

CONTEXT



Taíno Indian woman from sixteenth-century German woodcut (see article on Kathleen Deagan, page 16 of this issue).

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Images of the Past: Remote Sensing and Geographic Information Systems

by Kenneth L. Kvamme

As the cost of archaeology sky-rocket, the understanding of site structure through excavation becomes less of a possibility. Broad excavation exposures or the digging of numerous sites in regional studies is occurring less frequently. Remote sensing techniques are widely seen as a useful and cost-effective alternative, because they can return a great deal of information about sub-surface site content and structure precluding, in some cases, the need for excavation, or providing guidance in where to place a limited number of test pits.

Just what constitutes "remote sensing" and how is it used in archaeology? Over the past few decades there has been a literal explosion of remote sensing techniques and technologies available for the study of archaeological sites. If we take a liberal definition of remote sensing as *any method or technology that is able to acquire information about sub-surface archaeological structure and deposits through indirect means*, then a host of domains become potential candidates. These various methods may conveniently be grouped into four broad families of operations.

Geophysical Prospecting Methods

Geophysical prospection involves a variety of instruments designed to record the physical properties of near-surface geological structure, either by active or passive techniques. "Active" techniques might pass electrical current or radio waves through the

ground, for example, and record how they are modified by sub-surface characteristics. "Passive" techniques, on the other hand, measure only inherent or native properties detectable at the surface. Instruments that employ active methods include electrical resistivity meters, which measure resistance to the flow of a current injected into the ground. Electrical conductivity meters accomplish essentially the reverse by assessing how well a transmitted radio wave is conducted through the earth. By taking measurements every meter or so, the operator may use these instruments to map anomalies in the near-surface geological structure, many of which may be archaeologically significant. For example, a buried foundation of stone may offer greater resistance to the flow of electricity or a lower ability to conduct radio energy. Alternatively, a buried ditch filled with sediment might retain somewhat more moisture than the surrounding earth, thereby facilitating the flow of current or offering low resistance. By mapping resistance or conductance measurements systematically across the surface, the outline of walls, ditches, structures, and other features may become apparent, a process greatly facilitated by various computer mapping and display technologies.

A popular active technique is prospection by ground-penetrating radar (GPR). Like a conductivity

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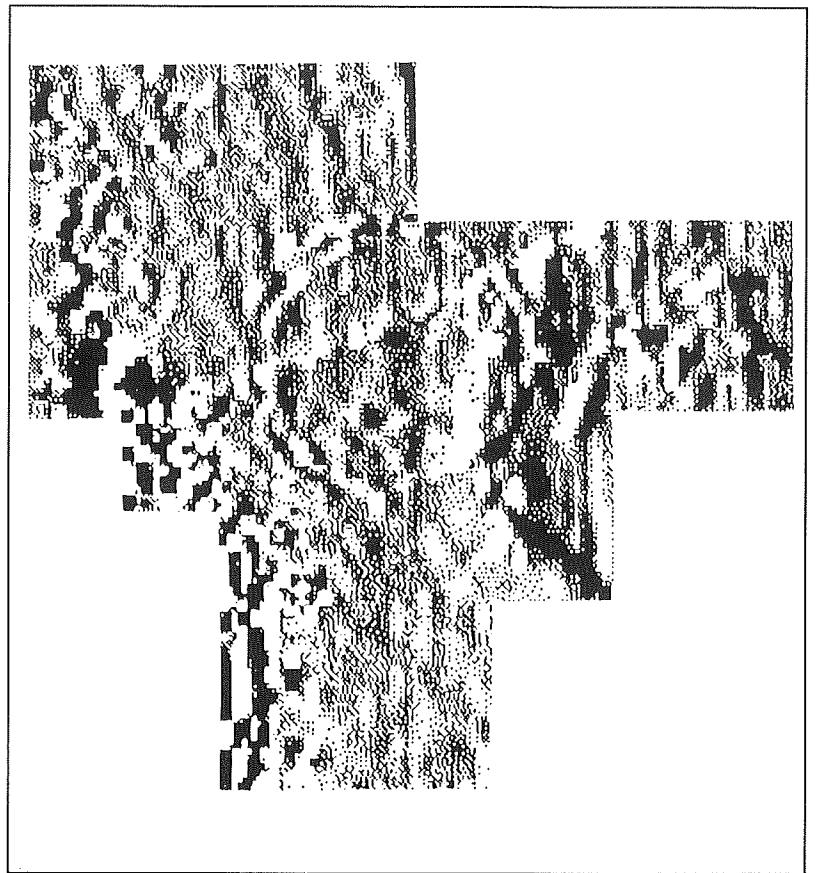
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meter, this device transmits a radio signal into the earth. GPR, however, records the time it takes for the signal to be reflected back to a surface receiver by various sub-surface characteristics like buried walls, pits, or even stratigraphy. By mapping these times along a transect, a profile is created that indicates relative depths to buried features.

