 2005). "Fluted" refers to a channel on both sides of the point made by removing a single broad flake originating at the base and, on Folsom points, extending nearly to the tip (Feder 2004). I return to Folsom points and their attendant culture complex below, but now attention must be directed to examining the antiquity of the Paleoindian archaeological record. While Folsom served as the first widely accepted evidence for an American Paleolithic, it does not represent the oldest known and generally accepted culture complex. This title is reserved for Clovis.

The Clovis Discoveries

Six years after the Folsom discoveries, distinctive bifacially flaked and fluted stone artifacts now known as Clovis points were unearthed with associated mammoth remains near Dent, Colorado. However, the term "Clovis" comes from a town of that name near Blackwater Draw, New Mexico, where Clovis points were found stratigraphically below the Folsom horizon (Stanford 1991). The earliest Clovis archaeological expeditions—from 1933 to 1937—were led by Edgar B. Howard, and sponsored by the University of Pennsylvania Museum of Archaeology and Anthropology

and the Academy of Natural Sciences in Philadelphia. The fieldwork was conducted in dry lakebeds on the plains of eastern New Mexico (Boldurian & Cotter 1999). In summary, under the guidance of Howard, the 1933 Clovis excavations established the presence of mammoth hunters in North America during the terminal Pleistocene. The 1937 season enabled a stratigraphic distinction to be made between the earlier mammoth hunters and the later Folsom bison hunters (Boldurian & Cotter 1999). Thus, the horizon of Pleistocene habitation was pushed back further, but just as with the Folsom sites, exact dates would have to wait until radiocarbon technology. Since the initial excavations of Howard and his associates, about 14,000 Clovis-style stone points have been found at hundreds of sites across North America (Marshall 2001).

The modern day archaeological conception of the Clovis complex is dated to the terminal Pleistocene; from roughly 11,200 to 10,900 radiocarbon years BP. (Haynes 2002; Stanford 1991), and is regarded as the oldest known undisputed archaeological/cultural complex in North and South America. Clovis culture as evinced for the most part by lithic artifacts appears rather abruptly, almost simultaneously throughout much of the New World. “Whereas there are either no sites, or at best, very few sites in America radiocarbon dated to before 12,000 years ago...there is a virtual explosion of Clovis sites in the American Southwest and beyond dating to after 11,200 B.P.” (Feder 2004: 283; Haynes 1992). Two of the oldest sites containing Clovis artifacts are Aubrey Cave near Denton, Texas, which has yielded a radiocarbon age of around 11,550-11,600 and a site near Big Eddy, Missouri dated around 11,900 years ago. But as Haynes points out, “[t]hese dates are often outliers from slightly younger dates in the same strata or components, hence they are possibly not accurate” (Haynes 2002: 95). Other authors claim the oldest Clovis sites date to around 11,800 years BP (Marshall 2001).

From the information provided by the archaeological record, beginning sometime around 12,000 years ago, we have empirical evidence of human occupation of North America and within a very short span of time—possibly less than a thousand years—the culture group or groups producing the Clovis industry had spread to nearly all regions of North America, and by 10,000 years ago humans had established themselves as far south as the tip of the South American continent. In my opinion, there is no reason why west

and east coast or even North and South American Clovis site dates shouldn't be roughly contemporaneous (plus or minus 500 years or so). Assuming that Clovis groups were nomadic bands with no ecological constraints on their subsistence base (*see* Kelly & Todd 1988), mobile groups could conceivably traverse the latitudes of the Western Hemisphere in no time at all, geologically speaking of course. Powell (2005), citing Meltzer (2001), describes the colonization of the New World from Beringia to Tierra del Fuego as being a feat accomplished in 500 to 600 years, according to some interpretations of the archaeological record. Lending support to the feasibility of this idea is Martin's calculation that, assuming a population growth rate of 3.4 percent annually, that is, doubling every twenty years, 340 years would be the minimum time needed for a band of 100 "invaders" to saturate the hemisphere. A population growth rate of 1.4 percent annually would require only 800 years (Martin 1973). Another estimate comes from Kelly and Todd (1988) who suggest Paleoindians moved through the Americas in about 1000 years, implying a southward rate of movement from the Northwest Coast of North America to the tip of South America on the order of 16 kilometers per year, reaching Tierra del Fuego by as early as 10,700 BP (*date from* Emperaire et al. 1963). These population growth rates and migratory patterns do not seem incredible, given that the New World would have likely been an Eden of game and space.

