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## The Archaeology of Abundance

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When excavating a site or surveying a region, archaeologists are often confronted with thousands or even hundreds of thousands of artifacts and ecofacts. Sometimes this is the result of deflation or other site formation processes that aggregate the remains of many periods onto a single landscape surface. In many cases, however, plenitude was just as obvious to ancient people as to us: every hunter had the experience of killing an animal that was more than could be eaten by one person; every farmer had a harvest in which there was more food than could be eaten at one sitting; every shoreline dweller saw populations of fish and birds that outnumbered the human inhabitants of the landscape; and every urban center had markets and distribution centers that contained more than what any single household could use. Contexts ranging in time from Paleolithic deposits to ancient cities thus provide evidence of vast quantities of objects, indicative of conditions in which individuals recognized, generated, and gravitated toward plenitude.

In this volume, we choose the term *abundance* to describe the mass quantities that were perceived as part of ancient human-environmental interactions and cultivated as part of human social landscapes. Our use of the word *abundance* as a neutral term is taken in deliberate counterbalance to the pejorative and subjective term *excess*, with its connotations of waste, greed, and inequality (e.g., Oka and Kuijt 2014; Wilk 2014), or *surplus*, which implies inherent political power in the allocation of resources or the deliberate manipulation of labor and raw materials for exchange (Groot and Lentjes 2013; Morehart and De Lucia 2015). Similarly, concepts of *scarcity* as the dominant

explanatory economic paradigm obscure conditions of plenitude in which items can become more desirable even as they become more abundant (Guerzoni and Troilo 1998; Silverstein and Fiske 2005; Smith 2012). We propose that the ability to characterize natural and culturally produced items as scarce, excess, and surplus is rooted in the more fundamental capacity to recognize the relative effect of mass quantities and their potential for positive and negative effects.

Scholars have philosophized about the ways human-made objects have shaped social relationships, as seen in seminal works including those by Thorstein Veblen (1899), Daniel Miller (1985), and Sheena Iyengar (2010). Artifacts have been a component of individual development and collective activities since the origin of our species, and materiality has been the mechanism by which cognition and linguistic virtuosity have profoundly impacted the surrounding environment (Karlin and Julien 1994; Martin 1998; Shipman 2010). The mutually constituted relationships sustained between people and objects over the past million years have been variously characterized as “engagements” (Masquelier 1997; Renfrew 2001), “interactions” (Schiffer 1992); “enchainment” (Chapman 2000), and “entanglements” (Hodder 2012). Although these scholarly treatments have definitively demonstrated the essential nature of objects for human social life, they have generally addressed only the *concept* of objects as inanimate phenomena and have set aside the critical consideration of object *quantity*. In this volume, we address the distinct effects of object plenitude as seen in the archaeological record of both natural objects and deliberately created artifacts.

An explicit understanding of object quantity allows us to address two undertheorized aspects of the material record: singular finds and abundant ones. Singular finds are treated as statistical outliers whose interpretive importance varies according to the contexts in which they are found (Zedeño 2009). Particularly for the earliest human cultural phases, unique items are viewed as “leading-edge” developments of material culture in which there is a “low number of finds because initial creative efforts were the result of individual actions” (Marshack 1990:460). Low find-density is also attributed to the existence of a small number of sites for the most ancient time periods, the vagaries of survey and excavation methods, or taphonomic and site formation processes that result in infrequent preservation. Commentators on the recovery of single finds of ordinary goods often include the caveat that more research would surely turn up additional items. The exception to the apologetic treatment of singular finds is when such finds are perceived to have been deliberately created as items of distinction through the use of unusual raw materials or high levels of labor investment. These singular finds are interpreted as evidence for elite activities, in which the low frequency of archaeological recovery is regarded as a faithful representation of the object’s prevalence in antiquity.