Passive methods are fewer in number, but include one of the most important: magnetometry. Magnetometers record the strength of the earth's magnetic field through incredibly sensitive instrumentation (capable of magnitudes as small as one part in 500,000). Much of the earth contains iron-bearing or ferrous material in varying amounts, which becomes magnetized. If a ditch was excavated in the past and was later filled with sediments, those deposits would contain different magnetic properties. Likewise, a buried wall of stone could be more or less magnetic than the surrounding matrix depending on its ferrous content. Fire and burning tend to enhance the magnetic contrast, and artifacts made of iron give the most obvious readings of all. Like the other methods, geomagnetic readings may be mapped systematically across a landscape allowing interpretation of the sub-surface through the recognition of culturally significant patterns in high and low readings.

Some of the foregoing is illustrated in Figure 1. During the summer of 1994 I had the opportunity to perform geophysical survey at Navan Fort (*Emain Macha*), the ancient seat of the Kings of Ulster in Northern Ireland, with colleagues from California State University at Long Beach and Queen's University, Belfast. The site is a large earthen-ring enclosure, some 200 m in diameter, located on a prominent hill-top. Within the enclosure are two large mounds excavated during the 1960s, one of which contained a great barrow precisely dated by tree rings to 94 B.C. I focused on an apparently featureless area between these two mounds using a proton magnetometer. The magnetometer was able to detect an outer ring associated with one of the previously excavated

Figure 1. Proton magnetometry results for a portion of Navan Fort in Northern Ireland. The central ring is approximately 30 m in diameter.



mounds; two nineteenth-century field walls and associated potato beds; and, importantly, a previously unknown double ring structure some 30 m in diameter lying midway between the mounds, a discovery of some significance to the archaeology of Northern Ireland (Fig. 1). It is interesting to note that a resistance survey of the same area performed some years ago by Dr. Barrie Hartwell of Queen's University yielded no indication of the double ring feature, although the field walls and potato beds were readily visible. The different results of the two surveys highlight the fact that different sensors do not record the same physical properties, and the importance of combining multiple technologies in the investigation of a region. Evidently, the fill in the double ring contains material with a much greater magnetic signature than the surrounding matrix, but which was not different in its resistance to the flow of electrical current!

Geochemical Methods

Geochemical methods focus on the chemical, mineral, and trace-element characteristics of archaeological

deposits. They are obtained by taking soils samples from the field and subjecting them to a variety of chemical analyses and measurements. If samples are taken systematically across an area (e.g., every 5 m) then, much like geophysical measurements, maps can be made that may illustrate patterns of archaeological interest. For example, wall plasters, used by many societies, tend to yield high calcium and pH measurements, while latrines, animal pens, and middens tend to be high in phosphates. Lead, copper, or zinc (alloyed with copper to make bronze) concentrations are typical in metal-using societies and may indicate residential or work areas. By mapping measurements of these elements and chemical compounds, archaeologists have created rough maps of site layouts and identified key features in many studies.

Aerial Methods

Aerial photography, the oldest remote sensing technique, can reveal much about site structure, especially when there are architectural remains on or near the surface. It is also true that characteristics of sub-surface archaeo-

logical deposits can become visible on the surface because of several phenomena. Past land disturbances and sub-surface features like pits, ditches, and walls, can be expressed on the surface through subtle variations in microtopography. Aerial photography can capture this phenomenon by making use of low sun angles during the early morning or evening. The nature of deposits immediately beneath the surface can also differentially affect plant growth. A rock wall feature may stunt surface plants while a ditch or pit filled with moist sediments might enhance growth. Where plant cover is uniform over broad areas, such as in agricultural fields, this phenomenon is known as "crop-marking," a chief means of site discovery from the air and one that can give excellent information about a site by revealing entire complexes of walls, paths, roads, ditches, pits, and other similar features.