I am not definitively asserting that Clovis technology represents *the* first inhabitants of the Americas, nor am I presently indicating any specific geographic origins of Clovis lithic technology, or the people it represents. What I am suggesting is that Clovis era artifacts represent the oldest indisputable material evidence the archaeological community currently has for human cultural activity in the Americas. Thus, speculation on the early inhabitants of the Americas should be based on what the Clovis archaeological record can tell us about their way of life. In light of this, I shall proceed under the assumption that Clovis-era groups actually *were* the first inhabitants of the New World. Analytically, however, the origins of Clovis and the origins of the first Americans are two distinct questions that deserve separate treatments before a synthesis is possible.

"There is general consensus that prehistoric sites in the Americas go back to at least approximately 12,000 [radiocarbon] years ago, but earlier Clovis or pre-Clovis sites are

still controversial” (Toth 1991: 53). Indeed, as a result of radiocarbon dating technology, “[o]f the more than 100 sites in North America that have been reported during the last century to contain evidence of ‘pre-Clovis’ occupation, only a small number...remain under active consideration” (Taylor 1995: 177). Regarding controversial pre-Clovis sites—namely, Monte Verde in southern Chile—I shall give them some treatment in a brief section near the end of this paper, but next I elucidate what it means to be Clovis.

Clovis Lithic Technology

According to Goebel et al. (1991), one major aspect of Clovis technology was the manufacture of blades, of which many presumably served as tool preforms. A second major aspect of Clovis technology was the production of bifaces and fluted projectile points. These bifacially flaked spear points are large (up to 11 centimeters long and 3-4 centimeters wide; some from the *Richey-Roberts cache* are 23 centimeters long [Lyman et al. 1998]) and characterized by a central flute or channel flake, and concave bases enclosed by small, thin ears (Powell 2005). Goebel et al. describe the Clovis toolkit, based on an analysis of the lithic assemblages recovered from sites at Blackwater Draw and Murray Springs, as consisting of fluted points, bifaces, side scrapers, end scrapers, retouched blades and flakes, perforators and cobble tools (1991). Haynes (2002), citing Stanford (1991), similarly describes the “inferred Clovis lithic toolkit” as containing bifacial, fluted projectile points, large bifaces used both as tools and preforms (Haynes [1980] points out that archaeological evidence from the Murray Springs site in Arizona shows that bifaces were used as tools and reduced on the spot to produce other tools as the situation called for), blades and blade cores, cutting and scraping tools made on blades and flakes, graters, and a variety of endscrapers, with a few Clovis sites yielding burins or possible burins (Haynes 2002; Stanford 1991, *for a detailed description of these basic Clovis implements see* Boldurian & Cotter 1999: 41-42; Goebel et al. 1991: 53-54). Clovis toolkits vary from site to site, and there are suggestions of regional variation, however, these variations are relatively minor. Haynes has suggested that the overall similarity of Clovis assemblages from site to site is indicative of the great adaptability of the Clovis kit to all of the variable environments of the Pleistocene-Holocene transition (Haynes 1980).

The similarity in lithic assemblages from different parts of the country has also been interpreted as being an indication of continental consistency in behavior (Kelly & Todd 1988).

Beyond flaked-stone lithic technology, there is relatively little evidence for any other uses of stone by Clovis peoples. Cobbles and rocks used as hammerstones have been recovered from Clovis sites, but only one stone grinder has ever been found associated with a Clovis assemblage and no metates or milling stones (Haynes 2002). “Apparently people in the Clovis era did almost no grinding but had no end to cutting and scraping tasks” (Haynes 2002: 115).

