



# THE REVIEW OF ARCHAEOLOGY

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*Near East*

## **A Brutal Social Landscape: Mesopotamian Civilization as Exclusive and Exploitative?**

By C.C. Lamberg-Karlovsky

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*Ancient Mesopotamia at the Dawn of Civilization: the Evolution of an Urban Landscape* (2008) GUILLERMO ALGAZE. The University of Chicago Press, Chicago.

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The nature of ‘origins’, and its twin companion the ‘rise and fall of civilizations’, are continuously subject to inquiry by philosophers, historians, and social scientists. The inquiry began several millennia ago. The question remains the same: “What is the origin of X?” X may be the cosmos or a civilization. With the passing of time the answers differ dramatically. The Sumerians, in asking of the origins of agriculture, kingship, or the plow, had a singular answer: They were all the gifts of the gods. Divine intervention was the primary agent of change whether in nature or in society. It took the passing of millennia before the Greeks challenged the divine ordination of what we call the historical process. Attempts to answer the question, “What sort of being must be when being becomes?” led Plato in *The Laws* and *The Republic* to outline social evolution from primitive pre-state conditions to the rise of civilization. Plato, Aristotle, Herodotus, and Thucydides are but a few of the classical authors who laid the foundation for Western social thought. Their overriding concern for addressing the *origin* of things, a belief that developmental processes followed definite *patterns*, a concern for isolating the *cause(s)* that underlie patterns, a belief that all things within nature are set to specific *purposes*, and an emphasis placed on *methodology* provided guidelines that transformed historical inquiry.

In the long eighteenth century the Enlightenment challenged the theologically perceived Judeo-Christian dogma in which origins and causes were, once again, held to be guided by divine ordination. The Enlightenment propagated the notion that a utopian ideal of social harmony could be attained through the application of reason and rationality in guiding the inevitability of human progress. To the Enlight-

enment *philosophes* progress was reason in the survival of needs. Enlightenment philosophers, Voltaire, Rousseau, Hume, Ferguson, Montesquieu, Kant, Herder, Mirabeau, Locke, Diderot, Condorcet, and Adam Smith [to mention but a few, see Wolff and Cipolloni 2007] were all as one in propagating the notion that origins, causality, progress, freedom, and individuality could all be determined, achieved, and directed by the application of human reason in the service of rationality. The arch-conservative Louis Bonald (1754-1840) asked, “The great question that divides man and societies in Europe: whether man makes himself and makes society or society makes itself and makes man.” Over a hundred years later the archaeologist V.G. Childe opted for *Man Makes Himself* (1936).

If origins is a millennia-long quest, the words *culture* and *civilization* are by no means old words or concepts. Samuel Johnson’s celebrated dictionary of 1755 defined *culture* as “the act of cultivation, the act of tilling the ground, tillage.” Such a definition was in conformity with the French *Encyclopédie*. James Boswell (1791:xxv) reported that in 1772, “On Monday March 23 I found him [Samuel Johnson] busy preparing a fourth edition of his folio dictionary... He would not admit *civilization*, but only civility. With great deference to him, I thought civilization from to civilize, better in the sense opposed to barbarity than civility.” Somewhat earlier Ephraim Chambers (1728), with great precision, noted that “Civilisation is performed by turning the information into an inquest, or vice versa.” Thus, the nature of civilization was to be turned into an inquiry, to ascertain or decide upon a series of facts. Since the eighteenth century, when Chambers and Johnson reflected on the nature and definition of culture and civilization, there has been an industrial output of writing on the origin(s), nature, and even survival of culture and civilization.

In an earlier and influential work Guillermo Algaze (2005) argued that in the fourth millennium Mesopotamia was involved in an imperial expansion extending from southern Mesopotamia and colonizing distant reaches of northern Mesopotamia, Iran, and Anatolia. This book incorporates that vision, with modifications, and expands upon a narrative exposition that interweaves a multiplicity of causes and processes that

bring about the emergence of the world's first civilization. In preferring to allow 'civilization' to remain undefined the author positions the narrative itself to serve as its definition. While Algaze does not advance any single theoretical perspective, his book is very much theoretical. There is no mention of Weber, Marx, Foucault, Derrida, etc. and no review of anthropological archaeologists reflecting on the origin and evolution of civilization and/or the state. The views of Jane Jacobs on the role of "diversification and specialization" in the emergence of cities, Gunnar Myrdal and Allen Pred on "circular and cumulative causation theory", and David Ricardo and Paul Krugman on "comparative and competitive advantage" all offer positive insights for what Algaze refers to as the "Sumerian takeoff" (for an earlier discussion on "comparative advantage" and the benefits of water vs. land transport in Mesopotamia see Silver 1985). An emphasis upon the theories of classical and modern economists, as they pertain to the emergence of economic complexity, is a laudable aspect of this book. Locational theories, on the other hand, as advanced by Johann von Thünen, and Walter Christaller "fail to account for the complexity of the situation in southern Mesopotamia" (pp. 25, 27). Discussion focuses upon the causal factors that coalesced in the emergence of cultural complexity. The neo-evolutionary paradigm, which argues for the transition from band to tribe and state, which could have framed his *longue durée*, is advisably ignored. Emphasis is placed upon specific environmental and cultural factors that brought about a specific archaic state in southern Mesopotamia. His theory is firmly grounded in the evidence he explores. Caroline Bynum (2009:78) has recently written that: "Searching for deep structures and large patterns seems located at the opposite pole from the postmodern sense of history-writing as fragmentary, fragile, and so to speak, under perpetual construction."

Algaze would agree. In his search for "structures" and "large patterns" he offers a robust narrative involving something more than theory, something that approaches explanation and understanding. Algaze begins his argument by positing that the favorable Mesopotamian environment is a *necessary* condition for the emergence of cultural complexity. The conjuncture of a rich "natural landscape" and a "created landscape" offered *sufficient* conditions for a

"Sumerian takeoff". The natural landscape of the Tigris and Euphrates alluvial lowlands offered an agricultural base that was at least twice as productive, and more reliable, than that of neighboring societies. Recent research, well reviewed by Algaze, indicates that the Tigris-Euphrates fluvial system of the fifth and fourth millennium was entirely different from that of the historic period: "...the two rivers formed a single dynamic network of anastomosing channels at the time of early urban emergence" (p. 49). The richness in the alluvial, coastal, and aquatic ecotones offered an abundance of resources that were complimented by summer monsoonal rains that brought the alluvium summer precipitation throughout the fifth and fourth millennia. Today the monsoonal rains barely reach the northern edge of the Persian Gulf. The author's argument for southern Mesopotamia's "unique ecology and geography" (p. 8) as necessary cause for the Sumerian takeoff is both thorough and convincing. His perspective is not, however, reducible to environmental determinism— "And yet, natural advantages derived from geography and environment do not explain in and of themselves the chystallization of early Mesopotamian civilization—or that of any other pristine civilization for that matter" (p. 47).

A necessary environmental condition still requires a sufficient cultural setting and Algaze is at his best in discussing that cultural setting. The dramatic "Sumerian takeoff" in southern Mesopotamia is given a narrative frame of reference that suggests an event-like process. In fact, the "takeoff", beginning in the Middle Uruk and extending to the Late Uruk Period is a process that lasted at least 500 years, 3600-3100 BC. Conflating the chronology of the "takeoff" as event-like conjoins a number of cultural, technological, and perhaps environmental, attributes as co-occurring. Thus, the emergence of new forms of organizing labor, new forms of record keeping, trade for the control (?) of foreign resources, the domestication of the donkey, a "created landscape" allowing for cheap water transport, to mention but a few cultural transformations, are presented as contemporaneous. More than likely each of the above took place at different times (our chronology and periodization of the Uruk Period is at best both ambiguous and imprecise) and some, like seals and seal-

ings, for record keeping, and long distance trade, existed millennia prior to the Uruk Period.

In 1798 Thomas Malthus wrote *An Essay on the Principles of Population* in which he argued that natural populations grow at an exponential rate whereas the increase in food supply is linear. How then do agrarian societies break the grip of the “Malthusian Trap”? A trap characterized by an equilibrium between population growth and agricultural productivity resulting in homeostatic, self sufficient, village communities. Algaze in defending his earlier work (1993, 2005) on the Uruk Expansion and the “world’s earliest regional asymmetries” recognizes that “it did not postulate a coherent set of mechanisms or processes to account for how that supraregional system evolved in the first place” (p. xvii). In the book under review Algaze addresses how the Malthusian Trap was broken and how it led to the “Sumerian take-off”. In summary form, which does not do justice to Algaze’s fulsome treatment, the following points are of major significance to his thesis:

1. Trade, organized for “the control of coveted resources” (p. 8), involved the import of elite goods, preciosities: metals, precious stones, timber, etc., derived from distant peripheries. “Where trade flows, its ramifications in the form of increasing social complexity and urbanism follow” (p. 100).
2. The rich “natural landscape” with a variety of complementary ecosystems was the “trigger” (p. 40) that offered environmental and geographic advantages that, in turn, allowed for a “created landscape”, riverine and canal systems that allowed for integrated water transport (being up to four times more efficient than land transport) and communication.
3. New forms of organized labor. Corvée labor attached to central institutions, i.e., temples, for the construction of monumental buildings, irrigation systems, agricultural projects, warfare (?), etc.
4. New forms of record keeping within administrative bureaucracies: writing, seals, sealings, standard measures: weights, volumes, distance.

The unique presence of the above offered southern Mesopotamia a “competitive advantage” over its neighbors. This “competitive advantage” was manifest in trade, involving the

control of foreign resources, changes in commodity production, labor organization, and transport advantages evident in cheap riverine and canal communication. All of the above offered opportunities for diversification and specialization, which led, in turn, to the institutionalization of growth and Mesopotamian urbanization. Once this urban process is set in motion how is it sustained? Algaze turns to the role of “circular and cumulative causation”, a concept first introduced by Gunnar Myrdal (and not fundamentally different from Colin Renfrew’s “multiplier effect”) that involved the recognition that economic, social, and cultural factors can reinforce each other in the process of directed change. Algaze is to be commended for introducing the concepts of modern economists, Allen Pred, Paul Krugman, Nicholas Kaldor, Edward Malecki, and Paul Bairoch, among others. He makes a persuasive case that their concepts are as consequential in the past as they are today.