Aerial photography brings up the related but more modern technology of remotely sensed satellite imagery. These data are typically too coarse for most within-site archaeological applications, however, with resolutions usually between 10 and 30 m on the ground. Similar instrumentation can be carried by airplanes (a tethered blimp has also been used) that bring the sensors closer to the earth. This allows much higher resolutions to be achieved, on the order of a meter or less. Aerial multispectral scanners (MSS) allow reflected radiation from the earth's surface to be recorded at specific wavelength intervals, known as "bands." Bands might be selected, for example, from the blue, green, red, or infra-red portions of the electromagnetic spectrum. By analyzing or combining these bands in different ways through computer processing techniques, the researcher may determine various earth properties like soil moisture or clay content, differential plant growth, or thermal conditions, all of which are factors that can reflect the nature of sub-surface structures or conditions of archaeological significance.

It was noted previously that surface microtopography can reflect past dis-

turbances and sub-surface circumstances (pits, ditches, walls) through subtle variations in the present land surface. Today, it is possible with modern laser-based survey instrumentation and computerized data loggers to actually map these small surface elevation changes systematically over a region at very tight intervals. Surface changes not initially apparent can become instantly recognizable by viewing the data with computer graphics in three-dimensions, with a greatly exaggerated vertical dimension. In some cases it has actually been possible to identify room or structure outlines, walls, roads, and ditches, by the surface elevation data alone.

A closely related technique is the mapping of surface artifact distributions. It has been recognized for a long time that surface finds frequently are an expression of the sub-surface archaeological matrix. Consequently, by mapping surface artifacts—ceramics, bone, modified stone, brick, tiles, shell, glass, metal, and other items—we can learn much about the spatial structure of archaeological sites. This is a growing focus in arid lands archaeology, where vegetation does not obscure surface finds, but is also undertaken in plowed fields anywhere (although in the latter the action of the plow can move artifacts about substantially). An on-going research project of mine in western Colorado illustrates this practice to some extent. Its location in an arid

region with sparse vegetation, where modern society has hardly intruded, partially explains the presence of thousands of stone artifacts on the surface, left behind by prehistoric hunting-and-gathering parties. Although the site was initially recorded in the 1970s as a single prehistoric camp, a detailed mapping of some 25,000 surface artifacts has indicated a much more complicated series of camps, with numerous work and tool-production areas, dating from various times between 6,000 B.C. and the past century (Fig. 2).

Computer Methods: Geographic Information Systems

Despite all the benefits of the many remote sensing approaches, few would be very useful without computer storage methods and processing techniques. If we consider a single hectare (100 x 100 m), thousands of surface artifacts might be present for mapping. If we record surface elevations at 1-m intervals to investigate microtopography, 10,000 measurements are necessary. Magnetometer surveys frequently are performed at a 0.5-m sampling interval (for 40,000 measurements), while scanned aerial photographs or MSS imagery can yield tens of thousands of pixels ("picture elements," each an individual measurement). Clearly, the data volume generated by remote sensing can be enormous. This information needs to be

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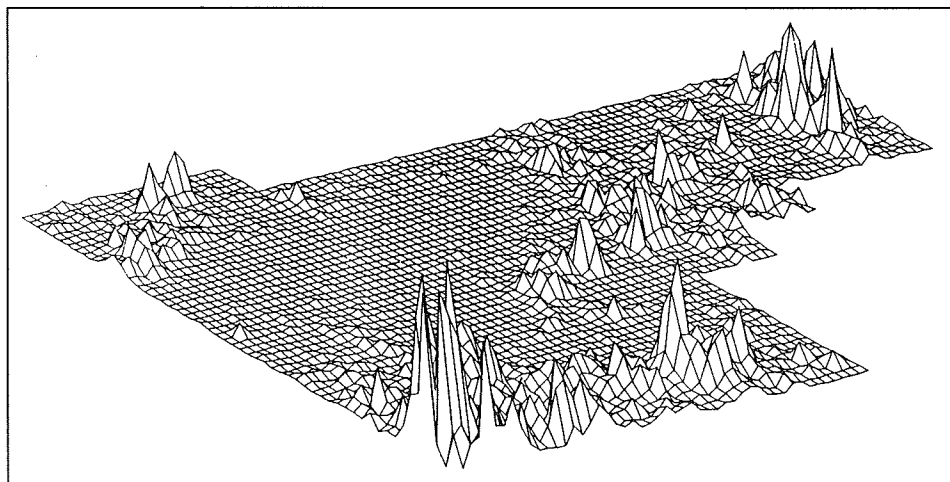


Figure 2. Computer-produced map illustrating the total count of surface artifacts in a desert region of western Colorado. Each grid square is 4 m on a side. The region measures 360 x 220 m.

