

Chapter One

EARLY POPULATION FLOWS IN THE WESTERN HEMISPHERE

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Setting the Stage

The early history of human exploration and achievement in the Americas is a register of ideas inferred from the combination of archeological, paleoecological, biological, and linguistic data. Scholars have recognized many patterns in the data and proposed several interpretative scenarios, at local and continental scales, and their recurrence in time and space. These scenarios have emphasized the variable biological, social, and cultural capacities of the first humans to spread throughout the New World and their adaptations to changing environmental circumstances and their symbolic and material expressions. These adaptations across the Americas involved many cultural continuities and changes through the selective invention and exchange of cultural elements (Dillehay 2000; Adovasio & Page 2002; Meltzer 2003b).

The focus here is the first few millennia or so of human settlement in the New World, spanning the late Pleistocene and early Holocene period, from approximately 15,000 to 9,000 years ago, with implications for later periods. This coverage does not terminate the late Pleistocene at the usual arbitrary cut-off point of 10,000 years ago when deglaciation ended in most regions. That date prevents the late Pleistocene period from being considered as part of the social and cultural contributions made to later prehistory. In the pages that follow, the scholarly ideas and scientific evidence about this period are summarized, illustrating how our knowledge of the first Americans continues to develop. Although I primarily emphasize the technologies and economies of the first Americans, I also attempt to address social and other issues in hopes of imbricating the deep past with more recent indigenous cultural transformations.

Much rethinking about the peopling of the Americas has occurred in recent years as a result of new discoveries in archaeology and paleoanthropology. Several archeological sites in both North and South America have much potential to document earlier traces of human occupation (Dixon 1999; Dillehay 2000; Meltzer 2003b). The eastern woodlands of the United States in particular have yielded more convincing evidence of sites ancestral to the widely documented 11,300-year-old Clovis culture, which is best known for its fluted bifacial projectile point and big game hunting tradition. Meadowcroft Shelter in Pennsylvania, Cactus Hill in Virginia,

Topper Site in South Carolina, and others suggest that groups of generalized hunters and gatherers may have lived in those areas as far back as 16,000 to 13,000 years ago (Figure 1.1). These possibilities are supportive of the 12,500-year occupation at Monte Verde and slightly later sites in South America, because if people first came into the New World across the Bering land bridge, we would expect earlier dates in North America. It also is likely that multiple early migrations took place and people moved along the edge of the ice sheets from Siberia to Chile (Fladmark 1979; Dixon 1999; Dillehay 2000) and possibly from northern Europe into eastern North America (Stanford and Bradley 2002). Recently, there is renewed discussion of possible influences from Australia and Oceania and even Africa. Some paleoanthropologists, led by the Brazilian Walter Neves (Neves et al. 2003), suggest that the oldest skeletal material from eastern Brazil more strongly affiliates with ancient Africans and Australians than with modern Asians and Native Americans. This suggests the presence of non-Mongoloid as well as Mongoloid populations in the Americas (cf. Steele & Powell 2002). Neves does not believe that these migrants came directly from Africa or Australia, but that they splintered off from an earlier group that moved through Asia and eventually arrived in Australia and America.

Linguists and geneticists also postulate earlier and multiple migrations. Johanna Nichols (2002) believes that a high diversity of languages among Native Americans could only have developed from an earlier human presence in the New World, perhaps as old as 30,000 to 20,000 years ago. Several geneticists present a similar argument derived from genetic diversity (e.g., Schurr 2004). Based on comparisons between certain genetic signatures shared by modern Native Americans and modern Siberians, it has been estimated that people from Siberia entered the New World at least 20,000 to 14,000 years ago. These first immigrants are believed to have followed a Pacific coastal route into the Americas, where they spread into all interior regions. Later interior migrations possibly moved into North and Central America where they mixed with earlier populations.

These new discoveries and ideas are not without their critics. Advent Clovis proponents who defend the Clovis-first theory still hold to the notion that the first Americans were mainly big game hunters who entered the Americas from Siberia no earlier than 12,000 to 11,500 years ago and spread rapidly throughout the Americas. These proponents believe that notions of a pre-Clovis presence at earlier sites are based on questionable radiocarbon dates, site stratigraphies, and interpretations of the evidence. Although these criticisms are often constructive and warranted for some earlier and often outlandish claims and encourage a more rigorous approach to the study of the first Americans, they are usually based on anecdotal tales, emotive vindication, and little scientific evidence.