In the first half of the fourth millennium sites in northern Mesopotamia were roughly comparable in size to those of the south. The growth of large settlements in the south are placed at ca. 3500 BC. Of the four allegedly co-occurring ‘causes’ for the growth of the southern cities, cited above, two are given pride of place: trade and the unique and favorable environment. Joyce Marcus (1998) and Kent Flannery (1995), dedicated to neo-evolutionary paradigms and universally applicable models, suggest that regional chiefdoms within Mesopotamia were consolidated by force to form the state. Algaze favors a view in which “trade fueled asymmetrical growth leading to co-evolutionary polities of varying size” (p. 111). Uruk emerges as a single dominant center while the Nippur-Adab region suggests the possibility for multiple competing centers.

Algaze suggests that with the “exception of metals it [trade] was characterized by the exchange of lightly processed commodities from the periphery for processed prestige goods crafted in southern Mesopotamia” (pp. xiv-xv). This is surely wrong. The mining and transport of lapis, carnelian, and a variety of stone, was not “lightly processed” nor is there anything but very limited evidence, save perhaps for invisible exports, i.e., textiles, for “goods crafted in southern Mesopotamia” found in the periphery.

One may also add that textual evidence for the third millennium suggests that foreign traders were more likely to go to Mesopotamia than Mesopotamian merchants to go to foreign lands (for references see Lamberg-Karlovsky 2009).

Some scholars have argued that political paramountcy dominated the southern Mesopotamian social landscape (Liverani 2006) while others have emphasized the role of religion as a coalescing force (Adams 1966, Steinkeller 1999). Within southern Mesopotamia political and religious centrality may have existed within distinctive settlement regimes. Thus, throughout the third millennium Nippur was the acknowledged religious center of the southern alluvium but never the seat of a political dynasty. Algaze opts for a cautious approach: "...the fact remains that available survey and excavation data from southern Mesopotamia remains entirely too ambiguous to allow for detailed reconstruction of either the political or the religious landscape of southern societies at that time [the millennia long Uruk period (Wright and Rupley 2001)]". Such constraint does not occur in confronting the reconstruction of the economic landscape. Algaze's "Sumeran take-off" is essentially an economic one.

World systems, cores, and peripheries dominate the perspective. Mesopotamia is an extractive, controlled, colonizing, exploitative, archival, dominant core, extracting resources from an underdeveloped, subservient, and manipulated periphery. Southern Mesopotamia "united previously independent regions and polities into an overarching system of asymmetrical relationships of interdependency that were principally, but not solely, economic in nature." The establishment of Uruk colonies in northern Mesopotamia, and regions of Anatolia and Iran, "may be conceptualized as unwittingly creating the world's earliest world system" (p. xv). Thus, Uruk colonies established for the control of trade and the extraction of resources result "unwittingly" in the earliest world system. 'World Systems Theory' (WST) takes its lead from Wallerstein's (1974) study of the emergence of capitalism in the 15th -16th century and has had a major influence upon archaeologists (Kardulias 1999). WST insists upon three assumptions, none of which are applicable to the Bronze Age of the Near East! 1. The core dominates the periphery, be it by organizational

efficiency, military means, or ideological agency; 2. The core exploits the periphery by asymmetric trade; the extraction of valuable resources from the periphery by exporting cheap goods from the core, and; 3. The politics of the periphery are structured by the cores organization of trade and exchange. This essentialist view, inspired by Marx, is demonstrably wrong when applied to the Near East and perhaps to all pre-industrial societies. Algaze's faith in WST is firmly alleged but weakly demonstrated. As Marshall Sahlins (1994:412-413) has observed, in denying agency to the periphery, "world systems theory becomes the superstructural expression of the very imperialism it despises." For Algaze the periphery is a wholly benign entity, neither described nor explored, an ill-defined entity whose presence merely served southern Mesopotamia's purpose for colonization and resource exploitation. In discussing core-periphery relations Liverani (2006:69-70) is more to the point:

The [Mesopotmian] population supports itself with local agro-pastoral resources, on which inter-regional exchange has no influence... It is certain that, in the period of concern here [the Uruk] the economic exploitation pertained to resources that were of secondary character only [elite goods]...it contributed to an increase in the local socio-economic stratification and it strengthened the elite's hold over the general population.

Mesopotamia can be characterized as a cuneiform state in which writing is favorably glossed by Algaze as "technologies of the intellect" (p. 127). In Uruk times texts were the tools of a centralized bureaucracy almost exclusively devoted to monitoring labor, the distribution of goods, production, consumption, and redistribution. These "technologies of the intellect," writing, seals, and sealings are better seen as "technologies of social control" (Lamberg-Karlovsky 1999). The community was at the service of a centralized brute power, dominating a mob of people, attached laborers and slaves, whose labor was counted by the state in the same manner and terminology as were "cattle", each with clearly delineated roles and defined rations (Renger 1996). Claude Levi Strauss (1972) was on target in regarding "the primary function of writing as a means of communica-

tion, is to facilitate the enslavement of other human beings.” Within the Uruk period neither the texts nor archaeology is able to adequately address the nature of individual agency. How did the urban elites coerce the populations to accede to their authority, to accept the newly constituted institutions, and to their structured organization of labor? It is to iconography that one must turn to suggest that individual agency was involved. Algaze doubts that “we will ever be able to answer such questions” (p. 153). Recently, Denise Schmandt-Besserat (1993, 2007) has convincingly summarized what a number of authors had previously alluded to: the frequent depiction, on a number of different sites within the Uruk period, of an outsized bearded male, wearing a standard hat, hair in a chignon, wearing a net skirt and depicted as a hunter, warrior, or performing in various ritual activities. Pierre Amiet (2005) is forthright in his identification: it is the iconographic representation of a “Priest-King”. The implications indicated by the presence of this individual is largely overlooked or avoided. What role did this individual(s) play in the emergence of the southern Mesopotamia city-state? The fact that this individual appears on several different sites may indicate that either priest-kings dressed in a similar manner existed in the different emerging city-states or that there was a *single* individual(s) [dynasty?] involved in the centralization of the Uruk polity. In the former instance one has co-evolving polities that emerge as independent city-states, in the latter, a single powerful center coercing and coordinating a centralized polity. Algaze firmly selects the former. It is his belief that there was no “national” Uruk state (p. 115) and that ‘trade fueled asymmetric growth leading to co-evolving polities of varying size’ (p. 111). Perhaps. Initial conditions may differ greatly from the intended, or unintended, consequences of an end product. The chicken is not an obvious end product of the egg. The *longue durée* of the Uruk millennia may well have vacillated between centripetal forces, directed toward a singular state, even empire, and the more normative Mesopotamian condition in which centrifugal forces fostered independent city-states.

A substantial part of Algaze’s book is devoted to discussing the economic structure, trade, and industry, mostly textile, of the Ur III period

(2113-2029 BC, being the dynasty of five successive kings). The Ur III period is perhaps the best textually documented period within Mesopotamian history. Even though the Ur III is later than the Uruk period by a thousand years Algaze presents it as proxy evidence for understanding the “dawn of civilization”. In fact, the highly centralized, bureaucratic, extraordinarily well documented, and expansionist nature of the Ur III Empire is without parallel in the history of the Near East. Algaze’s informed use of Ur III texts highlights the industrial scale production of textiles, the organization of labor, and the organization of long distance trade. To highlight the importance of long distance commerce Algaze summarizes the nature of the Assyrian colonies in Anatolia (ca. 1900 BC). An extensive archive documents a century of trade that united the Assyrian city of Asshur with the distant Anatolian town of Kültepe. Both cities traded an extensive array of goods, principally Anatolian textiles for tin from Asshur. (The tin was likely derived from Susa which in turn obtained it from further East.) The unique archive at Kültepe documents the role of individual families involved in private commerce, the effect of supply and demand on prices, the laws governing commerce, the trade routes and custom duties to be paid, as well as the personal concerns of individual merchants. Algaze (pp. 83-84) fairly asks: “Can the Ur III texts or the Kültepe archive offer an understanding of the social formation, economic or political conditions existent a millennia earlier in the Uruk period?”

Can fragmentary statistics derived from the record of a much larger imperial society [Ur III], that thrived in southern Mesopotamia a millennium after the Uruk period be relevant to an assessment of conditions operating in the same area during the fourth millennium? Indeed they can, provided that a number of defensible assumptions are explicitly made and that those assumptions are taken for what they are: analytical sleights of hand that allow us to conceptualize a problem, however tentatively, and the results inferred from later cuneiform sources are checked against pertinent ethnographic data where possible.

Fair enough. However, his assumptions are highly dubious. His first assumption is that the

technology of wool production in the Uruk and Ur III periods had “no significant technological differences” and were “organized along the same principles” (p. 84). There is absolutely no way of documenting, or proving, either assumption. It is very doubtful that the textile production of the Uruk period compared to the extraordinarily large Ur III production and export. His last assumption is that “survey data show no significant differences in the *relative* proportion of people who lived in cities in the Mesopotamian alluvium during the Late Uruk and Ur III periods.” Algaze’s use of Robert Adams’ survey data (1981), particularly for the Ur III period, is challenged by Piotr Steinkeller’s (2006) analysis of settlement patterns and demography derived from the written texts. Steinkeller documents a significantly larger settlement number, of both cities and particularly villages, than recorded in the Adams’ surveys. Finally, Algaze’s method of using the cultural context of the Ur III period to understand the cultural world of the Uruk and asking both to be compared to ethnographic data, conjures up a primordial unchanging Mesopotamian universe that Edward Said (2003) found so typical of western Orientalist perspectives.

The evidence from the Ur III period counters Algaze’s perspective that “asymmetric” trade characterized the relations of the Mesopotamian core with the periphery. The texts abundantly attest to the fact that the Ur III imperial design was not one of conquest nor asymmetric exploitation but one built upon economic and political alliances. The political alliances with Marhasi (eastern Iran), Anshan (central Iran), Mari (northern Mesopotamia) and Shimanum (eastern Anatolia?) offered an attempt to establish a symmetric international order between defined geographic spheres. To the east Ur’s partners were Marhasi and Anshan. Both alliances were cemented by dynastic marriages during the reign of Shulgi. In the year Shulgi 34 the rule of Anshan was transferred to the family of Yabrat of Shimashki, who likely also married a daughter of Shulgi. To the west Ur’s strategic and enduring ally was Mari, already initiated by Ur-Namma founder of the Ur III dynasty. There is virtually no evidence of Ur III military activity in the north or in the west. As for Shimanum, situated on the upper reaches of the Tigris, a dynastic marriage united one of Shul-

gi’s daughters with Shimanum, while a military campaign in the year Shu-Sin 3 permitted Ur to stabilize the reign of the ruling family and restore order. The strategy of the Ur III empire was characterized more by diplomatic alliances than military conquest. Strategic alliances allowed for the extension of territorial influence, the expansion of trade routes, and security for obtaining desired resources. Rather than an asymmetric, exploitative, militarily dominant relationship, the Ur III ‘core’ maintained diplomatic alliances that were more symmetric – permitting Shulgi to attain an imperial consolidation over the ‘periphery’ by political means (Steinkeller 2008).