Like singular and unique finds, abundant ones have heretofore been interpreted through ad hoc and context-dependent criteria. Within a site, a plenitude of durable items may be recorded as the result of formation processes such as deflation and erosion or as a compressed palimpsest of ancient activities perceptible only to the archaeologist who conducts a stratigraphic investigation. Mass quantities resulting from incremental processes, such as the filling of a well with discards, are viewed as having had a cumulative effect that was invisible or inconsequential to ancient people. Mass quantities associated with industrial-scale production, as evidenced at sites of iron and pottery production, are perceived as having effects on the landscape that were incidental to the role of finished products. When mass quantities are interpreted as purposeful accumulations, such as the presence of large number of objects in a burial, they are analyzed from the perspective of craft specialization, ritual deposition, or the elite control of wealth in which plenitude is viewed as supporting an interpretation of special-purpose activities distinct from living contexts.

A focus on abundance provides the opportunity to evaluate large quantities as a consistent component of human-material engagements that permeated daily life and were not limited to elites. Large quantities prompted individual and collective responses, in which objective assessments of plenitude were transformed into subjective assessments that the amount of a particular item was too much, insufficient, or just right for present circumstances. The authors of the chapters in this volume address the quantification of ancient objects and artifacts at both site-specific and regional scales. The first step of analysis is the recognition of large quantities and the extent to which those quantities were perceived by the ancient inhabitants of the sites they studied. This is followed by an assessment of the role of abundant goods in social groups of varying sizes and a consideration of the ways in which plenitude prompted social responses: sometimes people gravitated toward abundance, and in other cases they shunned it.

The evaluation of abundance has implications not only for the study of the meaning of objects in the past but also for approaches to artifact study in the present. Perhaps one reason archaeologists have undervalued abundance is that although we excavate items in large quantities, their display in museums is done with a focus on singularity in which one or two items represent an entire category in a glassed-in case. This display tactic renders individual artifacts as the partible “approved document” of representation. A similar distillation effect is seen in scholarly publications in which items are selected for illustration on a one-by-one basis, separated from data tables that provide information about quantification in numerical rather than visual form. Recognition that artifacts were originally manufactured and used in quantity reorients our assessment of ancient materialized contexts as far more populated than the spare aesthetic of museums and publications.

Ours is not the only data-driven field to place differential interpretive weights on singular finds relative to mass quantities. Like archaeologists, biologists seem to have under-theorized abundance to date, as noted by Anton Pauw (2013:31) who has commented that studies of floral communities “seem to be biased towards studying the low-density end of the spectrum.” Biologists’ focus on minimum rather than maximum numbers is driven by considerations for species decline, the specter of extinction, and the pressing need to ascertain minimum thresholds of viability while creating reserves and corridors. Biologists do, however, emphasize quantitative effects when discussing mass migrations and invasive species, two phenomena that could be further evaluated as providing comparative perspectives for theory building. A potential model is provided by the citizen science mass-data project eBird, for which researchers note that “abundance” can be characterized in a variety of ways that result in new understandings of the dynamics of environmental systems (Sullivan et al. 2014).

The recognition of mass quantities as having both *emic* and *etic* value is critical to our field’s increasing use of large data sets to address broad research questions. Contemporary “big-data” approaches include compilations of heritage data (e.g., Kintigh et al. 2014; Peterson and Drennan 2012), new initiatives of information collection through citizen science (Bonacchi et al. 2014; Smith 2014), and open-access data sources that are providing mass data sets such as the Alexandria Archive and the Digital Archaeology Record (tDAR). The resultant data sets will not only render comparative analysis more robust but will enable the assessment of both the variability and quantity of archaeological phenomena as they were experienced by ancient people.