The Pre-Clovis and Clovis Dilemma

In the 1950s, the discovery of fluted projectile points at Blackwater Draw, near Clovis, New Mexico, the type site of the Clovis culture, set the standard by which all other point types and early cultures would be measured for the next 50 years. Based on the later discoveries of more Clovis points at sites throughout North America, the Clovis culture came to be known as the first “migratory culture” in the



Figure 1.1 Location of major archeological sites of the late Pleistocene period in the New World

Americas. In essence, the Clovis point was equated with the first Americans and with early human migration from Siberia to Tierra del Fuego. The argument for the Clovis-first model has been based primarily on the stylistic association of a few similar traits such as fluting on lanceolate projectile points. Every time these and other traits have been found in the Americas, they have been uncritically interpreted as evidence of a Clovis culture and a Clovis migration. As a result, the Clovis culture has continually widened to include technologically distinct point types, such as the Fishtail, Restrepo, Paijan, and Ayampitin points in South America. None of these distinct types fit culturally, stylistically, and technologically with the Clovis point and with the Clovis-first scheme. It also remains unclear as to what Clovis culture is and the criteria employed to define it (cf. Haynes 1969; Dillehay 2000). Although there is a good understanding of Clovis stone tool technology, little still is known about the subsistence, social, domestic, and mobility patterns of regional Clovis cultures and even less about their possible relation to the early cultures and peoples of the Southern Hemisphere.

Despite the continuing debates over the first peopling of the Americas and the ambiguity and paucity of evidence, four issues are becoming clearer. Although Clovis culture is the most widely distributed early record in North America and accounts for a major portion of the first chapter of human history in the north, it fails to explain early cultural and biological diversity in all of the Western Hemisphere, especially in South America. Second, Northern Hemisphere agendas about the peopling of the New World, which were developed in the historically better investigated regions of North America, have created unrealistic expectations or preconceptions about the significance of cultural developments in South America. Despite the likely migration of early people from the north to the south, the archeological records of each continent must be viewed in their own terms and not be judged by preconceived notions usually based on meager evidence or overextended interpretative models (Dillehay 1999, 2000; Meltzer 2003). Third, many anthropologists now no longer consider the Clovis people to be purely big game hunters, but also small game hunters and gatherers of plants. And fourth, regardless of the quality of evidence, early American populations seem to present a cultural and biological melting pot for a long time and probably had their physical, genetic, and cultural roots in different areas. A lingering question is whether Clovis people developed from an earlier population in the Americas, or whether they were only some of the first Americans in some areas.

It is my belief that there were pre-Clovis populations in the New World sometime between 20,000 and 15,000 years ago. I also believe that the first migrants into the Americas adapted to many different environments quickly, creating a mosaic of contemporary different types of hunters and gatherers (i.e., big game hunters, generalized interior foragers, coastal foragers) immediately after they entered new environments. Further, in my opinion, a key issue is not rapid migration but rapid social change, cultural exchange, and a steep "learning curve" across newly encountered environments – adaptation of technological, socioeconomic, and cognitive processes over several generations (cf. Dillehay 1997, 2000; Meltzer 2003). As the early archeological records of South America and parts of the eastern United States suggest, this was not a single unitary process, but many. While different types of hunter and gatherer groups were settling into one new environment, others were probably just moving into neighboring areas for the first time. Others probably stayed for longer periods

in more productive environments. All of these processes must have begun sometime before 12,000 years ago in order to produce the types of technological and economic diversity reflected in the archeological record by 11,000 years ago in most regions of the Americas (Bryan 1973; Dillehay 1999, 2000). The record left behind by these processes is characterized by variable site sizes, locations, functions, occupations, artifact assemblages, and internal structures that reflect different adaptations to different environments and various degrees of social interaction between different populations.

Interdisciplinary Evidence and Words of Caution

It may be argued that one of the most direct evidences of humans in the Americas are the languages spoken by peoples of the hemisphere and the genetic linkages between them and others. However, there is no consensus among specialists as to the validity of historical linguistics and genetics in constructing models of American origins as far back as 10,000 years ago and more. Both historical linguistics and genetics can suggest likely places of origin of a language and genetic group, and the geography of its spread from such a point of origin, but on their own they cannot convincingly achieve a chronology for the spread of a language group or genetic population or the dating of a particular language stage and genetic mutation.

In regard to chronology, language and genetics do not change at a constant rate and we do know that language replacement can occur rapidly. What is required is a material indicator of the language spoken and of the genetic mixture to provide a correlation of language and date. As expected, such correlations are very difficult to find. These difficulties aside, it is important to consider the linguistic and genetic information for the Americas in relation to the archeological and biological evidence. The information gained from these disciplines enables the highlighting of the differences that exist between the current communities of the area, and warns of the complex associations between these communities in the present and the past. However, it must be kept in mind that it is difficult to associate historical linguistics directly with material evidence. And the genetic evidence must be derived from human skeletons. Further, both the linguistic and genetic chronologies must depend on radio-carbon and other dating techniques in archeology.

In this essay, I primarily consider archeology (including the scant skeletal material available for the late Pleistocene) to be the only reliable direct indicator of a human presence in the Americas, and the paleoenvironmental evidence, which may be used to provide a proxy (i.e., not direct) record of human presence. The environmental evidence, like the genetic and linguistic evidence, has problems related to its utility and interpretation. The archeological record also is problematic. It generally is not well preserved and often is disturbed by numerous natural processes that may destroy and mix evidence. Furthermore, early archeological sites are generally characterized by a narrow range of cultural materials and few internal site traits (e.g., hearths, activity areas). In fact, most early sites contain stone artifacts and, when preservation permits, the bone remains of animals. This forces archeologists to over-rely on technologically distinct and temporally sensitive stone projectile points, for example, in order to maximize information about the first Americans, which also is problematic.