However, neither common economic interests, nor marriage alliances, nor security considerations were sufficient to maintain Shulgi’s international system of political alliances. The imperial system began to disintegrate during the first years of Ibbi-Sin’s reign (2029 BC). An increasing resistance to Ur III hegemony, the breakdown of alliances, and a military increasingly staffed and influenced by foreign contingents led to the defeat of Ur and to Ibbi-Sin being carried away in chains to Anshan. For a short period of time Ur was occupied by an Elamite garrison (Postgate 1992).

For Algaze the periphery is not an active agent of change. Its sole purpose is to provide resources, by coercion, to Mesopotamia. Far more preferable, and realistic a view is that of Kardulias (1999) who writes of a “negotiated periphery” in which the periphery negotiates its own incorporation. Alliances and warfare with the periphery go unmentioned by Algaze. Both had very considerable consequences particularly for Ur III Mesopotamia. Shulgi, the most formidable of Ur III kings, married his daughter to a son of the King of distant Marhasi, located in southeastern Iran (Steinkeller 1982, 2006b; Potts 2002). Such political alliances with the periphery offered military assistance to an expanding Ur III empire. Marhasi can now be more precisely centered along the Halil Rud River in the Jiroft of southeastern Iran—well over 1000 kilometers from Mesopotamia. To date, although systematic surveys have yet to be undertaken, over 150 sites have been located along the Halil Rud (Madjidzadeh 2008). One of these sites, Mathoutabad, is presently being excavated by Massimo Vidale who has uncov-

ered hundreds of sherds of Mesopotamian (Uruk period) beveled-rim bowls within a local cultural context dated to the first half of the fourth millennium.

What happened to the Ur III Empire, or for that matter, the Uruk? For the Ur III we know that Mesopotamia was brought to its knees in a military defeat coordinated by the periphery, an alliance of the Elamites and Shimashki. Daniel Potts (in press) argues for identifying Shimashki with the far distant Bactrian-Margiana Archaeological Complex (BMAC) of Central Asia (located in Turkmenistan, Uzbekistan, and Afghanistan, see Sarianidi 2002, 2006). The exploitative nature of southern Mesopotamia's relations with a subordinate periphery, one characterized by asymmetric trade relationships, has been well countered by Gil Stein (1999, 2005). Stein distinguishes colonialism from colonies. Colonialism is characterized by relationships of dominance and inequality while the nature and relations within a colony, a more neutral term, is open-ended. Stein's excavations at Hacenebi (3700-3300 BC), in Anatolia, 1200 kilometers from Uruk, revealed a strong southern Mesopotamian Uruk colony. In contrast to Algaze's Uruk colonialism dominating the periphery, Stein presents the Uruk colony as an independent enclave, the "foreigners were an autonomous diaspora rather than a dominant colonial elite.... The Mesopotamian and Anatolian communities produced, exchanged, and consumed goods with their own encapsulated social domain." (Stein 2002:58). Rather than asymmetric relations in which the Uruk colonialists were in control of trade Stein derives evidence for each community, the Uruk and Hacenebi, producing its own distinctive diet, crafts, and administrative methods. Exchanges were small scale and symmetric. Each community maintained a relationship of parity. The archaeological and textual evidence for trade relations that brought Mesopotamia into contact with the Persian Gulf, Anatolia, and the Iranian Plateau (Elam) throughout the third millennium, evidence bilateral, symmetric trade, political alliances, gift-giving, occasional conflict/warfare, state monopoly, as well as private entrepreneurial markets. Reducing the complexity of trade relations to an asymmetric core-periphery relationship simplifies the remarkable expanse of geography involved, the

scale of interaction, i.e., tons of copper shipped to Mesopotamia in the Dilmun trade, and the mosaic of cultural regions, ethnicities, and languages spoken (Adams 1992; Silver 1985; Lamberg-Karlovsky 2009).

The theoretical underpinning for Algaze's "dawn of civilization" involve cores and peripheries, relations of dominance, exploitation, asymmetries, and hierarchical relationships involving colonization. It takes its lead from an understanding of western dominance, colonization, and the processes involved in the emergence of capitalism. In the final analysis, even ignoring the untenable Ur III as proxy for the Uruk period, I find the theoretical edifice unconvincing, monolithic, and simplifying. Centuries prior to the Ur III period the southern Mesopotamian world was in contact with the distant reaches of the Iranian Plateau, with the Dilmun culture of the Persian Gulf, with ancient Magan (the Sultanate of Oman), the BMAC, Anatolia, and Meluhha, the Indus Valley. What matters in these distinctive and distant Mesopotamian foreign relations is not dominance and exploitation by a core of a distant periphery but political, economic, and social *connectivity*; the recognition of the existence of numerous independent and interdependent interaction spheres in which southern Mesopotamia, beginning in the Ubaid period, is but one actor among many. This is true for the Ur III as it was for the Uruk Period. Connectivity breaks down the treatment and privileging of assumed geographical cores and places a more interactive cultural geography as paramount in the process of emergent complexity in *all* regions concerned. Connectivity implies mobility, mutual influences, diversity, cultural borrowings, a porousness of borders rather than fixed frontiers, and a complex multiplicity of relations involving marriage alliances, private markets, state monopolies, open warfare, and simple avoidance. Connectivity appreciates that trade is subject to the vulnerability of commodity flows, the safety of overland routes, and above all that cooperation among a mosaic of ethnicities is absolutely essential to transport resources from a distance. Exploring the nature of connectivity allows for an open-ended exploration for examining the *different* reasons and/or causes for cultural interaction at a distance rather than applying universal attributes as

common cause for all foreign relations. Levi-Strauss arbitrarily divided interaction into two categories: weak and strong (for reference and discussion see Rouse 1986:11). Weak interaction consists of trade, religious pilgrimages, intermarriage, political alliances, and other sociable activities. Strong interaction includes warfare, political control, and other kinds of forcible activities. Algaze supports strong interaction in which southern Mesopotamia attained, through economic dominance, a political control over its periphery. The periphery, whether in northern Mesopotamia, Iran, or Anatolia, maintained its own cultural identity, assimilated the foreign into their own culture, and maintained their own local development. Thus, a weak interaction might better express what has been termed transculturation, the exchange of cultural norms when an immigrant population enters a new area (for the process of transculturation see Ortiz 1947:97-103).

Algaze's "Dawn of Civilization" offers a sampling of the internal developments within southern Mesopotamia that led to cultural complexity. However, one reads little of the role of an earlier Ubaid cultural expansion that preceded the Uruk, the nature by which order was established, how power was legitimized, of the political organization and alliances ('leagues', Matthews 1993) of the early city-state, of shifting settlement regimes, evolving villages to urban centers (Ur 2007), the changing functions of the household (*oikos*), the temple, land tenure, or of the role of pastoral nomads, of irrigation, or what Norman Yoffee (2005), in discussing state origins, refers to as the "ubiquity of conflict". Many of the above concerns are discussed in Steinkeller's (1993) important analysis of the evolution of southern Mesopotamian political structures, kingship and the territorial state, and its northern Mesopotamian adoption (and difference) in the form of the "Kish Civilization" (for other fine reviews of Mesopotamia's "dawn" see Nissen 1988; Postgate 1992; and Liverani 2006).

To a certain extent Algaze appears trapped by the "Ionian Fallacy", the belief in a single integrating principle for bringing order to a complex set of features, namely, trade and the exploitation of the periphery to control resources. In order to support this contention for the mid-fourth millennium, he uses late

third and early second millennium evidence as proxy for understanding the structure of trade, the organization of labor, and the emergence of an administrative bureaucracy. Even if one takes into account the textual and the archaeological evidence of late third millennium trade between Mesopotamia and Iran, a relationship that Roger Moorey (1993:43) correctly characterizes as one of "vitality and centrality," his conclusion that "taken together the evidence of artifacts and texts sustains a minimalist rather than a maximalist view of the overland trade between them, a trade in luxuries for the privileged rather than in staples for the masses". Trade in such luxury items, however, was far from trivial for enhancing the status and hierarchies of Mesopotamia's elite. In negating trade as 'cause', Christopher Edens (1992:121) is perhaps most strident "to analyze precapitalist complex societies, and the place of long distance trade in those societies, as economic configurations is to misplace basic social forces in those societies."

Paradoxically, if the Uruk colonies, and the very process of colonization and the control of trade and resources were seminal elements to the dawn of Mesopotamian civilization, there is no discussion of either the collapse, or its cause, of the Uruk colonies. Whether in northern Mesopotamia, Iran, or Anatolia, the Uruk presence completely disappears ca. 3100 BC. Similarly, the Assyrian trading colonies in Anatolia also disappear ca. 1850 BC. Why? While the reasons are elusive the results are not. Following the collapse of the Uruk presence in northern Mesopotamia, Anatolia, and Iran each region sustains its indigenous cultural polities. Only with the passing of 500 years does northern Mesopotamia, once again under the influence of the south, but NOT within a context of colonization, emerge as urban and literate communities. Far from being unique, the Uruk Expansion is preceded a millennia earlier by a Mesopotamian Ubaid Expansion (ca. 4500 BC) to Anatolia in the north and to the Persian Gulf in the south (Iran, Bahrain, Saudi Arabia, and Oman) and a slightly later (ca. 3300-2900 BC) Proto-Elamite Expansion throughout the Iranian Plateau (Lamberg-Karlovsky 1978, 1989). Algaze discusses neither. Just as the Uruk colonies withdrew from the distant periphery so too did the Ubaid and Proto-Elamite colonies. Given the location, size, and context of the Ubaid and

Proto-Elamite colonies it is difficult to assert that they represent a primary process of colonization involved in asymmetric trade. It is entirely reasonable, however, to view trade as a by-product of their presence in distant lands. The presence of numerous Mesopotamian type bevel-rimmed bowls in Pakistan at Miri Qalat (Benseval 1997) and in Iran at Mathoutabad in the Jiroft, (as previously alluded to) may attest to the adoption of their specific function rather than as instances of migration, colonization, or trade.