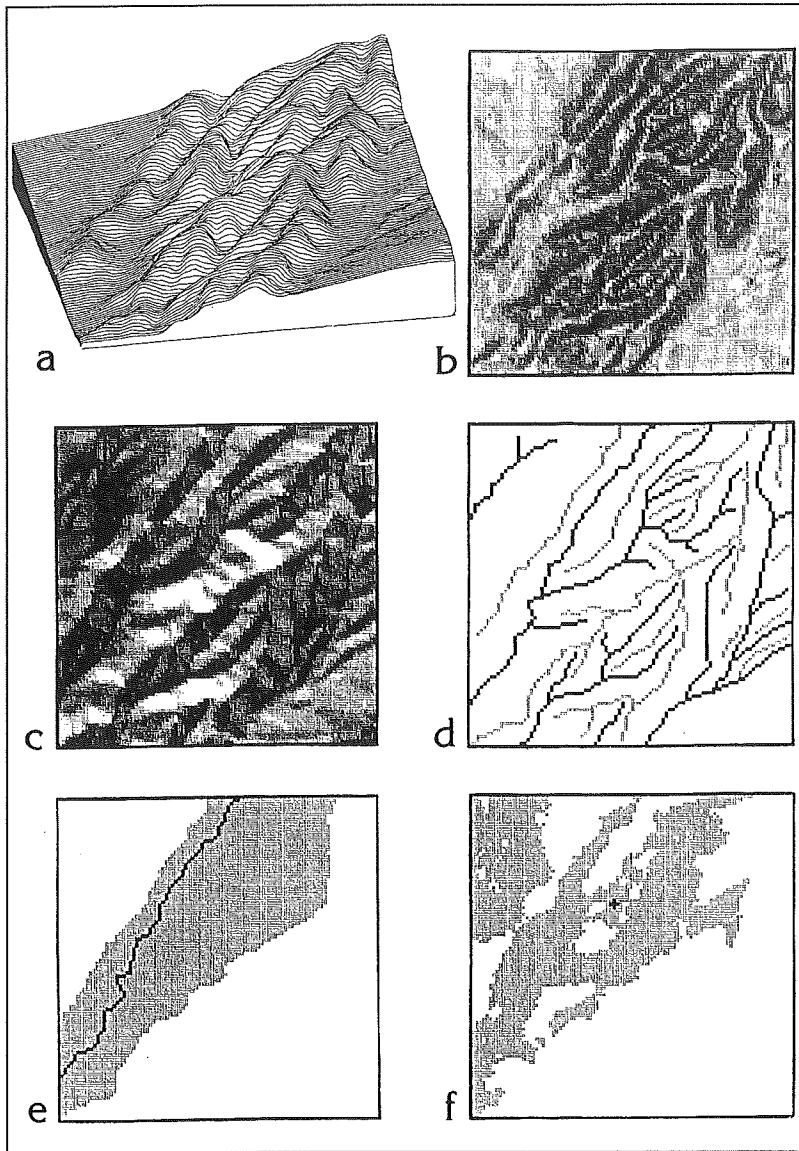


Figure 3. The digital elevation model (a) and its products: (b) slope, (c) aspect, (d) ridge and drainage lines, (e) a watershed and its watershed, and (f) the viewshed of a specified locus.

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 organized, managed, analyzed, and processed to yield usable information in the form of maps, and the computer provides the only means.

One of the most valuable software systems for handling these kinds of data is known as Geographic Information Systems (GIS). GIS are interrelated computer programs designed for managing and processing mappable data. This spatial link allows capabilities not possessed by other computer programs because (1) many kinds of information can be compared for the same point on the ground, and (2) the results of various analyses can be displayed in map form allowing ready visualization of patterns that might exist.