To elaborate briefly, traditional approaches to the peopling of the Americas have relied too heavily on subjective aesthetic definitions of point styles (e.g., Clovis, Folsom, Fishtail, Paijan) from a wide variety of archeological sites in North and South America. Not yet fully integrated into these approaches are systematically contextualized archeological traits such as internal site patterning of non-projectile point stone tools, other artifacts and features (e.g., hearths, storage pits), and inter-site quantitative and qualitative comparisons between these and other variables. Point styles may be valid chronological and functional markers but not valid indicators of late Pleistocene social organizations, economic strategies, and patterns of early human entry and dispersion throughout the New World. Arguments for long-distance migration in the Americas must be founded on something more scientifically rigorous than a simple reference to the appearance of a single, possible foreign trait – that is, the flute on a Clovis point – and its possible association with a single similar trait elsewhere. A narrow focus on a single trait or small group of traits may conceal many other cultural possibilities. The lack of explicit study of a wide range of artifact sites and inter-site comparisons across the Americas impedes communication by restricting our understanding of what is meant by different artifact styles and their associated traits within and across different types of sites in different environments.

The New World during the Last Glacial Maximum

During the period 25,000 to 10,000 years ago shifting dry and hot or cold conditions prevailed over much of the hemisphere. This climatic regime peaked 21,000 to 15,000 years ago, during a period called the Last Maximum Glaciation, or LGM. Extensive areas of the northern half of North America and limited high-altitude and high-latitude areas of South America were glaciated during the LGM. During this period the sea level stood approximately 130 m below present level, so that the continents were larger than they are now. Much of the continental shelf that is now ocean floor was comprised of low-lying plains. Some would have been a continuation of dunefields and other geological formations, but others were resource-rich coastal lakes and lagoons, forests, and rugged hills, plateaus, canyons, and river valleys. Cooling of the ocean resulting from reduced glaciation decreased evaporation, and consequently throughout many regions precipitation was less.

Extensive dune whorls in the North American southwest and mid-Atlantic seaboard and in parts of northern South America dated to this period suggest a strong semi-permanent high-pressure system over many regions. The lack of warm sea in high-latitude areas and increasing land surfaces due to glacial retreat reduced the onshore movement of tropical rain depressions. Inland aridity was intense enough that lakes as far south as Chile and Argentina dried up, forests retreated, and some animals became extinct. Over the high-latitude regions severe cold, drought, and strong winds discouraged vegetation growth in some regions.

After the LGM world temperatures increased, the Northern and Southern Hemisphere icecaps began to shrink and as a response the level of the sea rose. A surge came at 15,000 years ago, when the North American ice sheets melted, but ice sheets in Antarctica began their retreat at 12,000 years ago. The land area shrank, and the present coastline began to form about 6,000 years ago. From 14,500 years ago, tree

lines climbed about 800 m in many areas, while glaciers and surrounding alpine and subalpine environments in the Rocky Mountains of North America and the Andean Mountains of South America retreated. This shift in the location of higher-altitude forests often restructured the diversity and type of resources available to people, especially in hilly and mountainous areas. In many areas, temperature increased by 5–6°C. In the interior of both North and South America, especially in the temperate woodlands of eastern North America and in the tropics of the Amazon Basin, there was sufficient humidity and cooler temperatures to sustain vegetation, and dune building decreased. Progressively, dunefields across the continent stabilized and forests replaced former shrubby grassland and savanna. From 11,500 years ago many plant species in mountainous environments migrated inland and to higher altitudes, replacing grasslands and savannas.

When people first arrived in the Americas and dispersed across the continents, they faced a continual series of environmental challenges that persisted throughout the late Pleistocene and early Holocene. The adaptability and endurance in colonizing the Americas produced early cultural diversity across these environments, including specialized big game hunters in open terrain such as the Great Plains in North America and the Pampa and Patagonian grasslands in Argentina and Chile, specialized maritime foragers along both the Pacific and Atlantic shorelines, and various kinds of generalized foragers in various parkland, savanna, and forest habitats.

Extinction of Megafauna

Most mammal species inhabiting the Americas in the late Pleistocene survived into modern times. Those that did not survive include most of the largest species. These extinctions occurred as mosaics of individual events in different parts of the Americas over many thousands of years. Late Pleistocene extinctions included mastodont, woolly mammoth, American horse, giant armadillo, ground sloth, ancient bison, and others. During the late Pleistocene nearly all animals had a larger body mass than their modern descendents. Many researchers believe that some of the large species did not become extinct at all, but simply became smaller because of a strong selective force for smaller body size as modern climatic conditions approached. Such a trend is particularly notable among the grazing animals.