#### THE HUMAN HISTORY OF ABUNDANCE

Our earliest ancestors were endowed with the same survival strategies as other mobile, omnivorous species: they gravitated toward locations replete with desirable resources such as food, shelter, water, and potential mating opportunities. In the relatively underpopulated landscape of early foragers, abundance was not the exception but rather the norm of human expectations. Communal hunts would have produced piles of recognizable discards, as Sandra Olsen (2010:529) describes for Upper Paleolithic Solutré, where generations of hunters would have encountered a landscape replete with horse bones. Demonstrable abundance in food became intertwined with conceptualizations of “the good life.” Extremely large prey appears to have provided an opportunity for provisioning that was symbolic rather than practical (Waguespack and Surovell 2003). Daily acts of symbolism were also manifested in the cumulative effects of small-size food units: trees full of nuts, plants full of berries, and streams full of fish.

Our ancestors' engagement with abundant artifacts was an outgrowth of a cognitive propensity to recognize quantitative value, in which accumulation was a purposeful, recognized, and deliberate aspect of human activities. The earliest durable evidence for artifact production comes from the Oldowan period, dating to 2.6 mya in East and South Africa, where some sites have thousands of artifacts and manuports (Kuman 2014). The earliest tool manufacturing was accompanied by large numbers of waste flakes, as exemplified by the 1.6 mya MNK "factory site" at Oldovai where a 2 meter  $\times$  5 meter excavation area produced about 30,000 pieces of debitage (Stiles 1991). Like the accumulations of manufactured objects, the heaps and scatters of waste material from production would have presented a visible record of plenitude forming part of the community's experiential landscape. When our ancestors began to make more elaborate stone tools such as hand axes incorporating bilateral symmetry and repeated hammer blows of manufacture, the quantities we find in the archaeological record suggest not only a practical but also a symbolic investment of labor (Klein 2009:95).

Our ancestors' engagement with crafted goods extended beyond utilitarian tools to the use of decorative items such as beads, pendants, and ochre as early as 130,000 years ago in Africa (McBrearty and Brooks 2000). As Mary Stiner (2014) has argued, early ornamentation was standardized across large areas, indicative of communication and contact among groups about style and manufacture. Quantity was an important part of that display, such that the number of beads worn by an individual enabled the person to modify the amplitude, or "loudness," of communication (Stiner 2014:61). Quantities of decorative objects are certainly evident in a variety of forager contexts worldwide, such as the Upper Paleolithic gravesite of Sungir where burials contain over 3,000 ivory beads per individual (Soffer 1985:259), the prehistoric coastal fisher/forager settlement of Khok Phanom Di in Thailand in which 120,000 shell beads were recovered from a single grave (Bentley et al. 2007:303), and the prehistoric Pacific Northwest fishing camp in which the investigators recovered extraordinary amounts of stone and shell beads, including 350,000 beads from one burial alone (Coupland et al. 2016:302).

The deliberate pursuit of food abundance appears to have underwritten the diversified approach to provisioning starting in the Upper Paleolithic period. In contrast to earlier interpretations that the "broad spectrum revolution" was the response to population surpluses or food shortfalls, Melinda Zeder (2012) has argued that it was not the scarcity of food but its abundance that conditioned the location of early migratory populations. What made our ancestors distinct from other migratory species, however, is that they not only moved toward locations of plenitude, but they also collected, consolidated, and augmented that plenitude through the selective acquisition, transportation, and curation of distinctive items to create a

notion of plenty through human actions. The worldwide phenomenon of shell middens indicates the extent to which discards were not merely an afterthought of consumption but constituted visible forms of place-making by forager groups (McNiven 2012; Moore and Thompson 2012).