The most fundamental concept of GIS is that of the data layer, which may be regarded as the digital equiv-

alent of a single thematic map. The individual layers are all co-registered to a common spatial coordinate base. Data layers might represent magnetometry or resistance readings, artifact locations, elevation data, scanned photography, or an individual band of MSS imagery, for example, all from the same region.

The beauty of GIS for the management of remote sensing data is that they can readily handle and organize the large volume of information and display it using state-of-the-art computer graphics (illustrated by gray-scaling techniques in Fig. 1, or by simulated 3-D wire frames as in Fig. 2). Of nearly equal importance are the image processing functions native to most GIS. Most remote sensing data as they are captured in the field, whether geophysical, geochemical, aerial photographic, MSS, or micro-

topographic, are simply matrices of numbers, which can be regarded and treated as imagery when encoded within GIS (simply by assigning gray or color tones to various number ranges, as in Fig. 1). The raw data, however, generally are not very informative, but image-enhancement techniques can improve contrast or sharpness, and other algorithms can remove noise or detect and define linear features such as walls.

GIS provide much more to archaeology than simple data management and display of remotely sensed information. They are widely used in other domains, and it is worthwhile to explore some of these. Perhaps the commonest archaeological application of GIS is in the area of national or regional databases of sites and monuments. Data that might be encoded within a single database include archaeological site locations, site features, artifact lists, temporal and cultural affiliations, field-surveyed regions, land ownership, and environmental conditions like soils, elevations, and distances to nearest water sources, roads, and towns. The foregoing list is by no means exhaustive; many more kinds of data could have been included. With this kind of database, GIS can provide maps of archaeological sites or finds quickly, against a backdrop of other information (e.g., rivers, roads), making it easy for archaeologists, planners, or government managers, for example, to assess regions threatened by development or destruction. Researchers, too, greatly benefit from GIS-driven databases because they make it relatively easy to extract information, through queries and searches, about the archaeology of a region.

Although GIS databases are extremely useful, some of the most exciting potential of GIS lies in their analytical power and their ability to generate new information. At the simplest level, map overlaying, the superimposition of two or more layers, is a trivial operation as is map reclassification, the simplification of data from many to fewer categories (e.g., changing ten soils classes to only two: good and poor). A more complex operation makes use of