There are different explanations for why so many animal species, especially the larger ones, became extinct within the last several millennia. The main arguments concern environmental changes of natural origin, and over-hunting. However, no single cause is sufficient to explain the disappearance of a large and diverse range of animals adapted to such a wide range of habitats. Least evident is the part humans may have played in the process. An extreme view of the human intervention explanation is the “*blitzkrieg* hypothesis,” formulated by Paul Martin (1984) to explain animal extinctions in North America. This argument is that the larger animal species were eliminated by “overkill” shortly after people first arrived in the continent. Other less extreme positions are that small-scale but continuous hunting of megafauna, or large-scale burning which changed the landscape, had cumulative long-term effects that threw megafauna into an irreversible decline. There also are multi-causal explanations that combine human intervention with climatic change, offering a scenario of

sustained hunting of species that were ecologically stressed by the onset of the LGM and already on the path to extinction.

Despite the discovery of many archeological sites with megafauna bones, there is not an overwhelming number of megafauna-kill sites in North America and only a small handful in South America (Meltzer 1993; Dillehay 2000). Kill sites are rare anywhere in the world, so it is not surprising that few have been identified in South America. Generally, archeologists believe that this is a limitation of the archeological record rather than a true indication of late Pleistocene subsistence. Even if more kill sites exist, as we believe they must, there is the problem of how to identify them. Projectile points have been found with the bone remains of megafauna in many sites throughout the New World, but they also could represent fortuitous mixing of natural and cultural debris or even human scavenging of natural death localities. Further, stone artifacts and megafauna remains have been found stratified together in many caves and in beds of springs. In the absence of direct evidence, this evidence may only mean that humans and megafauna frequented the same places at different times. More often the bones are intrusive in the critical levels and their association is spurious. The marks of butchering tools are difficult to demonstrate and other marks on megafauna bone are from teeth of predators, scavengers, and tree roots. Even evidence of burnt bones found with stone tools is not always sufficient evidence alone to assume a human association. I point this out because there has been a tendency in archeology, especially in North America, to overinterpret the archeological evidence toward big game hunting, which is understandable in many cases because only stones and bones are preserved in sites and many scholars view the depletion and pursuit of big game as the primary factor motivating people to migrate rapidly to new environments in search of food.

Motivating Migration

What motivated people to explore and colonize distant lands? It is unlikely that we will ever really know what motivated people to travel along interior rivers and other routes and along coastlines or possibly across the sea to settle America. There may have been “push-pull” effects (Anthony 1990) in migration from northeast Asia across Beringia to Alaska or from western Europe along the ice sheets to the northeast shores of Canada. Factors pushing people to migrate might be perceived as overpopulation of certain resource zones, feuding, expulsion, environmental catastrophe, and/or adventure. Pull factors might be through the maintenance of contacts with related groups that had already settled elsewhere. Other pull factors might be the need to develop new alliances through intermarriage for population purposes and the developing knowledge of easy resource exploitation in pristine environments. Whatever the motivation, and whether exploration and colonization were by interlopers or seafarers or both, the next consideration is where they came from.

Based on current evidence, all that can be established is that if people moved southwardly along the northern Pacific and/or Atlantic coastlines, they must have crossed some distances greater than swimming range and therefore watercraft must have been required. It is not likely they were out to sea and had no land in sight; the coastlines were probably always in view. In this sense, archeologists may be

underestimating the early archeological capacity for sea voyaging as suggested by new archeological finds in other parts of the world. For instance, rockshelters in the northern Solomon Islands contain occupation debris dating back to about 28,000 years ago. The nearest land from which people could have traveled to the Solomons was New Ireland, 180 km away off northeast Australia. Earlier views considered that people in unnavigable boats could only have achieved occupation of Alaska or Newfoundland by accidental drift voyages. What we do know is that people had crossed the sea to settle Australia and New Guinea at times of lower sea level before 40,000 years ago. At the height of LGM, many more islands and high points in the landscape of the Northern Hemisphere were connected by large areas of lowlands and river channels.

It is presumed among many archeologists that there was less constraint in following coastlines, because they offered the best chance of survival in a new unknown land. This premise of dependence on the resources of the sea and littoral zone is the basis of the coastal hypothesis proposed by Knut Fladmark (1979), who postulated that the first colonists subsisted primarily on fish, shellfish, and small terrestrial animals, and that they had little interest in moving inland. This scenario would explain the rapid peopling of the New World. He and others argued that human settlement was confined to the coastline for many centuries, and that only later did people expand along the river corridors to exploit the rich aquatic resources of inland water bodies.

As the number of known early sites has increased, their distribution has broadened to include non-coastal habitats, and there is no comfortable fit between Fladmark's model and these inland findings. Further, the coastal economy is a highly specialized economy of the littoral zone, not the more generalized exploitation typical of many indigenous groups living along the American coasts in historical times. The coastal model implies that people were so specialized that they were unable to adapt to environmental conditions away from the coast. While some coasts were richly endowed with food resources, others were almost bereft of them. Inland there were vast expanses of tropical and temperate forestlands and woodlands, and grasslands inhabited by grazing animals. An alternative scenario is progressive colonization of various environmental zones – the better-watered regions first and the arid areas last. Woodlands were prime country because they supported a greater diversity of plant and animal species, which would have permitted a broad-spectrum diet of large and small game, aquatic resources, and plants.