Migrations, and the establishment of colonies in distant lands, have a myriad of reasons for their undertaking. Colonization, and resultant colonialism, for control of trade and resources is the leitmotif of the European experience. However, migrations and colonization, in the absence of colonialism, can come about as a result of climate change, inequalities of landholding, political oppression, conflict/warfare, natural disasters, prejudices due to religion/race/ethnicity, poverty, and population pressure to name but a few 'causes'. Recently, Barry Cunliffe (2008) in a magisterial review of the archaeology of Europe points out that Europe, throughout the millennia, experienced numerous episodes of large-scale migration. These were often due to population pressure in which the growth of urban communities exceeded the carrying capacity of local productivity—requiring emigration and colonization. One can also imagine that within Mesopotamia a relatively rapid urban transformation placed a stress on maintaining equilibrium between carrying capacity and populations. Adams (1981:69-70) documents a "massive process of growth at the very outset of the Uruk period... Yet something closer to a tenfold increase than to a doubling [of population] seems to have occurred on the central Euphrates floodplain, and within a period not exceeding one or two centuries." Such a dramatic increase in early Uruk population must have placed a considerable stress on agricultural productivity perhaps requiring the movement of populations in search of arable lands. Dramatic population increase and subsequent stress, perhaps also evident in the shifts in settlement regimes as seen between Nippur-Adab and Uruk (Adams 1981:84), in conjunction with the emergence of coercive forces in the management of labor, land tenure, craft production, and social life increas-

ingly enmeshed in a network of control, resulted in social dislocation and migration leading to the Uruk Expansion to the periphery.

For decades archaeologists dismissed the role of migration/diffusion as a major factor of social change. Recently they have regained a semblance of respect. In fact, mass migration/diffusion are omnipresent in the archaeological and historical record. In addition to the Uruk and Proto-Elamite migration/diffusion we can add the south-to-north spread along the Nile of the Naqada III, the spread of the Namazga III culture from the foothills of the Kopet Daggh in Central Asia to Baluchistan, the spread of the Harppan civilization from the borders of Iran to the Ganges and from northern Afghanistan to the Narbada River in India, the spread of variants of the Andronovo culture from the Ukraine to Zinjiang in China, and the dissemination of the Bell Beaker culture from central Europe to Britain. In each and every instance, and others could be mentioned, the above migrations/diffusion resulted in a major impact enhancing both connectivity and cultural complexity. Within the archaeological and historical record there is hardly a single instance for the emergence of what we call a 'civilization', or cultural complexity, that did not experience, prior to its emergence, migration/diffusion—from Uruk to Ellis Island.

The reasons, or causes, for the migration/diffusion are subject to great debate and too often are elusive. The great American historian Frederick Jackson Turner (1920:37) asked what motivated the pioneers to migrate to the western frontiers. Finding little in the way of materialist causes he opted for attributing it to the spirit of adventure, discovery, and rugged individualism, attributes that he believed molded the American character—best said in his own words:

...coarseness and strength combined with acuteness and inquisitiveness; that practical, inventive turn of mind, quick to find expedients, that masterful grasp of material things, lacking in the artistic, but powerful to effect great ends; that restless, nervous energy, that dominant individualism, working for good and for evil, and withal that buoyancy and exuberance which comes from freedom or traits called out elsewhere because of the existence of the frontier...

Written over 75 years ago the above finds resonance in what Cunliffe (2008:139) has recently written concerning the migrations that populated the European landscape:

We have suggested that this dynamic [migration] may have been embedded in a system of social values enshrining the belief that young men could gain status only by heading colonizing expeditions... behind it lay an innate desire to explore the unknown.

We learn that throughout European history the *consequence* of migration, rather than the cause, was trade. In Italy toward the end of the first century BC the relationship of population to carrying capacity is implicated in state organized migrations. Civil wars and massive urban upheavals characterized the Italian social landscape. Population pressures exceeded the holding capacity of the land initiating migrations that led to one-fifth of the population of Italy to migrate to distant provinces. A hundred overseas colonies were established, each with 2-3,000 male inhabitants. (Cunliffe 2008:368). Earlier in the 3<sup>rd</sup> and 4<sup>th</sup> century BC, "The continent wide scale of the migration was unprecedented...What initiated the migrations is not entirely certain but Livy was probably right when he saw uncontainable population growth as the underlying dynamic" (pp. 360-361). Migrations are far from uncommon, invariably disruptive, and often carry with them new technologies and ideas initiating new cultural complexities. A multiplicity of causes implicating both materialist and ideological factors are brought to bear within a single migration.

The author does not discuss the most distant echo of the Uruk Expansion, namely, the presence of Late Uruk, i.e., seals, at Maikop in the Caucasus. Neither is the contemporaneity of the Late Uruk Culture with the expansion of the Transcaucasian Kura Araxes Culture mentioned. The Kura Araxes Expansion is directed to the south (as far as Israel where it is known as the Khirbet Kerak Culture) at the very time of the abandonment(?) of the Uruk colonies in the north. This correlation may well address the 'cause' of the abandonment of the Uruk colonies in the north (for an expansive discussion see the important study of Palumbi 2008). Algaze does not address the near universal abandonment of the Uruk 'colonies' on the distant periphery. By the end of the fourth millennium

the Uruk presence, whether in Anatolia at Arslan Tepe or in Iran at Godin, is absent. Only at Susa, following the presence of a Late Uruk settlement does there appear to be an indigenous assimilation, acculturation, and/or adoption, of the Uruk bureaucratic technology of writing, seals, and standard units of measurement. An emergent Proto-Elamite culture adopts and transforms Uruk texts and seals into distinctive glyphs and styles that suit their particular needs which become the hallmark of a Proto-Elamite Expansion. An interesting, but little discussed phenomenon, the Proto-Elamite Expansion, appears to undertake an identical process that characterized the earlier Uruk Expansion, namely, the establishment of colonies and settlements on numerous distant sites of the Iranian Plateau: Sialk, Malyan, Yahya, Hissar, Shahr-I Sokhta, Miri Qalat (Pakistan) and recently at Tepe Sofalin on the Tehran Plain where hundreds of Proto-Elamite texts and seals have been recently excavated. The earliest Proto-Elamite texts reportedly are contemporary with Late Uruk texts and ceramics (personal communication Rohoullah Yousefi).

Algaze has given us a richly textured book. The Mesopotamian environmental advantage, the colonization of the periphery, the control of foreign trade and resources, the cheap cost of water transport, and irrigation canals which he deems to be "the most important source of developmental asymmetries between southern Mesopotamia and neighboring regions" (p. 128), an efficiency in the organization of "dependent laborers", the development of "technologies of the intellect" consisting "of new modes of social control", are all implicated in the Mesopotamian "dawn of civilization." To the above substantive arguments can be added the theories of modern economists that are productively exploited, world systems theory that construct cores, peripheries, and colonialism, the use of analogy and proxy evidence derived from the texts and archaeology of a Mesopotamian world separated from the "Dawn" by at least a thousand years. The book is informative and provocative. Although this reader could not agree with all of the attributes, analogies, and metaphors that Algaze harnesses to drive the emergence of Mesopotamian civilization, the book is, without doubt, a landmark in the study of Mesopotamian civilization! □

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*Commentary***On the Palaeolithic Hunting in Central Europe—At More Than 40,000 Years Ago****By Hansjürgen Müller-Beck**

Since the discoveries made in Dmanisi, Georgia (Ljubin and Bosinski 1995), it has become a certainty that people of the genus *Homo*—representatives of a relatively early Oldowan (Jöris 2008)—lived in the mountainous regions of Europe as early as 1.8 to 1.9 million years ago, and hence in the late Villafranchian of the western Palaeoartic fauna province (Müller-Beck 2007). There has been no evidence so far to show whether these early representatives of the genus *Homo* actually reached central Europe. But, at least in climatically favorable periods of the Villafranchian, this is by no means out of the question, as its characteristic *Mammuthus (archidiskodon) meridionalis* faunas demonstrably occurred not only in all of southern Europe but in central Europe as well (von Koenigswald 1983, 2002).

The inventory of Ubeidiya Station in Israel, dated between 1.4 and 1.0 million years ago—thus belonging in the older phase of the Acheulean—comprises animal species of the Ethiopian fauna province side by side with some from the Palaeoartic fauna province. Gaudzinski (2000) not only found there a notably high incidence of younger hippopotami, but also indubitable cut marks on red deer bones. Even here, both of these observations are already indicative of planned hunting. As backed by ethnohistoric sources as well, inexperienced young pachyderms no longer under their mothers' protection were the preferred quarry of human hunters (Bratlund 1999). Not only did they provide sizeable quantities of sought-after meat, but experienced human hunters were in a far better position than other carnivores to judge whether they were still being attended by their powerfully aggressive mothers. Even more unambiguous, however, are the cut marks found on red deer bones which reveal without doubt that the red deer served to provide tendons, for sewing skins to make clothing, satchels, and shelter coverings. As gazelles had been earlier farther to the south, and as reindeer would be later on, Palaeoartic red deer, above all, were an

easy and extraordinarily “economical” quarry, requiring little investment on the part of the swift and skillful human hunter using simple throwing lances or digging sticks that must have been as universal as handaxes during the Acheulean. The quarry was easy to butcher and transport. Moreover, in addition to providing meat readily digested and easy to preserve by drying, it furnished skins that could easily be processed by simple cleaning and greasing, as well as tendons of various thickness. The latter served as useful sewing material in conjunction with pointed stone awls or antler tips for punching holes before the invention of bone needles with eyes. Judging by the discoveries made in Atapuerca on the relatively rough Meseta of Spain (Raposo and Santonja 1995) and in various climatic phases of the earlier Cromerian in southern England (Stringer, Rose, and Silva 2007), it is very likely that the creators of the older Middle Acheulean roamed through central Europe again and again. Due to the obvious drawbacks of their location and state of preservation in the central European riverbeds which shifted significantly everywhere north of the Alps, definitive traces are still lacking. However, the older Middle Acheulean presence is demonstrated by the lower mandible from the younger Cromerian found 100 years ago in Mauer near Heidelberg (Maul 2007; Maul and Markova 2007)—still the oldest evidence of the genus *Homo* in central Europe. At last, only a few months ago, a retouched flake of a larger stone artifact was discovered by elutriation along with approximately 600 recognizable small mammal teeth from the horizon of the lower mandible. This flake may have moved a few hundred meters at most in the periodic flooding of the Neckar River and then become imbedded.