Clovis and Folsom lithic tools are manufactured using essentially the same knapping and flaking technology, and as Boldurian and Cotter point out, “[i]n general, cultural relationships between Folsom and the slightly antecedent Clovis...complex have always seemed obvious on the basis of lithic technology and general subsistence patterns” (1999: 73). Bryan (1991) also briefly addresses the early recognition that Folsom evidently had developed from Clovis. This shared lithic technology is, as mentioned above, delicate bifacial flaking and a center flute or channel, thought to aid in hafting or attaching the spear point to a bone or wood shaft (Haynes 2002). The most obvious difference between the projectile points of the Folsom and Clovis complexes is in the size. The reduction in point size from Clovis to Folsom is thought to reflect a change in subsistence in terms of animal prey from hunting mammoths and mastodons in the Clovis era to bison in the Folsom era (Feder 2004). Other authors prefer to be more generalized and describe the transition as one from large mammals to relatively smaller. In a later section, I shall address the issue of Clovis culture patterns of subsistence and the archaeological and paleoecological evidence used to draw inferences about the Clovis lifestyle.

Non-Lithic Clovis Artifacts

In contrast to the European Paleolithic archaeological record from the same time period, the Clovis record is largely barren in terms of non-lithic, organic artifactual remains. What organic artifacts Clovis-era sites do yield come mainly in the form of

modified bone, antler and ivory (Haynes 2002; Toth 1991). Of these three materials, only a handful of wooden objects interpreted by some researchers as spears or staffs have been recovered. One from a site in Dansville, Michigan, in association with a mastodon skull (Holman 1986), and another from a site in Little Salt Springs, Florida, which was found between the collapsed upper and lower shells of a giant land tortoise (Clausen et al. 1979). There is skepticism, however, as to whether these wooden objects are actually artifacts, especially in consideration that the Florida spear was given a radiocarbon date of 12,030 BP (Clausen et al. 1979). Several authors have interpreted these objects, or similar ones recovered from other Clovis archaeological contexts as being the work of beavers, not man, thus relegated to 'pseudo-artifact' status (*see* Haynes 2002: 116).

The most common organic artifacts in Clovis assemblages are bone, antler, and ivory rods or cylinders. Twelve North American sites yielding 86 rods or rod fragments was the count as of 2002 (Haynes 2002 *table 3.1*). These implements vary widely in structure, size and shape, making functional categorization difficult (Lahren & Bonnichsen 1974; Lyman et al. 1998). What these rods do have in common are beveled ends, although some are beveled on both ends while others are beveled on one end and pointed on the other (Haynes 2002).

Lyman, O'Brien, and Hayes (1998), studying the 14 bone rods from the Richey-Roberts Clovis cache, examined the mechanical possibilities of the shape, beveled and roughened ends, and size, concluded that the rods served as levered hafting wedges used to tighten sinew binding that attached large fluted bifaces to shafts. These large fluted bifaces recovered in the same cache as the bone rods are interpreted by Lyman et al. (1998) as butchering tools, specifically saw-like implements, because of their larger-than-optimal size for functioning as projectile points. The bone rods may have been used to extend the use life of these composite butchering tools by being wedged in between the loosened, blood-wetted sinew and the shaft to which the bi-face is hafted (Lyman et al. 1998). Experimental butchering showed this function to be an effective use of the beveled rods.

Another interpretation of bone rods found in a Clovis burial assemblage at the Anzick site near Wilsal, Montana, comes from Lahren and Bonnichsen (1974). They suggest that the bone rods they recovered served as foreshafts of Clovis lances.