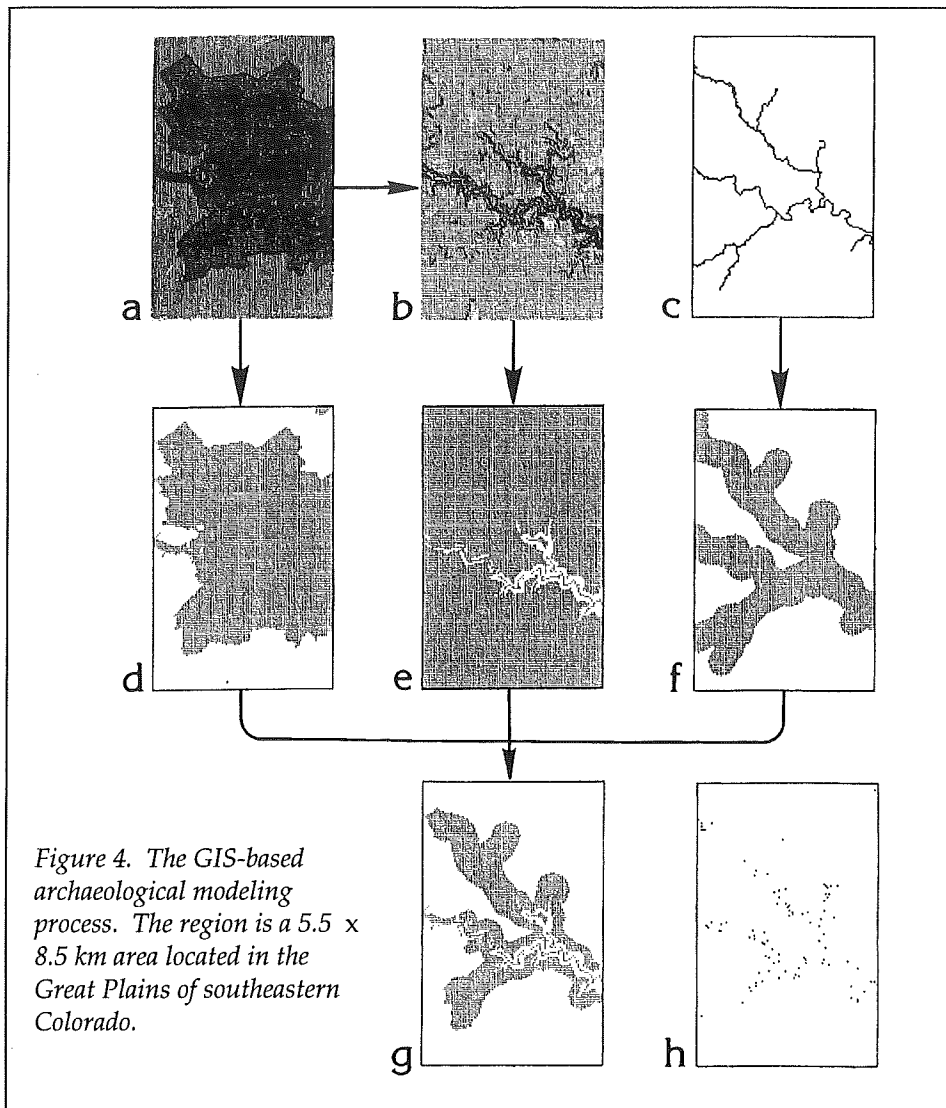


Figure 4. The GIS-based archaeological modeling process. The region is a 5.5 x 8.5 km area located in the Great Plains of southeastern Colorado.

proximity functions to generate a distance surface where, for example, distances-to-nearest-water are computed systematically across a region based on a layer of digitized water courses.

Because regional studies so often focus on terrain and landform, elevation data have achieved a particularly strong focus in archaeology. From digitized elevation contour lines, interpolation routines are employed to estimate a regular matrix of elevation values, referred to in GIS parlance as a digital elevation model (DEM). These are often used to produce simulated 3-D views of a region's landform (Fig. 3). From the DEM, a host of other programs may be employed to estimate gradient (ground steepness), aspect (direction of slope), identify ridge or drainage lines, or define watersheds (the area that drains into a specified locus). A related concept is that of watershed,

which denotes all locations visible from a specified point or area. The latter has been employed to analyze intervisibility between rival settlements in conditions where warfare was a concern. Cost surfaces attempt to measure the "cost" of travel from a defined point based on terrain form and land cover characteristics (which produce "frictional" effects offering variable impedance to movement). Cost-of-movement surfaces produce much greater realism than simple linear distances in settlement and locational studies.

Perhaps the best illustration of the analytical power of GIS lies in predictive locational modeling, one of the foremost applications of this technology in archaeology. This technique also qualifies as a "remote sensing" method because it is able to specify the nature of archaeological circumstances through indirect means.

Predictive models utilize locational patterns exhibited by a sample of known archaeological sites; these patterns are mathematically summarized and applied to regions not yet examined by archaeologists. The result is a predictive statement, in the form of a map, that indicates where archaeological sites should most likely be located.

The process of predictive modeling is illustrated in Figure 4 where, beginning with an analysis of a sample of prehistoric Native American camps in southern Colorado, a determination is made that they tend to occur (1) at low elevations, (2) on level ground, and (3) near water sources. To establish a model based on these criteria, a sequence of GIS operations is necessary. Beginning with the elevation data (a), a reclassification is performed to yield a low-altitude layer (d). A gradient operation is also applied to the elevation data to produce a ground slope layer (b), which is reclassified to create a level ground map (e). The drainage courses (c) are used in conjunction with a distance-finding algorithm to yield a 0-5-km water-distance buffer (f). These three binary layers (d, e, f) represent the stated criteria pertaining to archaeological location. The archaeological model (g) is simply the combination of these maps through a process known as a Boolean intersection. Finally, a comparison may be made against known archaeological sites (h) to assess the model's performance. Since the model seems to fit the known site pattern well, we might expect it to predict where as yet unknown sites are located in the region of study with a good degree of accuracy.

Obviously, there is much more to remote sensing and GIS than is covered here and there remains much yet to be exploited by archaeologists. The biggest stumbling block in the use of these methods lies in the training of the archaeological community, something that is being undertaken in Boston University's Department of Archaeology.