Expressions of plenitude were scaled up as social configurations grew more complex, accompanied in many cases by sedentism and the domestication of plants and animals. Food-production activities enabled humans to become active agents in the creation of “natural” abundance as they weeded, tended, fertilized, and watered plants and experienced seasonal harvests. Those moments of plenitude were counterbalanced with an expectation that harvested foods had to last for a long period of subsequent consumption, a factor that prompted both the symbolic and substantive management of the harvest through feasts and long-term storage (Halstead and O’Shea 1989; see also Bogaard et al. 2009; Smith 2015). The abundances afforded by food production were paralleled by a surfeit of material objects and an incremental discard of waste that signaled the passage of time and the growth of the community. For the Khartoum Neolithic, Randi Haaland (2007) has reported a site in which 30,000 pieces of grinding stone were recovered in only 140 square meters of excavated area, suggesting a stockpiling and use of tools far beyond their necessary use-life. Craft making through new technologies such as metallurgy resulted not only in an increase of finished products but also in vast quantities of discards, such as the hundreds of thousands of tons of slag and hundreds of thousands of crucible fragments cited by Joyce White and Elizabeth Hamilton (2014:816) for the sites of Non Pa Wai and Nil Kham Haeng occupied during the first millennium BC in central Thailand.

In addition to serving as an economic indicator, abundance was a marker of social cohesion and ritual affirmation. Pilgrimages to ancient sacred sites were marked by mass dedicatory caches and animal sacrifices whose accumulations reinforced individuals’ depositional acts (e.g., Hartman et al. 2013). Burials and ritual spaces became the focal points of activities in which the individual placement of items resulted in visible, incremental accumulations constituting intentional acts of place-making through deposition (e.g., Osborne 2004; Rajan 2008:45). Individuals’ incremental placement of artifacts enabled them to transform modest contributions into monumentality through accumulations that often became strikingly large. From the Fourth to Sixth Dynasties in Egypt, people discarded millions of miniature vessels as part of mortuary ritual (2550–2150 BC; Allen 2006). At the third-millennium BC site of Shijiahe in China, archaeologists recovered hundreds of thousands of red-cup ritual vessels (Fuller and Qin 2009:101). Accumulations in a landscape were significant not only to those who placed them but also to those who came long afterward and repurposed ancient abundance into their own contemporary meaning, as seen in the case of Egyptian religious sites on which later

Ptolemaic and Roman visitors left graffiti “in extraordinary numbers” (Gates-Foster 2012:204; see also Champion 2012).

Ritual deposition is only one form of large-scale participation in shared material culture. The acquisition of repetitive objects from a particular place constitutes another form of collective engagement, including souvenirs emanating from a particular locality or event (cf. “necrolithic theatrics” in Carter 2007:96, 100). Souvenirs, whether natural or manufactured, are often abundant in their source locale and subsequently become dispersed along trade routes by their collectors. Although we cannot decipher the idiosyncratic experience of any particular individual, the archaeological record shows the results of collective efforts that could have been “read” by subsequent visitors who then added their own material or graphic donations to existing accumulations. Similar social (or anti-social) expressions are seen in the “trash magnet” effect identified in public spaces by Richard Wilk and Michael Schiffer (1979) and in the private realms of object collection that enable individuals to create and sustain identity through the accumulation of material objects (Bianchi 1997).

In agriculturally sustained population centers, abundance became a distinguishing characteristic of social stratification as well as a marker of social cohesion. At the North American site of Cahokia, for example, the Mound 72 burial contained over 10,000 shell beads (Ambrose, Buikstra, and Krueger 2003:221). But at Cahokia we also see evidence for events that enabled larger and larger proportions of the community to participate in handling mass quantities of materials, such as the discarded remains of hundreds of carcasses and thousands of pots associated with feasting (Pauketat and Emerson 2007:112). At other chiefly sites as well, an increase in per capita portable objects was matched by an increase in the scale of built spaces meant to attract large numbers of people, indicative of labor investment in mound building and monumental architecture. In some cases, large architecture was intended to replicate domesticity on a grand scale (as seen in the Pacific Northwest; see Ames et al. 1992). In other cases, structures were intended to provide an altogether new type of architecture that had no analogue in ordinary domestic life but that represented social power through sheer size: Stonehenge, Göbekli Tepe, the menhirs of Atlantic France, and the moai of Easter Island.