Hypothetically, with the aid of a wooden splint, these bone foreshafts were utilized for hafting fluted (Clovis) projectile points to lance shafts. “The composite [wood] shaft-[bone] foreshaft-point reconstruction...would have been a more utilitarian type of hunting equipment than an alternative wood lance-fluted point combination. The [bi-beveled] bone foreshafts would undoubtedly be more resilient to stress...in the actual stabbing operation and would allow for deeper penetration of the point into the animal” (Lahren & Bonnichsen 1974: 149). A very interesting interpretation of bone rods pointed at one end and beveled at the other is that they may have acted as detachable lance heads. A Clovis point hafted to the beveled end and the pointed end inserted into a cavity at the tip of the lance, a Clovis-era mammoth hunter could have made numerous shots relatively quickly by retrieving the lance and attaching another spear-tipped foreshaft. It is posited that this would have been much more efficient than carrying numerous lances (Lahren & Bonnichsen 1974).

Saunders and Daeschler (1994) have interpreted the bone shafts found in 1937 by J.L. Cotter at a site known as the “Gravel Pit” in New Mexico as wedges or levers to aid in dismemberment and disarticulation of the mammoths they were found in association with. Other interpretations of these implements are: as spear or javelin tips (Cotter 1954; Jenks & Simpson 1941), and as handles of pressure flaking tools (Wilke, Flenniken & Ozbun 1991), and sled shoes (Gramly 1993).

A one-of-a-kind Clovis organic artifact was found in 1967 at the Murray Springs site in Arizona. This was a specimen of worked bone with an approximately two-centimeter hole bored through one widened end. It is popularly interpreted as a shaft wrench or spear shaft straightener (Haynes & Hemmings 1968; Haynes 2002; Haynes 1980; Lahren and Bonnichsen 1974) because of the similarity in size and shape to ethnographically recorded Klamath Indian arrowshaft straighteners. This is also the common assumption of the function of similar items found in European archaeological assemblages (Haynes 2002).

Now while the European Paleolithic record is relatively replete with artifacts considered or embellished with ‘art’, Clovis artwork of any kind is extremely rare. Furthermore, “the designs on pre-Clovis [sic] and Clovis-era organic artifacts are uncomplicated and almost uninvolved to the viewer” (Haynes 2002: 118). Some of the

bone and ivory rods discussed above are incised with geometric designs or zig-zag lines, suggested by Haynes (2002) to possibly represent efforts at decoration or some other kind of symbolic message such as ownership designation. Other than a few scratch marks generally accepted to be human-made modifications, there is no portable artwork, carved figurines, cave paintings or petroglyphs that are clearly and definitively dated to the Clovis era (Haynes 2002). To be sure, many artifacts have been touted over the decades by excited archaeologists as Clovis-era works of art, but all of these claims have been heavily contentious, and most have been disproven.

One hypothesis to account for the scarcity of organic artifacts from the Clovis-era takes into account circumstances such as higher mobility and shorter site occupation times by Clovis groups compared with inferred patterns of the Old World Paleolithic populations. Another hypothesis blames the poor conditions for preservation of the larger part of the American Pleistocene landscape (Haynes 2002). I draw a hypothesis to account for the virtual absence of art and decoration in the Clovis record from behavioral ecology, specifically from signaling theory (Smith & Bliege Bird 2005; Bird & O'Connell 2006; Bleige Bird & Smith 2005). The lack of artwork in any preserved form may be a result of demography and group and/or overall Pleistocene population density. If artwork in the archaeological record is interpreted as symbolic communication about social status or position, and we view the importance of social status as a direct consequence of interpersonal or intergroup competition for limited resources, and we also assume that Clovis groups were the colonizers of the New World who had ample space and resources and furthermore lived in small, nomadic groups (*see below*), then it may be understood why there is almost no Clovis-era artwork—they simply had no good reason to make much of it, aside from any personal aesthetic motives, of course. But these works of personal enjoyment would probably have been made of organic material now long decomposed. This is based on the assumption that it would not have been very efficient use of energy to put much time or effort into an endeavor (say an elaborately carved stone figurines or painted murals or petroglyphs) that does not afford any significant benefits over costs.

It seems appropriate here, if I may supplement the section heading, to include a brief discussion on Clovis dwellings and architecture, or more appropriately, lack thereof.