The unfavorable dynamics of sedimentation in the narrow and constantly migrating rivers of central Europe are also demonstrated by the discovery of a skull of a more highly evolved variant of the genus *Homo* found in a fossil site at Steinheim, southern Germany as an isolated object without artifacts from the Holstein Warm Period. This was found in conjunction with forest-based *Elephas antiquus* fauna (Adam 1988) which may now be datable to only 350,000 years ago (Litt 2007).

How difficult it is to categorize stone implements of the Lower Palaeolithic in southern Ger-

many that were in use only briefly is exemplified by the site in Stuttgart-Cannstatt-Bunker. This site, located in travertine, a more stable land surface (Wagner 1995), is approximately contemporaneous with Steinheim. The faunal remains from the site—only recently published (Schatz 2003)—permit definite identification as being anthropogenous both because of their archaeologically well-documented topographical situation and because of their taphonomy and their carefully evaluated elements. The site is a vegetation-covered conical hillock—for some time relatively well drained due to drainage through fissures in the subsoil—in a broad travertine swamp in the extended Neckar Valley dotted with marshy pools. From there, it is easy to reach the dense forest of the adjoining Keuper Heights only a few hundred meters to the northwest, the open grass steppe in the valley bottom directly to the west and, in the southwest and east, the watery meadows along the river which hold such outstanding appeal for larger animals. The relatively soft deposits that formed on top and inside of the hillock were not flushed out in subsequent eras but remained in place because they were covered by new travertine layers. They were only revealed and excavated when a foundation was built for a garbage processing plant in the abandoned stone quarry. The profiles of overburden and recumbency both show beyond a doubt that this is not a fluvial deposit (which, thus, would lack all locally residual autochthonous remains, especially of small mammals, and slightly para-autochthonously displaced animal cadavers would be absent as well); nor is it a water sink-hole, a cleft or fissure, and certainly not a secondary cave in the travertine. Add to that the complexity of age classes of the skeletal elements of the enclosed species, which neither accord with a natural thanatocoenosis nor with that of only briefly used carnivore eating areas or even hyena lairs, such as the fossil fauna from the Göpfelstein Cave near Heidenheim which served for comparison. Active hunting evidently predominates and is likely at that early time to have been executed with just-developed throwing lances of the Late Lower Palaeolithic (or the Middle Palaeolithic, Müller-Beck 2006), such as those from Schöningen near Braunschweig assigned a slightly later date (Thieme 1997). However, the use of meat from dead animals taken from hunting wolves or abandoned by

lions is definitely not out of the question. But, physiologically, humans can use such meat only in relatively fresh state (Schüle 1990). Nearly all the demonstrable quarry remains derive from animals heavier than 25 kg. Among the generally useful and easily transported parts carried in, aurochs and bison predominate, followed by red deer, horse, cave bear, as well as wolf and lion. Even rhinoceroses—not juveniles alone—still occur with relative frequency, while moose, pig, the smaller elks, and roe deer occur in lesser numbers. Among the rhinoceroses, inexperienced juveniles no longer protected by their mothers were evidently once again the principal quarry. But older animals, who had obviously become too self-confident because carnivores were no longer stalking them, are now hunted and killed with appropriate circumspection. The same is bound to have happened to powerful masticating adult bovines. A cautious hunter can certainly approach them with less risk because they, too, feel safe as long as they have never encountered human hunters. After all, even a lion would hardly dare attack such a heavy, healthy animal, whose instant defensive reaction was expected. Obviously deliberate and well-placed strike marks are demonstrable even though the yield of bone marrow was less than intensive, while bite marks from wolves and lions, neither of whom is capable of breaking large bones, are rare. As in all Middle Pleistocene warm-climate river deposits in central Europe, no hyena remains were found here. A few coarsely dressed bone artifacts were found, and even a red deer antler beam that had been dragged in. All of the discovered bones had been sedimented quite rapidly after being preserved (Classes I and II according to Behrensmeyer 1978). In addition, more heavily weathered elephant bones had been recovered from places of natural death or sites of earlier successful hunts and fashioned into simple but effective crude tools. Thus, what we have here in Cannstatt-Bunker is a base camp located on a relatively dry conical hillock covered by shrubs and other local vegetation, used by the group primarily in summer for processing quarry and, perhaps as well, as a spot for eating some of them. There is no trace of hearths or dwellings nor any indication of skins being treated there with more advanced tools of the type already common at the developed Acheulean level at that time. Stations typical of the latter activities

are likely to have been located on higher and more densely wooded dry hillsides along the Neckar upland only in autumn and winter. There, they lacked the chances of preservation offered by the travertine milieu in warm periods. However, Kristine Schatz's fastidious work provides clear evidence that even representatives of the late pre-Neanderthals—now most likely to be classified among variants of *Homo heidelbergensis*—were extremely successful hunters at least 320,000 years ago, with a degree of experience closely resembling in principle that of the Valley Bixa (Marks 1976) or the Palaeo-Eskimo musk oxen hunters of Umingmak (Münzel 1987). They were intelligent enough to take advantage of opportunities for defeating the self-confident bovines and rhinoceroses. Given adequate cover in dense woods, it was also possible to wound horses and, occasionally elephants on their trails with well-aimed and sufficiently heavy throwing lances from a distance of several meters, causing them to collapse sooner or later, so that they could then be killed at close range. Surely, those early hunters could not fail to notice the agony of the animals due to the sustained wounds. Such observations may well have given rise to reflection in these hunters and, more or less intensive feelings of guilt—depending on their temperament. It may be appropriate to assume that such spiritual and ethical kinds of reflection brought about thoughts of remorse and, eventually, atonement procedures leading to rituals of reconciliation. Binford's (1981) apodictic assertions, by which he declared any notion of early planned hunting to be practically beyond the pale, have definitely been refuted beyond any theorizing by the conclusive archaeological and archaeozoological arguments arising from the evidence presented at Cannstatt-Bunker.

Let us now turn to other, younger evidence—but still older than 40,000 years: The first station to be mentioned in this context would be Bilzingsleben in eastern Germany. Explored for many years by D. and U. Mania, formerly in Sachsen-Anhalt, now part of Thüringen because of border realignments, Bilzingsleben is also located in a travertine basin protected by mighty overlapping terraces. At first, it was also assigned to the classical Holstein Warm Period, but has meanwhile been reassigned to a discrete younger mixed-forest period (Mania and Mania 2004), a warmer phase during the general

decline of climate toward the Saale Glacial Period, which still comprised woods elephants and terminated in MIS 6. In addition to usually simple and little-retouched flake tools, there are indubitably shaped cores, crude pebble tools, and, occasionally, three-dimensionally shaped stone artifacts resulting from “bifacial” shaping. They compare closely with the typical Acheulean inventories with low incidence of handaxes found in use during repeated brief occupations or, in any case, generally simpler types of work not comprising more complex craft activities. There are also considerable series of more or less intensively and somewhat “opportunistically” worked bone tools, traces of disintegrated wooden implements, and residue of antler carving of the type represented by a few specimens in Cannstatt-Bunker (Schatz 2003). Among the bone implements, there is a notable stick with a series of notches (Mania and Mania 2004, Steguweit 2003). There is some likelihood that these obviously planned and systematically carved notches indicate complex cognitive reflection which may be viewed in the context of the rise of grammatically rule-bound language of as yet unknown differentiation (Müller-Beck and Porr 2004). In the course of years of excavations, the remains of three human individuals were also found. Ever since the first specimens, the authors have assigned them to the late *Homo erectus* (Vlcek 1978, Mania and Mania 2004). It is entirely possible that they may demonstrate the ritual manipulation of corpses, as is shown by the selective human burials in the Gran Dolina of Atapuerca (Gracia, Arsuaga and Martinez 2007), even though the latter permit no conclusions regarding any further details of the events. Also of significance are preserved discolored outlines on the ground, probably derived from shed-like structures dating from the final visits to the station, augmented by contemporaneous work areas at the surface of the site zone of the type familiar at numerous Neolithic moist-ground settlements in the Alpine region (though the wood was far better preserved at the latter [Müller-Beck 2008]). The contemporaneous faunal remains comprise a broad spectrum of mid-sized and large mammals of the kind already proven to have been preserved in close proximity at Cannstatt-Bunker. In Bilzingsleben—also exhibiting notably numerous rhi-

noceros remains—the faunal remains are dispersed across larger areas more significantly influenced by fluvial action; in these areas, directly, i.e., autochthonously, imbedded remains of locally conducted activities were found side by side with elements of para-autochthonous “background faunas” which had died elsewhere and were then displaced. These sedimentation sequences can indeed be regarded as quite “normal” inside of Neolithic settlements in riparian zones enclosed by an array of clay vessels (at a distance of 20 m or more), even at small lakes when flush dynamics are low but human traffic is intensive (Müller-Beck 2008). Stronger flushing action in riparian currents may even increase the distance to dozens of meters—as we assume to have been the case in Salzgitter-Lebenstedt (Gaudzinski 2000), which continues to demand our attention.

Also of particular significance are the excavations which H. Thieme has been conducting for over two decades in the surface layers of the lignite mine at Schöningen near Braunschweig (Thieme and Meier 1995) revealing a sequence of archaeological horizons. Among these is a zone of exploration (13 II-4) in which a group of well-preserved throwing lances of solid fir were discovered along with other wooden implements (Thieme 1997, 1999). They clearly belong in an Acheulean context with horse hunting, which has been documented by appropriate faunal remains. In addition to the horses, of which numerous complete upper parts of the cranium have been found, some with their own lower mandible, a very few remains of bison, red deer, and wild donkey were present in this ancient land surface. The archaeological excavations covered over 3000 square meters and revealed traces of already specialized hunting activities which were both ecologically motivated and probably accompanied by rituals. The site has been assigned to the end of a slightly warm forest-steppe phase in the period advancing toward the Saale maximum at the end of the Middle Pleistocene (Mania 2007). It clearly documents—even with well-preserved cut marks on the remains of prey—the technical skill of these Lower Palaeolithic hunters, whose dating should place them before the classic Neanderthals.