The highest echelons of political authority demonstrated their power not only through hierarchical consumption but also through displays of magnanimity and largesse. Brian Hayden (1990) has suggested that one impetus for the development of agriculture was the desire of aggrandizers to generate sufficient food for feasts. And in countless texts of social authority, leaders portray themselves as generous with provisions to wealthy and poor alike. In Mesopotamia, iconography provided visual reminders of largesse in which “abundance [w]as the result of divine beneficence brokered by the state apparatus” (Winter 2007:117; for more abstract visual expressions

of plenitude, see Porter 2011). Unlike household-level food storage, which was often meant to be private (cf. Bogaard et al. 2009), institutional storage facilities are meant to convey magnitude (e.g., Gremillion 2011:106–9). Central storehouses, such as the ones on Inca roads and in Cretan palaces, were physical manifestations of the *intent* of abundance in provisioning, even if those storehouses were never actually filled.

Political leaders could represent their symbolic control of abundance through intangibles such as ritual performances, song, dance, and music. Even “empty” spaces could reinforce leaders’ association with plenitude when they created plazas and other open areas to accommodate large numbers of people as a metaphor of largesse materialized in architecture. Much of the plenitude of complex societies, however, consists of ordinary goods that were manufactured and used in mass quantities. The Roman world presents strikingly strong and well-studied evidence for mass-production, mass-consumption phenomena, ranging from the distinctive glossy redware pottery that is ubiquitous throughout the Mediterranean (Fulford and Durham 2013) to the 40 million discarded amphorae at the single Roman site of Monte Testaccio (Bailey 1965). Archaeologically investigated urban centers worldwide have similar levels of discards, and the producer-consumer interaction that resulted in these massive quantities of objects has left its traces throughout the landscape at kilns, metal furnaces, waste dumps, urban households, port sites, and shipwrecks that illustrate the volume of manufacturing and exchange.

#### DEFINITIONS

Scarcity, sufficiency, and abundance are relative and situational parameters, the exact boundaries of which are conditioned by individual perceptions and in comparison with the sum total of desired available materials. What might be sufficient food for one type of occasion (such as a routine family meal) might be insufficient for a feast with extended family and guests. What might be a shortage of manufactured items might become an oversupply when fashions or technological needs change. Nonetheless, some definitions serve to place abundance in the context of other relative assessments for comparison and analysis.

*Scarcity* in the physical realm results from both variability in distribution and the inherent qualities of particular phenomena relative to demand or need (see discussion in Smith 2012). For example, some geological elements are rare because they occur in limited areas, while some animals are rare because they have low reproduction rates, require large areas of territory, or have characteristics that limit their capacity to compete with other species. In human societies, scarcity can also be a constructed quality in which some individuals restrict access to otherwise plentiful supplies, whether through sumptuary laws or by elite decree. Enforced scarcity

need not always be material; for example, restrictions on services, hairstyles, modes of speech, songs, or bodies of knowledge can also be enforced within a group and constitute markers of distinction. Scarcity can be universally perceived or relative: even when items are few in number, some individuals in a group may have large quantities of them.

The threshold of *sufficiency* cannot be abstracted to a single numerical value (e.g., “two of everything makes a household”) but instead refers to context within a complete repertoire of individual and household possessions. Like scarcity, sufficiency is conditioned by both biological and social parameters; although there is a minimum biological threshold of viability with reference to calories and hydration, different sectors of society might well have varying assessments of what constitutes “sufficient” amounts of food and drink. Unexpectedly large numbers within a repertoire may be a result of stockpiling relative to the frequency of manufacturing and loss rather than of the expectation of simultaneous use (see Varien and Potter 1997:196).

The notion of sufficiency applies to the lowest echelons of society as well as to the uppermost. An illustration is provided by the site of Cerén in El Salvador, where the study of three architecturally modest households showed the existence of a fairly standardized repertoire of objects: “an incensario, a celt, about five obsidian prismatic blades in use and another five in storage, a scraper, a macroblade, a mano and metate, a hammerstone, two to three donut stones, an antler tapiscador (maize husker), a few bone needles, a few *lajas* as portable grinding stones, and a few smoothing stones” (Sheets and Simmons 2002:180). While this repertoire can be keyed to the number of adult hands likely to be present in the living space, pottery at Cerén stands out as an object with what appears to be elevated numbers suggestive of culturally constructed ideals of sufficiency: “Each household had about a dozen or more polychrome serving vessels, a much larger number than we would have expected” (Sheets and Simmons 2002:181).