(Dillehay 1967; Kelly and Todd 1988). Evidence of Pleistocene-age structures are so rare in the American archaeological record that only one site contains unambiguous evidence of architectural features. This is Monte Verde in Peru, where the remains of wooden huts containing fire hearths within were found in association with mammoths remains and lithic artifacts (Toth 1991). Only a few caves in North America have yielded substantial evidence of Clovis-era human occupation (Toth 1991; Kelly & Todd 1988). While Toth expresses his “mystification” at this fact (1991: 67), Kelly and Todd (1988) attribute it to the short-term and redundant use of the landscape by Clovis groups as inferred from hypothetical reconstructive models of Paleoindian behavior, which we turn to in the next section.

Behavior of Clovis Paleoindians as Inferred From the Archaeological Record

It is a commonly held assumption that the Paleoindian groups of the Clovis era were nomadic hunter-gatherers whose subsistence base was comprised largely of the hunting of Pleistocene proboscideans—mammoth and mastodons (Haynes 1980; Waguespack & Surovell 2003). The conception of Clovis groups as nomadic has been inferred from the nearly contemporaneous dates of Clovis archaeological sites throughout the New World and from the nature of these sites, which show little if any evidence of permanent settlement. In fact, archaeological evidence shows that “the camp is intimately related to the killsite” (Haynes 2002: 186), and C. Vance Haynes asserts that “[Clovis] campsites were small and located only a few tens of meters away from their game takes” (1980; 119).

In a behavioral ecological model reconstructing early Paleoindian hunting and mobility patterns from the paleoenvironmental and archaeological record, Kelly and Todd (1988) support the hypothesis of Clovis people as highly mobile hunters. Regarding faunal remains at kill sites, they point out that Clovis kills tend to be small, with few bones missing and little indication of extensive processing. The fact that kills were not extensively processed coincides with the idea that residential encampments, which were associated with Clovis kills, were not occupied for very long until the group moved on in search of the next kill.

Archaeological evidence supporting the view of Clovis people as highly mobile bands of hunters comes from the fact that early Paleoindian sites have a structure of short term use, that is, the sites consist of a number of small, separate concentrations of artifactual material rather than continuous, undifferentiated scatters (Kelly & Todd 1988: 236). Hypotheses that Paleoindian movement was shaped by the need to maintain information and mating networks have been put forth (*see* Anderson & Gillam 2000). Foraging theory may also be applied in accounting for the apparent rapid proliferation of Clovis-era populations across the New World. If we assume the Clovis Paleoindian groups to be the colonizing population of North and South America, foraging models from behavioral ecology suggest that colonizing foragers, not having any competition from other groups, should deplete higher ranked resources (ie. megamammals) in any given area fairly quickly, then move on to a new resource patch, and so should occupy all parts of a region in relatively short order (Bird & O'Connell 2005; Smith & Winterhalder 1992; Kennet & Winterhalder 2006). The idea that Clovis-era groups were highly mobile lends another possible reason for the scarcity of Clovis art; it probably would have been quite burdensome to frequently transport many non-utilitarian items.

That Clovis-era populations subsisted mainly on the hunting of megafauna, particularly the North American Pleistocene proboscideans is also indicated in the archaeological record. “The archaeological record from around 11,000 rcybp in North America is *not ambiguous in indicating that megamammal-hunting was practiced*. An exceptionally high number of mammoth and mastodont killsites in North America is a signal about Clovis foraging that should astonish us with its implications” (Haynes 2002: 181 *emphasis in original*). In fact, there are more preserved megamammal killsites in North America than there are elephant killsites in all of Africa. Moreover, most killsites in North America date to within just a few centuries of each other (Haynes 2002).