The first human inhabitants of the Americas probably stepped ashore somewhere along the coasts, probably in Alaska and possibly in northeast Canada. Archeology cannot provide a precise answer about the timing of first settlements because much of these regions remains to be explored and excavated, and also there is a margin of error or uncertainty in chronometric age determinations. During the foundation era of first colonization, the human population was probably very small and may not have left sufficient traces to be archeologically visible. It is possible, therefore, that people arrived more than a few thousand years earlier than the dates determined for the oldest traces of human occupation of sites.

Thus, at the moment there is no clear resolution as to whether one or the other of these possible migration scenarios accounts for the patterns observed in the early American Pleistocene record. I am convinced that there were multiple migrations,

with varying degrees of longevity and interior penetration from different places throughout the late Pleistocene. There are many sites that have not yet been investigated, particularly along the coast and in the interior regions of Alaska, Canada, and Central and South America. It would come as no surprise if there were new data suggesting occasional contacts with western Europe.

One of the earliest migrations must have been from Eurasia to western to eastern Beringia. Several sites in what is now Alaska and Yukon Territory suggest the presence of people in late Pleistocene times (see Fig. 1.1). Possible bone tools and later stone tools at Bluefish Caves date between 20,000 and 12,000 years ago. Sites associated with bifacially flaked points and other tools date between 11,800 and 11,000 years ago in the Nenana Valley of Alaska. Later Nenana sites produced wedge-shaped cores and microblades reminiscent of tool industries in northeastern Asia. Although the early archeological evidence from the far northwest is scarce, it is becoming clearer that people with similar economies and technologies were moving back and forth across Siberia and Beringia by at least 11,500 years ago. The question is when and where these same people moved farther south and east, which would have been difficult at the time. Beringia was surrounded by massive ice sheets that provided few openings into new lands unless people followed the Pacific coastline. Much debate is centered on the movement of people through habitable openings in the ice sheets and initially along the edges of ice and farther south along an exposed coastal plain, where recently excavated sites such as On Your Knee Cave and Daisy Cave in North America and Quebrada Jaguay and Quebrada Tacahuay in Peru are beginning to shed new light on early maritime adaptations.

The archeological record below the ice sheets is different. The fluted point sites of the Clovis and later Folsom and Dalton cultures, dating between 11,300 and 10,500 years ago and 10,500 and 9,500 years ago, respectively, are the first established indicators of widespread late Pleistocene occupation in North America. Some of the best-documented sites are Kimmswick, Vail, Bull Brook, Shawnee-Minisink and Shoop, Flint Run, Debert, Clovis, Murray Springs, Gault, Aubrey, and others. Although many of these localities appear to represent specialized big-game kill sites, especially in the southwest and Great Plains, those in the eastern woodlands suggest generalized foragers (e.g., Meltzer 2003a), exploiting a wide range of animal and plant species. One site in particular, Meadowcroft Shelter in Pennsylvania, which dates in pre-Clovis times to at least 16,000 years ago, yielded a wide range of artifactual and ecofactual materials indicative of a broad-spectrum economy focused on large and small game and vegetal species.

Unfortunately, little is known of Mexico and the remainder of Central America. A few sites have produced Clovis, Fishtail, and other point types. In Mexico several early sites have been dated between 30,000 and 10,000 years ago, but archeologists question the contexts and, to date, little validity has been given to them. The only certainty is the promise that more research in this region will yield important information to allow us to not only recognize many new patterns in the Central America register but also to relate this region as a lengthy transformative bridge between the different histories of human migration in the Northern and Southern Hemispheres.

As I and others have stated before, South America is different from North America because no single culture dominated the continent the way the Clovis culture, with

its representative fluted points, may have done for a relatively short period of time in North America. The Southern Hemisphere differs for several reasons. First, there are no extensive ice sheets possibly blocking human movement, except those in the high altitudes of the central Andes and the high latitudes of southern Chile and Argentina. Second, there is no clear stratigraphic sequence of continental and regional projectile point styles, such as Clovis and Folsom and Clovis and Dalton. In South America, the earliest technologies consisted of different kinds of stone tools, including a wide variety of spear points, unifacial tools made of flakes, and sling stones, which is different from North America. A wide variety of point styles are known in South America. They include long bipointed forms like the El Jobo points from Venezuela and the Monte Verde points from southern Chile; the stemmed Paján and Fishtail style from various areas; and the triangular and subtriangular point types from the central Andean highlands. We know that these and other point styles began to proliferate around 11,000 to 10,500 years ago. Some stone tool industries of South America, especially those from late Pleistocene sites in eastern Brazil (Lagoa Santa, Lapa Vermelha IV), also were based on unifacial industries that coexisted with and had different characteristics from bifacial ones. Based on current evidence, the only possible link between North and South America has been the so-called fluting on the Fishtail and Clovis points, and this association is controversial and unconvincing. Although Fishtail points have been dated by radiocarbon means between 11,100 and 10,200 years ago in southern Patagonia, the southernmost tip of South America, they are no older than 10,500 years ago in other areas of South America and in Central America, leading Alan Bryan, William Mayer-Oakes, and other archeologists to suggest that they were invented in the far south and diffused to the north. Too, the South American stemmed Paján point is earlier than its North American counterpart. Earlier “fluted” and stemmed points in South America have prompted some archeologists to ask why more models of early south-to-north migration are not considered. But, here again, this suggestion is based on aesthetic point associations and not on systematically analyzed inter-site and intercontinental trait comparisons. Third, the earliest evidence from a wide variety of South American sites indicates dietary breadth and cultural diversity at the outset of human entry and dispersion, with many areas witnessing the development of broad forager diets long before 11,000 years ago (Bryan 1973; Dillehay 2000; Salemme & Miotti 2003). Big game hunting was simply one of many different economic practices, and apparently never achieved the importance it allegedly did in North America.