The archaeological record of numerically large quantities can be categorized by the term *abundance*, a value-neutral term that describes accumulations that are quantitatively large and/or diverse in their composition. A focus on abundance provides the opportunity to understand the dynamics of the “found” world and the “created” world of material culture interaction as consistent factors in societies at all levels of complexity. Abundance is a condition that can exist naturally through the repetitive appearance of both individual items (such as trees) and a diversity of interconnected biota (such as a forest with its trees, grasses, and animals). These diverse and plentiful locales represented resource zones that provided niches to which humans were attracted. As a mobile apex predator, humans’ use of the surrounding landscape modified preexisting natural demographics, resulting in altered profiles of mortality as well as incremental effects on population sizes. Some slow-maturing species

might have been initially abundant but dwindled under the pressure of human predation; some species might have been initially infrequent but encouraged through low-intensity practices of landscape management to produce greater and greater quantities (cf. B. Smith 2001). Human effects on the environment for the creation of new forms of materiality through artifact manufacture permitted a deliberate alteration of the natural world: craft manufacturing beyond the capacity of any individual to handle or use simultaneously and animal husbandry as a practice to bring control over natural processes of birth and death. Storage as a mechanism for the temporary or permanent accumulation of desired items enabled individuals and households to create abundance through the curation of windfalls and harvests, as well as through the incremental stockpiling of food, ornaments, and tools.

In urbanized societies and in territorially expansive states and empires, an increasing number of people and an increasing diversity of production strategies often resulted in increasing numbers and types of goods. Cities in particular are places where there is a higher diversity of goods and a more rapid turnover of styles compared to rural areas, with a resultant increase in discard frequency as items are replaced prior to the end of their useful life (Smith 2012). Strategies used at a household level for risk management and in support of community needs, such as storage, were scaled up by central agencies that commissioned extra-large vessels or constructed prominent warehouses and storerooms. Centralized authorities also influenced and exhorted increases in production through a variety of mechanisms, such as the forced movement of people for agricultural production (e.g., Kolata 2013), the sponsorship of irrigation works and other landesque capital (e.g., Shaw and Sutcliffe 2003), or the management of tax regimes and production quotas to guide the cumulative effect of household production (e.g., Sinopoli 2003). Recognized as “surplus” that could be put to political use (cf. Morehart and De Lucia 2015), the abundances that resulted from state-sponsored activities nonetheless were understood in the same cognitive context that had long shaped individual and household responses to the natural and social world.

#### CHAPTERS IN THIS VOLUME

The authors of this collection of chapters identify and analyze the effects of abundance throughout the spectrum of social complexity, ranging from forager societies through the most expansive historical empires. Their data sets illustrate the ways abundance can be documented in the archaeological record and the many crosscutting themes of analysis supported by an abundance perspective.

In focusing on the creation of hunter-gatherer wealth, María Nieves Zedeño examines northern North America starting ca. 1,100 years ago. At that time, climate,

ecology, and demography resulted in optimal conditions for bison herds and their increasingly specialized human predators along the northern Rocky Mountain foothills. Researchers in Canada and the United States are mapping bison and people at large scales to determine landscape use, political boundaries, and the reach of interregional trade, as well as to re-conceptualize the relationships between bison abundance and organizational complexity. The material record of abundance among pre-contact bison-hunting societies on the northwestern Plains had both short-term and long-term impacts on social and political systems in which there was a dynamic relationship between bison and the generation of different kinds of wealth within the rhythms of everyday life.