To test the validity of the long-standing but sometimes challenged (Boldurian & Cotter 1999) “Clovis as big game hunters/Clovis as specialists” hypothesis, Waguespack and Surovell (2003) conducted an analysis of the faunal data from thirty-three Clovis sites and applied the data to an optimal foraging model of expected diet-breadth. According to the optimal foraging model, a forager can maximize return rates (in terms of caloric energy obtained) by focusing on taxa whose return rates exceed the average

environmental return rate (Kaplan & Hill 1992). After modeling the Pleistocene ecological context, including such factors as estimated animal population sizes, it was shown that the best possible subsistence strategy available to Clovis groups would have been concentration on megamammal (i.e. mammoths and mastodon) hunting, and that if this behavior was indeed pursued it would be shown in the archaeological record by an overrepresentation of the largest taxa at Clovis sites. At the 33 Clovis sites analyzed, mammoths/mastodons or bison are found in 88 percent of the assemblages (42 percent contained both), and mammoths and mastodons are the most commonly (over)represented fauna (91 specimens) in all considered sites. That the largest species (mammoth/mastodon/bison) occur in the greatest number provides strong support for the “Clovis-as-large-game-specialists” model (Waguespack & Surovell 2003). But compare the findings of the above summarized study of 33 sites—26 of which contained megafauna in the form of proboscidean—with Bryan’s assertion from 1991 that “[a]ssociations of Clovis (or Folsom) points with extinct megafauna are in fact rare [Frison 1978:85; Haynes 1970], as well as being relatively restricted in geographical distribution (Wyoming, South Dakota, Colorado, Missouri, Oklahoma, Texas, New Mexico, plus the southeastern corners of Idaho and Arizona)” (Bryan 1991:20). The list of Waguespack and Surovell contains additional sites with megafauna remains in the states of Florida and New York, both of the original sources of the site data preceding Bryan’s publication (2003: 341 *table 2*).

Kelly and Todd (1988) argue that if Paleoindians entered a previously unpopulated continent, they would have needed a strategy that allowed them to utilize and efficiently exploit vast tracts of unfamiliar land. The strategy best suited to this task would have been one of primary reliance on faunal resources, as they are easier to locate, procure, and process than floral resources of an unknown region. Furthermore, animal prey was available year-round and the processing knowledge and procurement skill can be applied to a wide array of game whereas floral resource knowledge such as processing techniques and growing schedules usually depend on cumulative cultural knowledge.

The hypotheses of “Clovis as generalists” put forth by some authors (*see* Bryan 1991) violate optimal foraging models derived from reconstructed Pleistocene ecological contexts, and receive little support from the archaeological and paleontological record at

Clovis sites. As stated by Haynes: “Scientific philosophers who do not desire to hunt elephants today, especially if they have no choice except to be armed only with stone-tipped spears, also do not want to imagine Clovis foragers hunting megamammals” (Haynes 2002: 198).

What we can say for sure is that, from the evidence of the archaeological record at Clovis era sites, there is no indication that Clovis groups settled permanently or even semi-permanently in any single location, although there are some sites which indicate seasonal occupation (Feder 2004; Spiess 1984), as well as evidence of subaqueous meat caching (Fisher et al. 1994), which may indicate short term return to certain locations. However, in several instances it seems their campsite location was dictated by where the prey fell dead. Furthermore, from faunal analyses, it is shown that megamammals, in particular mammoth and mastodon, comprised at least a substantial part of the Clovis diet, regardless of what other animal or plant resources were utilized in addition, the remains of Pleistocene flora being virtually invisible in many North and South American archaeological contexts dating to the Pleistocene.

The hypothesis of a Pleistocene megafauna ‘extinction-by-Clovis’ has been offered by some prehistorians. I only include a short discussion here of some of these hypotheses and models to convey to the reader a further sense of the rapidity with which the Clovis populations swept over the entire Western hemisphere, as supposed by many prehistorians

Martin’s overkill hypothesis is perhaps the most dramatic of the extinction hypotheses. He suggests that, in accordance with the rapid population growth of the first Americans (described above), these groups of megamammal hunters quickly drove their prey to extinction (Martin 1973; *see also* Bryan 1991: 21; Feder 2004: 289-290). Martin’s overkill hypothesis is not without its support in the way of paleoecological and paleodemographic models, which we shall refrain from expounding on here. An important assertion of Martin’s hypothesis is that the population and overkill model predicts that the chronology of extinction is as effective a guide to the timing of human invasion as the oldest artifacts themselves (1973).