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Beating Around the Bush in Belize: Archaeological Survey at La Milpa, 1994

by Norman Hammond, Gair Tourtellot III, and John R. Rose

The 1994 field season at La Milpa yielded some surprising and intriguing results, even after substantial previous work. Reports on prior seasons are in Context 10:3-4 (1992-1993) 1, 5-8 (also see map of Belize on p. 4) and Context 11:1-2 (1993) 9-12.

In our third season at the large Maya city of La Milpa, in northwestern Belize, we continued to discover fascinating new types of ancient Maya construction features and recognize their potential integration in widespread modifications to a landscape that was both engineered and carefully managed. Further research on these discoveries will, we hope, support our somewhat disturbing initial suspicions about the ecological and demographic situation at La Milpa 1,200 years ago.

In previous seasons we mapped the central square kilometer of La Milpa on its high hill, tested the major plaza groups there, excavated and recorded the stelae and their inscriptions, began the excavation of a small pyramid on the Great Plaza (Plaza A), investigated the two ball courts, other buildings in the Great Plaza area, and several groups of small structures nearby (Fig. 1). We also began to map and test a sample of outlying areas off the main hill and away from the ceremonial precinct (Figs. 2, 3), discovering many enigmatic berms of chipped stone. Several preliminary reports and other papers have been published on our prior results and others are in press (selected publications are listed at the end of this article).

Three major categories of land modification have now been recognized at La Milpa: the central area atop a high ridge exhibits landscape modeling primarily for the purposes of supporting public architecture and habitation, but beyond we increasingly found signs of agricultural terraforming in addition to the ubiquitous levelings intended for habitation. Although less finished in appearance, the rural terrace and berm constructions may have involved more mass in aggregate than the temples and palaces of the ceremonial precinct.

We did not work in the site center in 1994: our efforts were focused on settlement areas beyond the central square kilometer of the site center, mapped in 1992-1993. Two transects were initiated, and eight more randomly scattered sample blocks, each 250 x 250 m, had their topography and ruins mapped in detail; subsequently several groups of ruins or features in each were tested by excavation. Ceramics are mostly from the Late and Terminal Classic Periods: earlier materials are scarce and the nature of the middens suggests most domestic occupation was rather short, representing a settlement peak late in the Classic Period. The existence of

Early Classic stelae in the Great Plaza at La Milpa indicates the site's emergence as a local center could not have been extremely late, but may initially have been rather modest.

Our principal strategy this season was to map transects 500 m wide, extending east and north from site center along the main N6000 and E6000 site-map coordinate baselines, to acquire continuous settlement data from the center through the peripheries of La Milpa. The nature of settlement between La Milpa and the Gallon Jug road near the eastern side of our concession area was wholly unknown. This season we used a Rolatape, or measuring wheel 1 m in circumference, to read distances during mapping off the baseline. This device has surprising accuracy over rocks and fallen limbs, and replaces the fallible mental effort of counting or calibrating foot paces. A team of three archaeologists and a couple of trail-cutters can arduously cut, measure, take levels, and map over 2.2 km of trail per day, equivalent to 100 m