It is not known when people first moved into South America, although it can be reasonably assumed that they came from North America by way of the Pacific and/or Atlantic coastlines and by various interior routes through the Panamanian isthmus. Although people had already reached the far southern tip of the continent in Tierra del Fuego by at least 11,000 years ago, the terminal Pleistocene between at least 11,300 and 10,500 years ago saw the establishment of human settlements in Amazonia (Monte Alegre, Lapa do Boquete), the high Andes (Tibito, Tequendama, Lauricocha), and the grasslands of Uruguay and Argentina. By about 11,000 to 10,000 years ago, people were moving into caves and rockshelters immediately after deglaciation in the high Andes of Peru (e.g., Cueva Pachamachay, Cueva Telarmachay, Cueva Uchumachay) and northern Chile (San Lorenzo), and in Andean foothills of southern Patagonia (Los Toldos, Piedra Museo, Cueva Fell,

Tres Arroyos). How much earlier were they there? Fifteen to twenty thousand years ago is certainly a possibility, but until more archeological evidence is available, it is uncertain.

As a final point here, in recent years, several sites have raised issues that are timely and important for the study of early plant and human interaction. Although vegetal matter usually is not preserved in the archeological record, where it *is* preserved, there is considerable evidence that the subsistence basis of the late Pleistocene and early Holocene was varied, though with widespread, recurrent elements in it. The absence of plant remains in most sites may result from sampling error, poor preservation, and/or non-use. However, where it is preserved, such as the 12,500-year-old site of Monte Verde in south-central Chile, various cave and rockshelter sites in eastern Brazil (e.g., Lapa do Boquete, Santana do Riacho), and open-air sites such as Pena Roja in the tropical lowlands of Colombia, it indicates that people gave equal or more emphasis to plant gathering and possibly manipulation than the exploitation of game animals. Most significant, terminal Pleistocene cultigens such as squash (*Lagenaria* sp.), gourds (*Cucurbita* sp.), and quinoa (*Chenopodium quinoa*) (Piperno & Pearsall 1998) also exist in the Central Andes, which suggests very early plant manipulation and dependency.

Just as the effects of expanding global systems have generated new interest in relationships between societies formerly conceived as occupying different rungs of a developmental social ladder, there should be more study of the applicability of different plant uses by specialized terrestrial hunters and maritime fishermen and gatherers (exploiting seaweed and other aquatic plants) and by generalized hunters and gatherers and of the relationships between these different, at times, coexisting economic groups from 12,000 to 9,000 years ago. The paradox in these differing economies is the creation and maintenance of diversity, likely involving new and continued reliance on wild plant and animal resources at a time when people were exploring and filling new niches and establishing more permanent exchange relations with neighbors and long-distance groups.

Unfortunately, little is known of the social organization associated with these different economic types in the late Pleistocene and early Holocene periods. Based on the current evidence, we can only presume that semi-mobile to mobile band societies in both North and South America cooperated and shared resources. At the outset of human exploration and movement, highly mobile foragers entering unpopulated lands had unlimited access to a wide variety of resources and must have relocated themselves regularly, especially in vast open areas like the high-latitude tundra of northern North America. The internal structure of domestic spaces at some sites, such as the open-air localities of Monte Verde in Chile, were well preserved, showing the remains of hut structures, hearths, and activity areas. The post-hole remains of possible shelters and other features at the Thunderbird site in the eastern woodlands of the United States reveal significant developments in the separation of public and private spaces and suggest seasonal, if not, yearly aggregation of people. Other sites like Aubrey and Gault in north Texas, Tres Arroyos in southern Patagonia, Paijan sites on the north coast of Peru, and many others throughout the Americas, also suggest that domestic spaces and especially hearths were important centers of social and economic activities. Once domestic areas were divided and designated for special purposes, some degree of communal, if not social, differentiation might have occurred.

Later in the early Pleistocene period, Paijan sites in northern Peru and other localities such as Acha 2 on the north coast of Chile exhibit multiple permanent household structures made of stone, which suggest long-term occupation, social aggregation, planning, and more intensified exploitation of local resources. Enough evidence now exists to indicate that broad-spectrum diets in the eastern woodlands of North America and in many different environments of South America were intensified from the late Pleistocene to the early Holocene period, which set the stage for increased regional experimentation and restructuring of subsistence economies between 11,000 and 8,000 years ago. Many human populations began to focus on seasonally abundant and storable resources, which led to increased sedentism, social interaction, and probably institutionalized management of human energy and time. Perhaps most important was the level and degree of social interaction between geographically proximal groups practicing different types of subsistence economies, and how this interaction was organized.