As yet uncertain is the temporal assignment of the discoveries at Weimar-Ehringsdorf (Müller-Beck 1966) with their stone implements, some

of which were very carefully retouched, some even representing indubitable projectile tips, as well as the remains of early, still “atypical” Neanderthals. It appears that the rhinoceros is the principal quarry there as well. It is entirely possible that this site falls into a time before the Eem Wooded Period (MIS 5a), although it used to be considered part of it, i.e., approximately synchronously with Taubach.

Evidence of hunting is also found in the Upper Pleistocene, which begins about 130,000 carefully dated years ago in MIS 5, whose artifacts are currently being assigned to a “Middle Palaeolithic”—which could justifiably still be referred to as “Late Lower Palaeolithic” as well (Müller-Beck 2006). In any case, it constitutes a continuum of only gradually differentiated nature toward the low end of the Lower Palaeolithic—which may still be regarded as Late Acheulean/Micoquian, or as Mousterian in the Acheulean tradition. Due primarily to the basic production of stone implements, it represents a characteristically different “techno-complex” than the subsequent African and Northern Eurasian Upper Palaeolithic. The latter, with its truly new serialized production of blades, provides new technologies for the rapid production of implement types with shafts, exhibiting markedly greater manufacturing precision and almost instantly replacing and extinguishing the handaxes that had so far been universal throughout the western Old World (Müller-Beck 2006).

A significant new approach to the accessible faunal remains from the travertine specimen horizons at Taubach near Weimar along an extended riparian area of the Ilm River should also be pointed out (Bratlund 1999). These horizons have been known for over one hundred years and can definitively be assigned to the well-documented Eem Woods Period (MIS 5a). They represent only slightly retouched flake inventories with little differentiation; there are no significant percentages of three-dimensionally worked and bifacially retouched artifacts. Early on, the individual human teeth found there were assigned to Neanderthals. The investigator succeeded in documenting well-preserved impact marks and traces of cuts on the bones of brown bears and rhinoceroses which far outnumber the other animal species in existence on the wooded steppes during that period. Their location and systematic presence easily

permit their attribution to the opening of joints, filleting the meat, and—with respect to the brown bears—to skinning the animals. The investigator, adducing ethnohistoric analogies, provides highly convincing reasons for this notably selective kind of hunting. It appears that, in spite of rather inadequate cover along these riverbanks, the hunters managed to surprise the young rhinoceroses who were dozing too confidently in their muddy resting pools. The numerous brown bears then fell prey to the Taubach hunters of the era in a second round, so to speak, by attempting to scavenge the remains left behind by humans, as they still do quite frequently today. These were indeed, as was common during warmer wooded periods, the highly adaptable omnivorous brown bears occurring everywhere in the Palaeoarctic, rather than the larger cave bears of the cooler grass steppes of Upper Pleistocene Europe whose behavior resembled that of the Kodiak bear.

But the hunters of Early Upper Pleistocene also managed to overcome the latter. The cave bear hunters' camp of Erd in the open terrain of the hilly heights west of Budapest—which already falls into a later moist-cold Upper Pleistocene phase following the Eem—furnishes definite proof (Gábori-Csánk 1968). This hunting camp lay on a hillside sheltered from wind and was likely to have been used frequently in season and is thus similar to the Cannstatt-Bunker (Schatz 2003) model—but on drier ground, with traces of at least six oval shelters measuring 5 x 2 m at most. This is a type still found as winter quarters among the earliest extremely climate-hardened Independence Palaeo-Eskimos who were seasonal hunters of musk oxen (McGhee 1996). In the latter case, these optimally space-saving buildings with a shared central hearth, safely accommodated two households both at night and in extremely harsh weather. In Erd, the cave bear remains from the more open steppes far outnumber others in all specimen horizons, while brown bear remains disappear completely. Once again, horses and wild donkeys were important quarry in the already cooler grass steppe of the lowland next to the Danube and the hillsides to either side. The inventory of artifacts, depending as it did on available gravel, is comprised of simple, yet intensively edge-retouched pebble flakes, i.e., "Pebble Mousterian".

The time span between 80,000 and 40,000 years ago permits an overview of the diversity of larger Upper Pleistocene sites with artifacts and animal remains, which number about 120. Consistently, the sites of this type are more revealing when located in open terrain which is less frequent than the cave sites on the edge of large watery meadows in the valleys. The latter tended to be only in sporadic use but comprise larger animal inventories (Müller-Beck 1988). Nevertheless, even in these cave stations there is occasional clear evidence of man-made cut and impact marks as well as selection of prey types. In this era, too, larger complexes of objects found in more circumscribed residential horizons belong chiefly to the riparian zones of shallow rivers and smaller or larger lake basins, such as the one at Königsau on Lake Aschersleben. There, Mania (2004c) succeeded in documenting three different archaeological specimen strata in the open boreal woods after 80,000 BC—specifically in the thick surface layers of lignite mining zones in which he worked from 1963 on, covering a riparian area 500 m long and 100 m wide. The inventory of implements there comprises outstandingly crafted and barely used flint artifacts, augmented by the remains of the oldest known birch tar hafts, which serve as proof of the relatively quick inundation of the camp. Both in the upper and lower specimen horizons "bifacial" implements from a late handaxe industry have been found, which are three-dimensionally well-formed. They are completely lacking in the middle horizon. This difference—viewed in the context of new approaches to the Taubach material—is in great likelihood due to seasonally determined differences in the activities along these riparian zones. The quarry found here—red deer and reindeer as well as horse, wild donkey, bison, mammoth, steppe rhinoceros, and woolly rhinoceros—is indicative of a biotope mosaic made up of woods and grassland. A fitting ecological match are the carnivorous wolf and lion as well as the documented hyena, which evidently replaces the bear there, too, in its role of scavenger.

Yet another, even colder, ecosystem in use by "more typical" late Neanderthals, as evidenced by skull fragments, has been documented by palaeobotanical macro remains in Salzgitter-Lebenstedt not far from Braunschweig in northern Germany in what was then a Palaeoarctic

shrub tundra extending far to the south (Tode and Mitarbeiter 1953; Busch and Schwabedissen 1991). Most probably, they should be assigned to the Upper Pleistocene MIS 4 or an earlier cool phase of MIS 3 between 58,000 and 48,000 BC. In addition to some coarser and some more carefully shaped hand axe variants, the inventory of stone implements comprises numerous three-dimensional blade-shaped bifacial tools most probably used to cut hides for making windproof garments or for covering tent-like shelters. In addition, there are a heavy, short, removable bone point for a throwing lance (Müller-Beck 1966) as well as crude reindeer antler batons. The latter replace the red deer antler clubs usually preserved only in fragmentary form and resemble the later end-Palaeolithic Lyngby axes. There are also short, massive, pointed lances or digging sticks made from the ribs of large mammals (Müller-Beck 1966).

A recent evaluation of the animal remains uncovered at the excavation level of Salzgitter-Lebenstedt, also in a section of riparian zone, has resulted in two very diverse inventories (Gaudzinski 2000). The numerically greater and more homogeneous inventory is comprised of at least 86 reindeer probably hunted primarily in the autumn, among whom adult individuals predominate. Both cut marks and systematic separation of the intensively used marrow bones are in evidence. We are, therefore, undoubtedly looking at traces of Middle Palaeolithic seasonal reindeer hunting for the purpose of harvesting sturdy autumn skins for winter garments as well as meat and marrow for consumption. The second, less uniform inventory of animal remains is qualified by the author as being “background fauna” (Gaudzinski 2000). It comprises components relocated over shorter or longer distances, as imbedded in varying density in gravel slowly sedimented by flowing water in riparian zones. Solid teeth and fragments of at least 17 mammoths, eight horses, three bisons, one woolly rhinoceros, and one wolf, as well as typical elements of the Palaeoartic Upper Pleistocene “Mammoth-Woolly Rhinoceros Fauna”, predominate among the “background fauna” at this excavation level (Kahlke 1994). The second inventory therefore represents para-autochthonous deposits of the remains of animals displaced by flowing water either after having died or having been hunted by humans or predators.

The problem of para-autochthonous “back-

ground fauna” is also encountered in cave sites (von Königswald et al. 1974). There, too, only parts of the animal remains were found in context with the activities and the observed implements of human hunters. The others were carried in by carnivores or derive from animals who died *in situ*, such as cave bears or hyenas. Even when the animal remains found in cave strata are painstakingly documented, it has been impossible to draw a line between actual human activities and surrounding “background fauna”, which, by contrast, the special conditions of Salzgitter-Lebenstedt and Cannstatt-Bunker have enabled us to do. Nevertheless, archaeological cave inventories dating back to the pre-Upper Palaeolithic period do indeed represent traces of human hunting activity. But the surrounding fauna is more a record of the possible hunting potential than the actual result of human hunting (Riek 1934, Müller-Beck 1983, 2006).

Nevertheless, the open terrain sites cited above, many of which have only been revised during the past decade, reveal indubitably documented evidence of human hunt proving that, at least since the Upper Middle Pleistocene no less than 320,000 years ago, even the pre-Neanderthals successfully hunted not only such “basic quarry” as roe deer, red deer, reindeer, horses, and pigs, but also the large masticators, including auerchs and bison—and even rhinoceros and bear. Beyond the routine hunt for the animals of the basic quarry so outstandingly important in economic terms, the hunt for large mammals including the greater carnivores called for stalking them with a minimum of risk and after careful observation. Surely this can also be said about the hunt for elephants, which is documented beyond doubt by the spear stuck in the woods elephant of Lehringen dating from Eem (Thieme and Veil 1985) and probably as well by the approximately contemporaneous woods elephant found in Gröbern in Sachsen-Anhalt, eastern Germany. The latter animal was already severely weakened by illness and relatively easy to defeat—much like the wolves roaming the Arctic tundra now manage to defeat nearly any old musk oxen, some of whom are already dying when attacked. Thus, even though we are able to consider Binford’s (1981) old theses refuted in principle by the above-described specimen inventories, we nevertheless have to admit to ourselves that we are looking at hunting tactics which surely had to succeed

without bow and arrow but, in the end phases, not necessarily without the first spear throwers (atlatls) for spears with attached projectile points. The never-absent risk could only be reduced by circumspection and increasing experience as techniques were constantly improved by these Lower and Middle Palaeolithic hunters more than 40,000 years ago. □

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*Commentary***Microblades and Seasonality:  
Settlement Patterns in the Tangle  
Lakes Region of Alaska****By Brian S. Robinson**

## INTRODUCTION

Among the reoccurring themes of Late Pleistocene and Early Holocene archaeology in Alaska is the interpretation of microblade-dominated and biface-dominated assemblages, and whether they represent cultural differences or specialized activities. Microblade insets in bone or wood shafts are recognized as part of a suite of effective technologies associated with extremely cold environments of Siberia from at least 18,000 radiocarbon years ago and perhaps earlier, providing an important focus for the understanding of Beringian land mass and the peopling of the Americas (Goebel et al. 2000; Hoffecker and Elias 2007; West 1996a). Artifact assemblages with contrasting proportions of microblades, burins, bifaces, endscrapers, and graters have been explained in different ways with profoundly different implications. Here I focus on aspects of settlement pattern in the Tangle Lakes region of central Alaska (West 1981, 1996b), proposing that the microblade/biface dichotomy may at times be associated with specialized winter and summer technologies. Varied explanations for the contrasting technologies are reviewed, the case from the Tangle Lakes presented, and broader implications discussed.