Christopher R. Moore and Christopher W. Schmidt's chapter examines forager economies in eastern North America to consider the ways Archaic hunter-gatherers in the lower Ohio Valley experienced a "giving environment" and how this interpretation of the Archaic lifeworld contributes to more nuanced understandings of health, site use, and artifact distribution patterns. Explanations of Archaic settlement patterns often juxtapose these "rich" zones with areas that had fewer or less diverse (i.e., scarcer) resources, such that hunter-gatherers were either pushed out of these zones or pulled toward the resource-rich zones by changing climatic conditions. Moore and Schmidt instead argue that the material and biocultural records of Archaic peoples in this region indicate healthy populations and little to no evidence of scarcity in either subsistence resources or material goods.

Shifting to the analysis of prehistoric agricultural societies, Mark D. Varien, James M. Potter, and Tito E. Naranjo integrate archaeological and ethnographic perspectives in their examination of the American Southwest. This region has typically been viewed as a landscape of scarcity because of limited precipitation and relatively short growing seasons. Despite this view, Pueblo people have thrived in the region and have used a variety of social strategies to create circumstances of abundance through practices such as feasting associated with ceremonialism and community social organization. In contrast to other parts of the world, communal feasting in the northern Southwest involves common, everyday "abundant" resources—such as ceramic bowls, maize, and rabbits—rather than rare, valuable, or feasting-specific resources. Inhabitants also used bountiful intangibles such as innovations and repetition of motifs in the increasing elaboration of artifact assemblages associated with both feasting and daily domestic life, such as decorated serving bowls.

The challenges of early agricultural societies are examined from a different perspective by Katheryn C. Twiss and Amy Bogaard, who consider the circumstances that occur when agricultural and husbandry produce "bumper crops." They note that abundance may be a generally good thing, but in early agricultural societies the stochastic variation of food presents a variety of challenges. Individuals or

groups who produce or acquire an abundance of resources must determine how to physically preserve and socially deploy that largesse while maintaining at least some appearance of equality and integration. They explore possible strategies for coping with resource abundances using the case study of Neolithic Çatalhöyük in central Anatolia, in which management strategies included concealment, dispersal within a production group, and distribution across broader segments of society.

Payson Sheets examines the integration of economies and social worlds among the Maya, where settlements ranged in size from isolated farming households through small and large villages to the large urban site of San Andres during the middle of the Classic period in El Salvador's Zapotitan Valley. Among these, he focuses on Cerén, buried by volcanic ash about AD 630. Although Cerén was a very small settlement, each Cerén household "overproduced" something for exchange with other households and thus avoided the need to be economically self-sufficient. Autonomy and the goal of abundance guided household-level decisions about production and consumption even as households engaged in communal activities. Local individuals were responsible for construction and maintenance of the *sacbe* (road), for example, but they had considerable discretion in how they achieved their goals within the parameters of cultural acceptability. Sheets's contribution illustrates the transitions whereby hierarchical sociopolitical configurations became increasingly apparent as societies became more complex and the fact that those hierarchies were integrated with daily life through household-level initiatives.

Traci Ardren evaluates abundance in the largest settlements of the Classic Maya period, with a focus on the site of Chunchucmil, which was located in an agriculturally marginal area but adjacent to a rich savannah. Archaeological studies of ancient Maya trade have long acknowledged the movement of products among different environmental zones as a cornerstone of Classic period economies. One of the most important circulations was between the long coastline of the Yucatan Peninsula and the many inland urban centers of the Classic period. In addition to the transportation of long-distance trade goods such as obsidian, traders moved savannah products including organic materials such as palm thatch and other often overlooked plant fiber technologies essential to household and political economies of the Classic northern lowlands. A consideration of the abundance of savannah resources provides a new perspective on initial settlement and eventual urban migrations to this unusual ancient center.