In regard to the social and ritual life of the earliest Americans, nothing is known of their mortuary practices and religious beliefs because only a small handful of human skeletal remains dating to the late Pleistocene period have been found in the New World. This may suggest different burial patterns from what is known for hunters and gatherers in other parts of the world. However, beginning around 9,500 years ago, several early skeletal remains have been recovered from both North and South America, including Kennewick Man, Spirit Cave woman, and others in the United States, several skeletons from cave and rockshelter sites in Colombia, eastern Brazil, and southern Chile and Argentina, among others. The craniometric evidence from these later remains suggests possible biological differences that may have their roots in earlier immigrants (<11,000 years ago) and later Paleoindians (11,000 to 10,000 years ago). That is, the early Holocene data reveal a wide range of craniofacial variation compared to later middle Holocene skeletons (*c.* 7,000 to 5,000 years ago), with little to no shared physical traits between them. Such differences suggest that the early and late populations were derived from temporally and possibly geographically different migrations, although genetic drift and regional adaptation may account for some of this variation (Steele & Powell 2002; Neves et al. 2003). This evidence generally agrees with the cultural and economic diversity suggested in the archeological record of the Americas. Despite the paucity of early biological data, most of the current and later genetic and skeletal data suggest close biological linkages between early populations from Eurasia/East Asia and early Holocene Native American groups.

Continuities and Complexities

In many areas of the New World, early Holocene foragers continued many of the economic and technological patterns and fundamental restructuring of the society and the way different populations interacted, which characterized the late Pleistocene period, although there are important local variations, such as the appearance of cave art in Brazil in terminal Pleistocene times and the development of cultigens, elaborate mortuary practices, and social changes in several regions in early Holocene times. In Mexico, the Central Andes, and the eastern woodlands of the United States, some

terminal Pleistocene groups discovered horticulture and new, more complex lifestyles such as semi-sedentism and population aggregation that set the stage for the subsequent construction of public places (e.g., ritual plazas and mounds) and social differentiation between 7,000 and 6,000 years ago in parts of the Americas (e.g., Watson Brake site in Louisiana, Nanchoc sites in Peru). Although the late Pleistocene and early Holocene environments of the landscape determined the resource structure and influenced the human response to the exploitation of resources, people produced the social conditions and structures in which they lived and, in turn, were shaped by the institutions and beliefs that either they controlled directly or that were beyond their control. As discussed above, many of the first Americans were generalized foragers, specialized hunters, maritime gatherers and hunters, or invariably different combinations of these economic strategies in a wide variety of environmental contexts. These diverse economies must have entailed different degrees of technological innovation, planning, risk management, resource sharing, mobility and territoriality, and social interaction. Not well understood by archeologists are the patterns of interaction operating among these different societies, especially in spatially proximal places like the Andean mountains and Pacific coast and ecotones like the Great Plains and the eastern woodlands of the United States, and how this interaction created new and different institutions and sociocultural complexities. However, it is becoming more apparent that different pathways were taken by different groups in the North American southwest and eastern woodlands and in the arid and tropical lands of Mexico and South America to incipient complexity and to different scales of interaction between these and other different types of societies. It also is important to recognize that these regional developments did not fully emerge in some areas like Mexico and the Central Andes until plant and animal domestication occurred in terminal Pleistocene and early Holocene times.

Most archeologists treat each early specialized hunting, gathering, and fishing economy differently. Yet, each bears a relationship to others as components of a hemisphere-long framework of the first Americans. None of these component economies is more or less important; they must have interacted with each other, as suggested by the shared stone tool technologies of the Clovis, Fishtail, Paijan and other point styles, and together comprised the conceptual framework through which participant regional groups interpreted and generated increased stylistic designs and ever increasingly different lifestyles. This interpretative and participatory framework must have shifted with respect to the relations between different people as they adapted to different social and physical environments. Perhaps most adaptable was a generalized economic organization, which would have allowed for flexibility in responding to various instances of what may be essentially the same basic participation at different locations and times in places. Specialized economies, on the other hand, allowed localization and more intimate linkages with specific types of environments, such as big game hunting in open terrain, fishing, and shellfish collecting along coastlines. Other societies seasonally combined different hunting, collecting, and possibly incipient horticultural strategies by practicing long-distance transhumance between different environments and/or by establishing exchange relations with other groups to access a wider variety of resources.

It is generally assumed that the advantages of early mixed hunting, gathering, and incipient horticultural economies were self-evident in terms of the security of food

supply, ease of storage, and stability of settlement, and that these advantages were offset only perhaps by the greater labor input required, especially by fixed-plot cultivation. This kind of activity would explain the emergent complexity of riverine societies in the eastern United States and of coastal societies in Ecuador and Peru. But the advantages of different forms of subsistence could only have been self-evident in a social context where more food, more permanent settlement, and more cooperation and sharing were desired (cf. Woodburn 1982; Kelly 1995). Interaction and cooperation between different groups could have been more advantageous than individualism in order to improve food gathering or to defend against others. It is perhaps more that small cohesive groups, such as those documented in several early Holocene sites on the north coast of Peru (Dillehay et al. 2003), were the best setting for the emergence of cooperation; in these groups, the practices and identities of the other members are known, there are multiple opportunities for reliable interaction, and there likely was egalitarianism.