The Tangle Lakes region of central Alaska was subjected to extensive survey and excavation by Frederick H. West and colleagues. Over 200 archaeological sites were discovered between 1964 and 1978 (West 1996b:378), contributing to the definition of the Denali Complex (West 1967; 1981). Subsequent field research in the Tangle Lakes has been conducted largely through the Interior Department's Bureau of Land Management, nearly doubling the number of sites. I began working with West on material from the original surveys at the Peabody Essex Museum in Salem, Massachusetts in 1985. Field trips to the Tangle Lakes focused on activities and landscape features. At the same time I was involved with research in

northeastern North America that resulted in definition of the Gulf of Maine Archaic tradition in the Early Holocene (Robinson 1992). This tradition lacked bifacial stone projectile points, but also bordered sharply (to the south) on technologies dominated by concurrently changing projectile point styles (Robinson 1992; Sanger 1996) providing a case study in which sharply contrasting technological assemblages coexisted in proximity to each other. In the Northeast, the non-biface tradition appears to span the region from Connecticut to Quebec, lasting up to 4,000 years in northern regions, providing large non-overlapping spatial and temporal patterns that justify definition of separate technological traditions. Similarly in Alaska, the biface-dominated Nenana and Mesa complexes and microblade-dominated Denali complex are proposed by some to represent separate cultural traditions (Kunz et al. 2003; Powers and Hoffecker 1989), although separations of biface and microblade technologies in time and space are far less clear, resulting in multiple interpretations (Hoffecker 2001:149-150; West 1996a:547-550).

Cultural subsystems and specialized activities have been increasingly employed to explain assemblage variability (Binford 1964:425; Clarke 1978; Hall 1982:13), requiring increased stratigraphic and spatial resolution to distinguish sub-cultural activities from cultural differences (Anderson 2008:170). Resolution is hindered by shallow sites in which artifact palimpsests from multiple occupations obscure temporal relationships, and because the rare deeply stratified sites often have small assemblages or do not provide adequate regional comparisons. Survey in the Tangle Lakes region yielded numerous artifact assemblages broadly distributed over a series of ridges and knolls. A sudden 30-meter drop in lake level left a well-preserved raised shoreline surrounding the modern lake (figure 1), while sediments from the exposed lake floor were redeposited by wind over the landscape to form a double soil-horizon, sealing off Late Pleistocene and Early Holocene cultural deposits (West 1981:126, 1996b:379). Taken together, these factors aided in the spatial separation of several distinct assemblage categories, providing the opportunity for landscape analysis.

Late Pleistocene and Early Holocene microb-



Figure 1. Map of Alaska showing selected sites referred to in the text.

lade and burin manifestations, including the Denali complex (West 1967), the American Palaeo-Arctic Tradition (Anderson 1970a:6) and the Chindadn complex (Cook 1996:325) of Alaska, and the Duktai culture of Siberia (Mochonov and Fedoseeva 1996:167), are all associated with bifacial projectile points or knives. In contrast, the original definitions of the Nenana complex (Powers and Hoffecker 1989) and the Mesa complex (Kunz et al. 2003) were proposed to be non-microblade or pre-microblade. The biface-dominated technologies have been proposed to be more appropriate Clovis ancestors or cousins (Goebel et al. 1991; Kunz et al. 2003:70). Denali and Duktai are considered by some to contrast with Clovis, based more on relative absence of microblades and burins in Clovis, than the presence of other traits (Goebel et al. 1991:70; Meltzer 2001:207). Others see the broad Beringian tradition encompassing Denali and Duktai as a plausible ancestor to Clovis (West 1996a:553). The microblade and burin component at Swan Point is now the earliest well-dated site in Alaska at 11,600 – 12,000 radiocarbon years (Hoffecker and Elias 2007; Holmes et al. 1996; Holmes 1998), leaving the priority of bifaces over microblades in Alaska unsupported, with varied explanations for their co-occurrence. Explanations that tend toward supporting whole-culture dichotomy of microblade and non-microblade cultures include multiple

migrations, depopulation and coexistence of different culture groups (Bever 2006:615; Goebel et al 2003:504; Hoffecker et al. 1993:50; Kunz and Reanier 1994:662; Meltzer 2001:211), while those that favor activity differences see more potential for cultural continuity with diverse tool kits encompassed within a broad Beringian tradition (Holmes 2001:156; Meltzer 2001:211; West 1996a:549).

Factors accounting for contrasting technologies (cultural or sub-cultural) include seasonal tool kits (Morlan 1987:291; Rasic and Andrefsky 2001:78; West, Robinson, and West 1996:394; West 1996a:550), different technologies for different species (Ellis 1997; Holmes 1986:157; Yesner and Pearson 2002:157), contrasts between thrusting spears and the bow-and-arrow (Ackerman 2001:93), adaptive strategies and risk management (Elston and Brantingham 2002), and activity or site functions such as hunting blinds, kill sites, occupation sites, processing locations, caches, and gender roles among other factors (Ackerman 2001:91; Bever 2006:607; Binford 1973; Clark 2001:69; Waguespack 2005). Given the potential for rapid climate change, low population density and high mobility, all of the potential factors (or combinations thereof) remain as viable hypotheses. The seasonal model is developed here based on landscape use patterns and previously proposed aspects of technology and arctic environments, with implications that may be tested more broadly.

Gordon (1996) proposed a model of seasonal tool kits for the ethnographic Dene of central Canada, who were caribou followers. Seasonal transhumance patterns are so regular that tundra and forest site locations were proposed to represent summer and winter occupations deep into the past, providing a foundation from which to analyze seasonal toolkit variations that are quite different from those described below (Gordon 1996:14).

The case for strongly contrasting seasonal technologies in the Tangle Lakes was first presented at the 33<sup>rd</sup> Annual Meeting of the Canadian Archaeological Association (West and Robinson 2000). Contrasts include not only microblades and bifaces, but dual technologies with multiple artifact classes (Clark 2001:69) and potentially contrasting lithic material types. Simply put, bone points with microblade insets



Figure 2. Photograph with Upper Long Tangle Lake at left and Landmark Gap at right center toward the horizon. The Pleistocene shoreline is shown incised into the relatively steep ridge slopes. From West 1996d.

are durable and make efficient use of small pieces of raw material when material access is limited (during winter), while bifaces are more quickly produced when larger pieces of material are reliably accessible (Guthrie 1983; Ellis 1997:53; Elston and Brantingham 2002:104; Knecht 1997). If this scenario works as a partial explanation for the spread of microblade technologies in the Arctic, it may also serve as a partial explanation for seasonal changes in technology. Sites from the Tangle Lakes region revealed a distinct separation of microblade and biface assemblages based on elevation and landform characteristics, suggesting that these differences may be more related to activity differences than to different cultures (West, Robinson and West 1996:394). This contrast is explored in terms of site assemblages and regional landscape, seasonal animal movements, and the landscape associations of proposed cultural traditions.

#### ARTIFACT ASSEMBLAGE CATEGORIES IN THE TANGLE LAKES REGION

The Tangle Lakes are located at the headwaters of the Delta River in central Alaska (figure 1). The Delta River flows into the Tanana River drainage which encompasses one of the major concentrations of Late Pleistocene/ Early Holocene archaeological sites in Alaska. The

Tangle Lakes are near the divide between the Tanana River which flows into the Yukon River, and the Copper River, which flows south into the Gulf of Alaska (figure 1; West 1981:114, 1996b:375). The location at a divide between river systems may be significant in terms of animal migrations, and also because the small drainage area and lake-side environment reduced erosion compared to more active river systems. The lake level of the upper Tangle Lakes dropped catastrophically when a probable ice-cored moraine washed out some time after 9100 radiocarbon years BP, and possibly as late as ca. 6000 cal BP, leaving a well-defined shoreline (figures 2 and 3) perched near the 2900 foot (880 m) contour line (Campbell 1993:18, cited in Mason et al. 2001:534; Schweger 1981:97-98; West 1981:129). The exposed lake floor provided a sediment source for wind blown deposits that blanketed the irregular topography and capped the Early Holocene occupation levels (Schweger 1981:98, West 1981:136).