The relationship of natural resources and abundant manufactured goods is the focus of the contribution by Elizabeth Klarich, Abigail Levine, and Carol Schultze, who examine obsidian trade at the Andean sites of Pukara and Taraco. During the Middle and Late Formative periods (500 BC–AD 300), Taraco and Pukara became major centers in the northern Lake Titicaca Basin of Peru. Both sites imported

obsidian from the Chivay source located 200 kilometers to the west. Although it is exotic to the basin, obsidian is ubiquitous in recently excavated contexts at both Taraco and Pukara, and its purposeful accumulation corresponds with increased investment in corporate architecture and supra-household food sharing. In addition, analysis of obsidian debitage indicates that “cavalier” craftspeople made few attempts to conserve or recycle obsidian during the preliminary stages of manufacture, a pattern that can be linked with resource abundance. The authors propose that this intentionally wasteful behavior further reflects the status of settlements as primary nodes in region-wide obsidian exchange networks.

Justin St. P. Walsh’s chapter makes use of big-data approaches to archaeological science by examining the incremental and subtle links of ethnic groups as determined by the distribution of everyday wares in the ancient Greek Mediterranean world. Using more than 20,000 whole and fragmentary Greek vases from 233 sites, he employs ArcGIS to evaluate patterns that illustrate the presence of different networks of provisioning and consumption among different “Celtic” and “Iberian” ethnic groups in the areas now encompassed in the countries of Portugal, Spain, Italy, Switzerland, and France. Large-scale data analysis also illustrates the effects of agency, as ancient groups’ adoption of Greek materials was a deliberate and strategic acquisition that cannot be predicted by simple economic criteria, such as distance to the source or the presence of easy trade routes.

Production, globalization, and distribution experienced accelerated integration through the process of colonialism. In considering the deliberate creation and local adoption of “excessive economies” in West Africa, François G. Richard proposes an alternative understanding of colonial practices as one that does not follow the standard narratives of elite control over property, production, economic surplus, and long-distance trade. In this region, the widespread availability of land combined with relatively small, mobile populations, resulting in a mosaic of consumption patterns in which conventional notions of dispossession, scarcity, and accumulation fall short of capturing the subtleties of political economy rooted in a broad ethos of abundance, such as collective ownership, horizontal redistribution, wealth in people/knowledge, and compositional forms of consumption for both wealthy and modest households. Using Bataille’s concept of “general economy,” which draws on ideas of excess, dissipation, waste, and sacrifice, Richard examines broad trends in the relationship among labor, wealth, and social power in northern Senegal during the past millennium and how these relationships were materialized in archaeological landscapes of local plenitude.

Manufacturing and distribution are prime signals of “globalized” trade activities that emerged numerous times in the pre-modern world, with one of the most spectacular examples that of the growth of Chinese porcelain trade starting ca. AD 1300,

as seen in Stacey Pierson's chapter. For foreign consumers, the development of maritime trade from as early as the Tang dynasty ensured that they could acquire and use large quantities of Chinese porcelain. Throughout the subsequent Yuan, Ming, and Qing dynasties, porcelains were made in vast quantities at Jingdezhen for domestic and foreign consumption using large amounts of raw materials, labor, and energy. The evidence of abundance is visible today in the huge sherds at imperial kilns, the textual records of vast orders for specific occasions, and the deforestation of entire areas of south China. Artisans and consumers engaged with porcelains that also included a visual dimension of plenitude through the often dense and repetitive decoration that can be seen from the fourteenth century onward.

### CONCLUSION

Throughout the volume, the authors emphasize that abundance is not a passive condition but an actively managed component of individual and social interactions. The masses of material remains evident at sites of many different time periods indicate that plenitude was the sought-after norm throughout human history and that the desire for and perception of abundance influenced the entire material spectrum, from production and distribution to consumption and discard. Abundance was an economic and political phenomenon, but it was also an aesthetic that was materialized in both tangible everyday goods and the performance of ritual. From the Paleolithic to the present, humans have responded to abundance by gravitating toward it and by creating it, resulting in a relationship to material culture in which "too much is not enough."

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