A more contemporary Pleistocene overkill model has been developed by John Alroy (2001). Alroy concludes from his multi-variable scenario model that growing

populations could have wiped out their megamammal prey in as little as 801 years (2001). Taking a slightly different approach to megamammal extinction, but still including the assistance of man, is C. Vance Haynes (1980). He points out the 10,000 year record low of the water tables during the Clovis era, and suggests that the resulting reduction in watering places may have played a significant role in animal extinction at the end of the Pleistocene. The increased concentration of animals around these scarce watering places may have increased man's role in the process of by creating a virtual oasis of meat. As Haynes states, "[w]hether or not Martin's (1973) wave-front overkill theory is correct, it is apparent that Clovis hunters contributed to the extinction of Pleistocene megafauna" (1980: 116). The question that remains, then, is 'how generous was Paleolithic man's contribution'?

Clovis to Folsom Transition and beyond

Whatever the reason, be it from environmental (climatic) or human consequences, or both, when the large Pleistocene megamammals die out, Clovis points also die out in the archaeological record and are succeeded by Folsom lithic technology. As stated above, Folsom stone points are similar to Clovis in that both are characterized by basal fluting, only Folsom points are smaller, presumably better adapted to bison and other medium sized mammalian prey (Feder 2004). Folsom points in the plains and southwest are part of a great number of contemporary and regionally specific point types such as Barnes, Bullbrook, Chessrow, Cumberland, Great Basin Stemmed, Midland, Peace River Fluted, and Simpson (Meltzer 2001). After 10,500 BP (remember popular Folsom dates range between 10,900-10,600 BP), there is an increase in the number of point types and their morphological diversity in the Eastern Woodlands of North America. This virtual explosion of lithic diversity in the archaeological record after Folsom gives rise to a series of region-specific, Archaic projectile point types in North America by 9000 BP (Powell 2005; Meltzer 2001).

Pre-Clovis Sites

The possibility of a pre-Clovis occupation of North and South America has been the issue of one of the central debates within American archaeology since the first Clovis discovery. Unfortunately, pre-Clovis advocates have had, for the most part, little more than speculation and radiocarbon dating errors on their side. One challenge to pre-Clovis archaeological efforts is defining just what it is that they should be looking for. What should a pre-Clovis artifact look like?

The notion that simplicity equates with ‘older’ or ‘cruder means older’ has been a long-standing axiom for some archaeologists in both Europe and the Americas. This subject has its own history or contention going back to the “eolith” debates in Europe in the latter half of the nineteenth century (see Grayson 1986). Suffice it to say that this assumption does not hold water when applied to the archaeological record of the Americas. As Toth eloquently puts it:

...if a substantial pre-Clovis occupation of the Americas was a reality, the evidence should not be ambiguous: as a minimum scenario, the artifacts should show absolutely certain signs of human workmanship and animal bones should show evidence of human butchery patterns. In addition, there should be an overwhelming consensus of opinion about this from archaeologists...To find anything less than this, and to argue that these Paleoamericans had a more impoverished archaeological residue than any known Paleolithic occurrence, including Oldowan sites between 1.4 to 2 million years ago, defies credulity. The mind winces from such *post hoc* explanations of material crudity and poverty (1991: 69).

The criteria seem simple enough, and over the decades since the first Clovis discovery, “[s]cores of pre-Clovis contenders have come forward, only to wither under critical scrutiny” (Meltzer 1997: 754). Only one site purported to contain evidence of pre-Clovis

occupation of the New World remains the bane of so many Clovis-first advocates. This is the Monte Verde site in Southern Chile.