The first archaeological discoveries in the Tangle Lakes were made in 1956 with a brief survey conducted in 1958 (Scarland and Keim 1958). Brief surveys conducted in 1964 by West led to more intensive survey and excavation between 1964 and 1978 (West 1996b:378). At this time

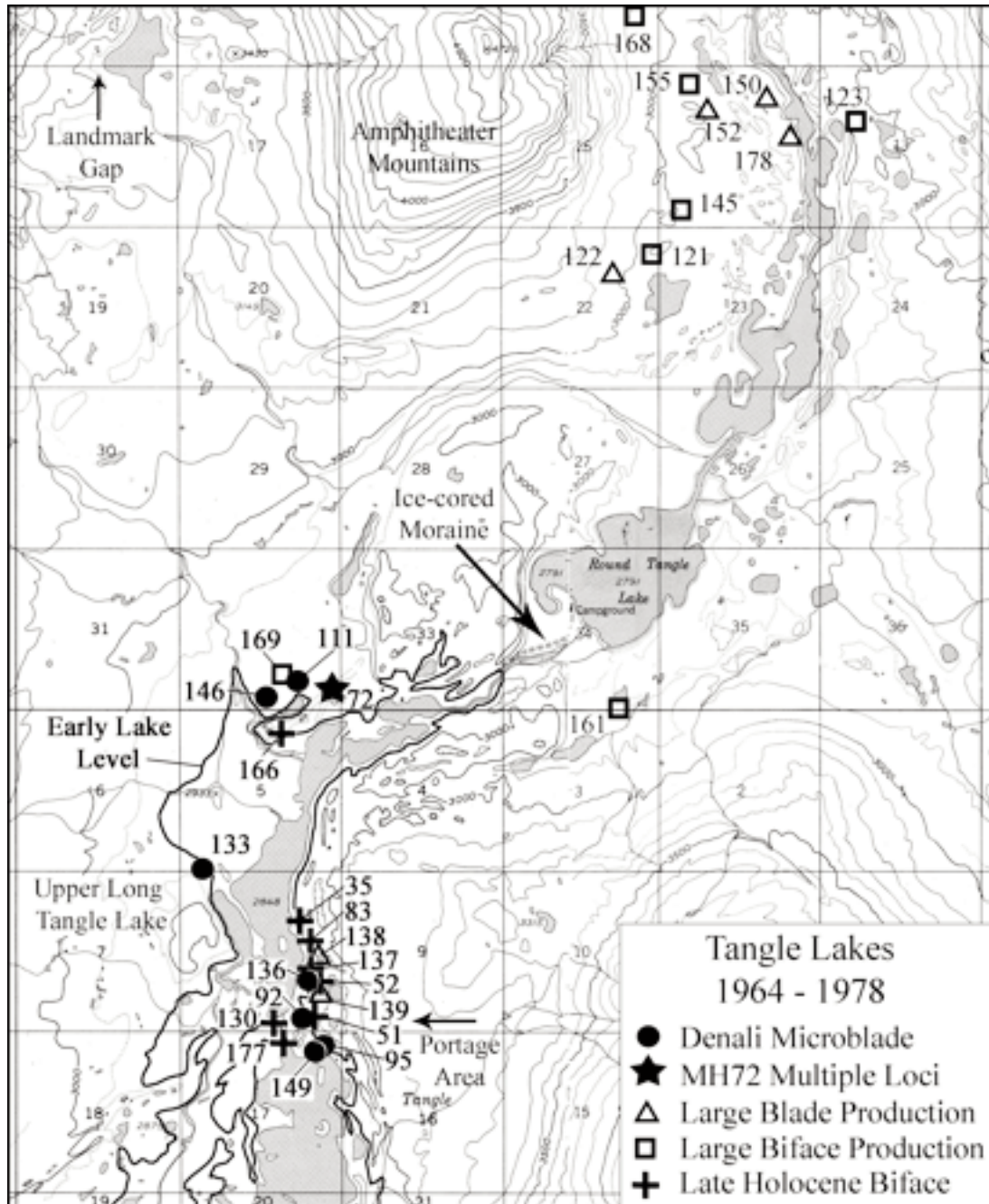


Figure 3. Distribution of selected assemblage categories on the Tangle Lakes landscape. Base map: USGS.

surface exposures along animal migration routes and blowouts yielded extensive surface collections, many of which were followed by excavation. Although the surface collections suffer from the standard problems of potentially mixed assemblages, the irregular topography and large area yielded a very large sample of site assemblages. Excavation and radiocarbon dates associated with the double soil horizon allowed

confident separation of Late Pleistocene and Early Holocene assemblages from those of the Late Holocene, yielding some of the largest and best-defined Denali complex assemblages (West 1981; 1996b). With the more recent full quantification of the Tangle Lakes material, four or five distinct assemblage categories recognized in the past were subjected to spatial analysis, providing evidence of activity specialization on the

varied Tangle Lakes landscape. This analysis draws heavily on the full Tangle Lakes report that is in preparation by West and others.

West (1996b:379) reports that 204 archaeological sites were discovered between 1964 and 1978 ranging from single artifact find spots to large excavations. Of those, the present study includes 155 sites located in proximity to the Tangle Lakes, with site numbers designated between Mount Hayes (MH) 27 to 180. Excluded from the current study are sites from Landmark Gap area, surveyed in 1973 (MH181-MH213), as well as sites recorded by others after the original field work. Landmark Gap is situated within the Amphitheater Mountains and was subject to more recent glacial advances than the Tangle Lakes.

The 155 sites produced 4,724 artifacts, cores, blade core parts and blades and over 50,000 flakes although a few flake samples remain unanalyzed. Artifacts include 513 bifaces, 101 wedge-shaped microblade cores, 153 burins, and 1,554 microblades, among other forms. Fifty-four sites (excluding isolated finds) were assigned to one of five generalized technological/temporal categories as described below. Sites in these categories were further ordered by sample size, with 31 sites having the largest sample

sizes within the respective categories used for the spatial analysis. These 31 sites included 4,296 artifacts, or 91% of all artifacts from the Tangle Lakes survey. Sorting sites by size proved useful because with a few important exceptions (MH72 and MH35), the largest sites often have a limited range of artifact forms, emphasizing the specialized nature of many of the occupations and supporting the integrity of the horizontally discrete areas. The five site categories emphasize activity differences more than cultural periods although some are more diagnostic of time or of specific limited activities, as described below. Representative artifact illustrations for each category are shown in figures 4 and 5. Artifact frequencies and landscape associations are shown in figure 6. The five assemblage categories are:

1) *Denali Microblade and Burin Assemblages* (Figure 4a-g).

Denali complex sites are usually recognized by microblade and burin production. Although we do not equate all microblade cores with the Denali complex, the full assemblages from the seven Denali assemblages are very similar to the original description of the Denali assemblage from the Donnelly Ridge site on the Delta River



Figure 4. Artifacts associated with Denali microblade and burin assemblage (a-g) and the Denali complex blade and biface component of the Whitmore Ridge site (MH72, h-n). From MH111 (a-d, g); MH146 (e); MH92 (f); MH72 (h-n). Wedge-shaped microblade core top parts (a); wedge-shaped microblade core (b); microblades (c, i, j); burin (d); snapped-flake graver (e); denticulate on blade (f); large blade (g); large reconstructed blade core (h); large blade (k); plano-convex biface (l); projectile points or knives (m, n).

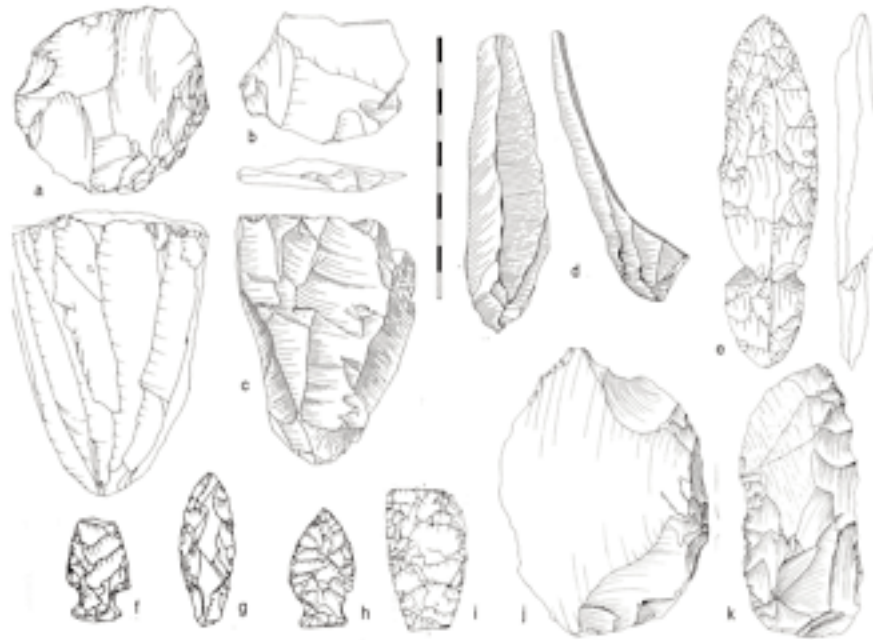


Figure 5. Artifacts from the blade production (a-d), large biface production (e, j, k), and Holocene biface assemblages (f-i) in the Tangle Lakes. From MH122 (a); MH152 (b, c); MH 169 (e); MH130 (f, g); MH35 (h, i); MH121 (j, k). Large blade cores (a, c); blade core tablet (b, attaches to c); overshot blade (d); large bifaces and preforms (e, j, k); Holocene projectile points (f-i).

(West 1967:372), supported by radiocarbon dates suggesting a range between approximately 10,200 to about 9000 radiocarbon years (West, Robinson and Curran 1996:384; West, Robinson and Dixon 1996:398). The major artifact forms include wedge-shaped microblade cores and parts (figure 4a, b), microblades, (figure 4c), burins (figure 4d) and burin spalls. Smaller but significant numbers of bifaces, end scrapers, large blades (figure 4g), tci thos, denticulates (figure 4f), and snapped-flake graters (figure 4e) also occur. Snapped-flake graters are thought to represent the tools used for creating the slot in slotted bone points among other incising activities, representing part of a more general snapped-flake industry (West 1996c:404). Thirty-five snapped-flake graters were recovered from four Denali sites: MH111(8), MH 92(4), MH149(4), and MH146(19). Nine well-formed denticulates comparable to those from Palaeoindian assemblages also occur at MH92(2), MH95(6), and MH146(1). Only four bifaces from the seven large Denali sites (excluding MH72) could be characterized as projectile points, two of which have rounded

10q) or slightly flattened bases, generally similar to Sluiceway points (Hoffecker and Elias 2007:178; Rasic 2003). Some or even most of the thick initial biface fragments are microblade core preforms.

At least four smaller site assemblages are attributed to the Denali complex but with fewer than 10 microblades, and small numbers of cores and burins. Seven other sites with a few microblade cores and blades are interpreted as undefined or mixed assemblages. Site MH72, Whitmore Ridge (West, Robinson, and West 1996), has a major Denali component but consists of a combination of the assemblage categories described here, and is described as a separate category below.

## 2) Large Blade Production Sites (figure 5a-d).

Some sites (including all of the Denali assemblages) have large blades but with cores and production parts largely absent. In contrast the large blade production sites include assemblages with multiple blade core production parts and blades and comparatively little else. These are often small sites representing a single reduction episode. Large blades are generally greater than



*aspice, quam longi temporis acta canam*

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