Likewise it is often assumed that settlement expansion and population growth are natural consequences of the adoption of agriculture, virtually without reference to the nature of the communities that adopted it in its various forms. Unfortunately, the scarcity of internal site structure and domestic architecture in early sites prohibits archeologists from inferring the social structure and internal activities of early communities. Emergent complexity also likely developed due to internal parameters such as population growth and intensification of land use in resource-rich areas and to social aggregation and greater care of the dead. As mentioned earlier, it is not until the 9,500 period that human skeletal material begins to appear more consistently in the archeological record of the Americas. It also must have taken shape and changed as a direct outcome of the social interactions of different populations in constant flux, especially where the crafting of incipient complexity involved material resources, but also invisible resources, such as the manipulation and invention of forms of meaning and abstract units of social organization.

In summary, the late Pleistocene period laid some of the social and economic foundations for the significant cultural changes that were to follow in the early and middle Holocene period (10,000–6,000 years ago). Early cultural developments show cultural diversity at the outset of human entry into many regions of the New World, especially South America, and the later establishment of ever increasingly distinct regional economic combinations. Although the evidence is still too scanty to discern the specifics of these developments, two general transitions can be discerned. The first was a change in adaptive strategies and organizational abilities during and at the end of the Pleistocene period. This transition signifies the rapidly increasing ability of people to recognize the environmental potentials that existed in some areas, to communicate these potentials to others and to take advantage of them, and to develop the social organization required to exploit resources in a wider variety of environments. Second, early people probably learned many hunting techniques, and on occasion employed them to bring down quite large animals. But with the exception of big game in largely open habits like the Great Plains and other grasslands, there is no hard evidence to show that hunting was the mainstay of the earliest known coastal and woodland economies. The social and psychological requirements of hunting probably played an important part in molding group organizational skills. But the same can be said of collecting plants and maritime resources. But I see these

issues as secondary to the real prime mover of greater social complexity, and that is the practice of sharing food and ideas within organized, aggregated social groups practicing different complementary lifestyles.

Epilogue

The emergence of humans in the Americas is probably far more complex than the current models depict. At the moment, the evidence points towards the presence of humans in the New World sometime between 18,000 and 13,000 years ago and their arrival from east Asia, with possibilities of immigrants from other places at other times. At the moment, none of the archeological, genetic, skeletal, and linguistic data are reconciled to produce a coherent model to explain human dispersion and cultural variation. The reconstruction of early American society necessarily depends upon the imaginative reconstruction of archeologists and other scholars, and the fact that the evidence is so sparse does not mean that we refrain from making some informed speculations, often grounded in the observed behavior of ethnographic foraging societies.

Part of my concern here also is that traditional approaches to the study of the peopling of the Americas have relied too heavily on subjective aesthetic definitions of projectile point styles from a wide variety of archeological sites in North and South America. Not yet fully integrated into these approaches are systematically contextualized archeological traits such as internal site patterning of non-projectile point stone tools, other artifacts and features, and inter-site quantitative and qualitative comparisons between these and other variables. Until we carry out inter-site and intercontinental studies of organizational strategies and mobility patterns, we will not more fully understand the peopling of the Americas.

Several new directions need to be taken in the future of first American studies. First, we need to use the ecological conditions of resource exploitation and the resource structures of population distributions to explore the shifting organization and relationships through time of different scales of specialists, generalists, mixed strategies, and interactionalists. The result is a picture of widespread and systematic relationships between what is usually viewed as "separate" desert, woodland, coastal, highland, and tropical peoples with separate maritime, hunting, and gathering economies. In this regard models like Clovis big game hunting encourage us to look for development and control by a single economic mode when in fact elusive and less conspicuous forms of exchange, economic synchronization, and social interaction also must have existed to link various peoples settling into and flowing through different landscapes. The shifting connections among these peoples surely have been a long-term feature in the regional dialogue through which territorial identities were eventually fashioned and transformed into the corporate styles of later ethnicities, politics, and state societies. Certain research questions can guide us in the ways these different early societies operated in terms of their practical deployment of different material conditions; the way that practice reworked the structured social and economic principles of organization; the way practice and social agency mutually worked to meet historical contingencies; and the way they accessed different sets of material conditions and the mechanism of interaction operating between them. Another research

direction should involve domestic archaeology – the living sites of past people – which has been a topic of increased research among archeologists in later periods, but has received minimal attention as a social unit among early people specialists. This is unfortunate, because it would help to counter the kill-site bias that plagues late Pleistocene archeology. Future work also needs to define better regional chronologies and to excavate larger areas in sites to identify and study activity areas and the internal spatial structure that make up local and regional systems.

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