The Monte Verde site was excavated from 1977 to 1985 and subsequently analyzed by a team of nearly 80 collaborators led by Tom Dillehay (Meltzer 1997). This site is well-known for containing preserved organic remains alongside inorganic artifacts and features on an occupation surface (MV-II) dated to around 12,500 years BP. There is a second possible occupation (MV-I) at this location dated to ~ 33,000 years BP. The cultural evidence from Monte Verde is largely based on nonlithic artifacts and architectural remains, fire pits, and a preserved human footprint, but there are lithic objects reported to be stone projectile points and grooved spheres present (Meltzer et al. 1997). Monte Verde gained widespread acceptance in 1997, when Dillehay invited a small group of well-known and influential archaeologists to the site, where a reading by each individual of the site report, and on-site inspection reminiscent of Foslom in 1927, resulted in an unanimous vote of confidence for the authenticity of Monte Verde's (MV-II level) antiquity (Marshall 2001; Meltzer et al. 1997; Meltzer 1997; Haynes 2002).

The case was not closed on Monte Verde, however. C.V. Haynes, one of the members of the group who visited and confirmed the site in 1997, later reaffirmed his feelings of skepticism—both about Monte Verde and pre-Clovis in general (Haynes 2002). Haynes raised questions as to whether the artifacts might be younger objects that mixed with older material and animal bones in a glacial flood (Marshall 2001). In 1999, Stuart Fiedel published a biting critique of Dillehay's site report, pointing out the numerous problems such as inadequately documented key finds and maps or tables that contradicted each other (Haynes 2002; Marshall 2001). Thus, doubts of the pre-Clovis authenticity of Monte Verde still persist as a source of debate.

Certainly, the possibility of human occupation of the Americas prior to the appearance in the archaeological record of Clovis remains open. I do not think any Clovis-first prehistorians would be averse to entertaining *possibility*. Lack of generally accepted empirical evidence for pre-Clovis occupation, however, cannot help but fly in the face of all speculative *possibility*. As the Paleoindian debate in American archaeology continues without signs of slowing, the burden weighs most heavily on the side that must show, beyond doubt, empirical evidence of human occupation dating older

than the Clovis complex. Complaints from pre-Clovis advocates like Bryan (1991) such as: “skeptics operating with the conviction that *Clovis constitutes the only demonstrated evidence for Pleistocene humans in the Americas and therefore must be the earliest* apply what they claim is the scientific method...by raising any imaginable question about the validity of the reported radiocarbon dates...stratigraphy...and...proper contexts” (1991: 19 *emphasis added*), seem inappropriate. Should science, I ask, be criticized for being too skeptical?

Conclusion

If I have been successful at accomplishing the purpose of this paper, the reader should have at least a slightly better understanding of the Pleistocene archaeological record of the New World. I have described the Clovis complex, expounding on the lithic and non-lithic remains, the preceding Folsom complex, and very briefly mentioned the Archaic regional lithic complexes that followed Folsom. I have also attempted to bring some life to the material record by introducing a few of the interpretive hypotheses and models developed by several authors to reconstruct Clovis-era Paleoindian lifeways, including group size and structure, migratory behavior, subsistence patterns, and a few other features of early American life. I devote the majority of this work to consideration of Clovis for two related reasons. The first is that, because I approached the Paleolithic occupation of the Americas from a conservative stance, my exploration was guided by the assumption that the Clovis archaeological record represents the first human inhabitation of this part of the world. The second reason follows from the first in that the most valid behavioral ecological reconstructive models of Paleoindian life are those built on an empirical foundation. Because these models can be tested against the material record, they necessarily have an advantage over those that are, at the moment, purely speculative. What I have not addressed in this paper is the question of the origin of the first Americans or the question of the origin of Clovis (Powell 2005; Hoffecker et al. 1993; Kunz & Reanier 1994; Goebel et al. 1991). These issues fall outside the rather narrow scope of the present paper, and furthermore, are two additional sources of debate within American archaeology. Each one of these research questions deserves a much

more detailed presentation of both the major hypotheses, as well as the current state of the controversy than could be given here.

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