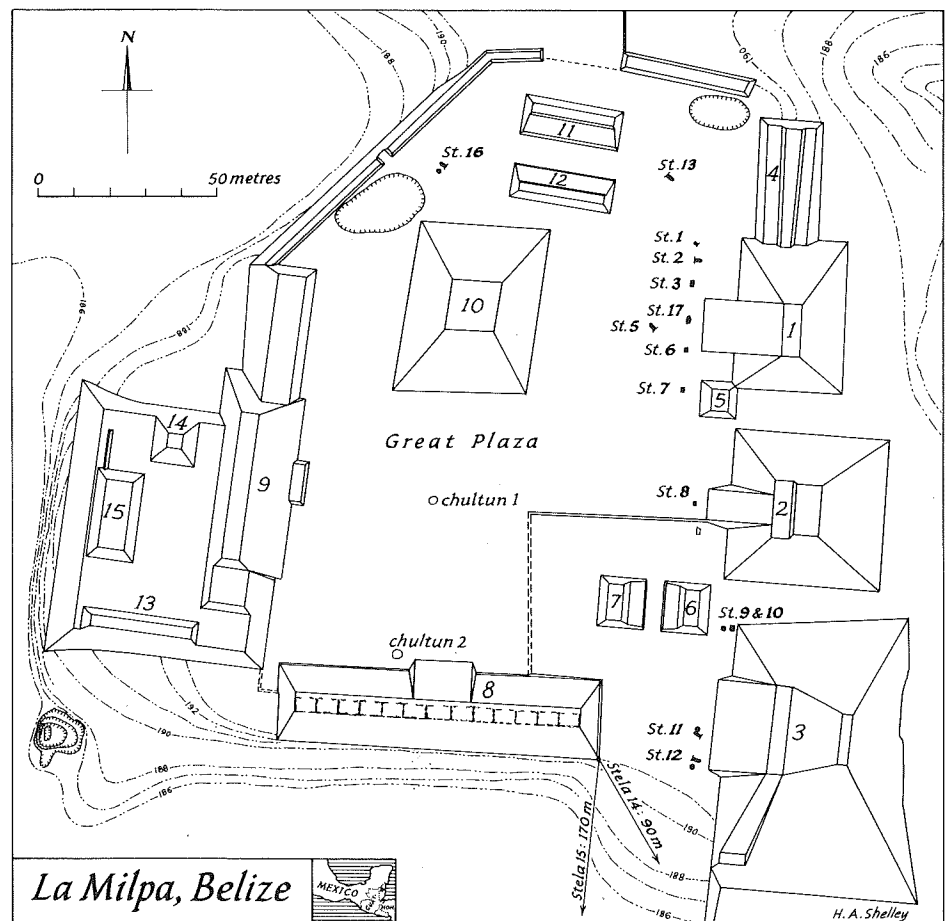


Figure 1. The Great Plaza of La Milpa showing the principal structures and locations of stelae.

along the main brecha, or 0.05 sq km (nearly equivalent to one 250 x 250 m survey block, or a square kilometer in a month).

Crossing prime ancient farm land, within 200 m the course of the East Transect baseline begins a very gradual ascent eastwards, under open forest with good lateral visibility for mapping. The broad crest of the rise is at E7500, where settlement density peaks. Particularly notable are the six large house groups on basal platforms raising them above the level of the rest. Five include a small (2–3 m high) pyramid on the east side and at least one large structure at right angles to it. The latter are perhaps collapsed masonry buildings of three rooms or so. One or two other structures are commonly present as well, forming only partially enclosed elevated patio units. About half the pyramids, presumably lineage ancestor shrines, have been looted: in one we found part of a Late Classic effigy censer, cached high up in the construction fill; another looter trench into a pyramid had exposed a burial urn high up in fill. The first convincing examples of property boundaries at La Milpa were seen here, comprising two substantial stone walls or linear berms separating three adjacent house lots, including the unusual one just mentioned. These walls may have been built around special groups in the face of high residential density.

The second hill, at E8000, is separated from the first by a deep valley and stream channel. The hill supports a fine small double-courtyard group, but no potential temple pyramids. Another hill without major structures lies just to the north, across a steep ravine. Neither of these has much in the way of rock berms or terraces. On the third hill along the ET baseline, at E8200, the higher that one climbs, the less elaborate are the structures: the operative factor may be increasing distance from the Great Plaza.

While the foregoing data contribute directly to analysis of the La Milpa community pattern, they are not surprising: what is really astounding, to us, is a far lowlier category of features, perhaps never before seen with such frequency and organization.

Beginning at the western end of the East Transect, very strange linear terraces and rocky berms 0.5–1 m high were discovered on nearly flat terrain beginning less than 250 m east of the foot of the La Milpa scarp. The berms and terraces seem to merge indiscriminately with each other. One clear berm-terrace combination comes downslope from a house group, turns an angle, trifurcates, and one branch continues for another 100 m towards a stream channel. Even longer examples appeared further to the east at E7100 where the ridge begins a long rise eastwards to E7500. Here two or three long contour-terraces appear to step up the very gradually rising terrain. Each terrace has a rocky "face" some 0.5 m high. From here eastwards an incredible amount of land modification appeared on the hillside along the north side of the transect: the total length of a sample of 17 mapped terraces and berms is approximately 1.43 km, the shortest stretches being on the order of 30 m, the longest two 250 m each. No clear pattern has been identified to account for why some stretches of the same align-

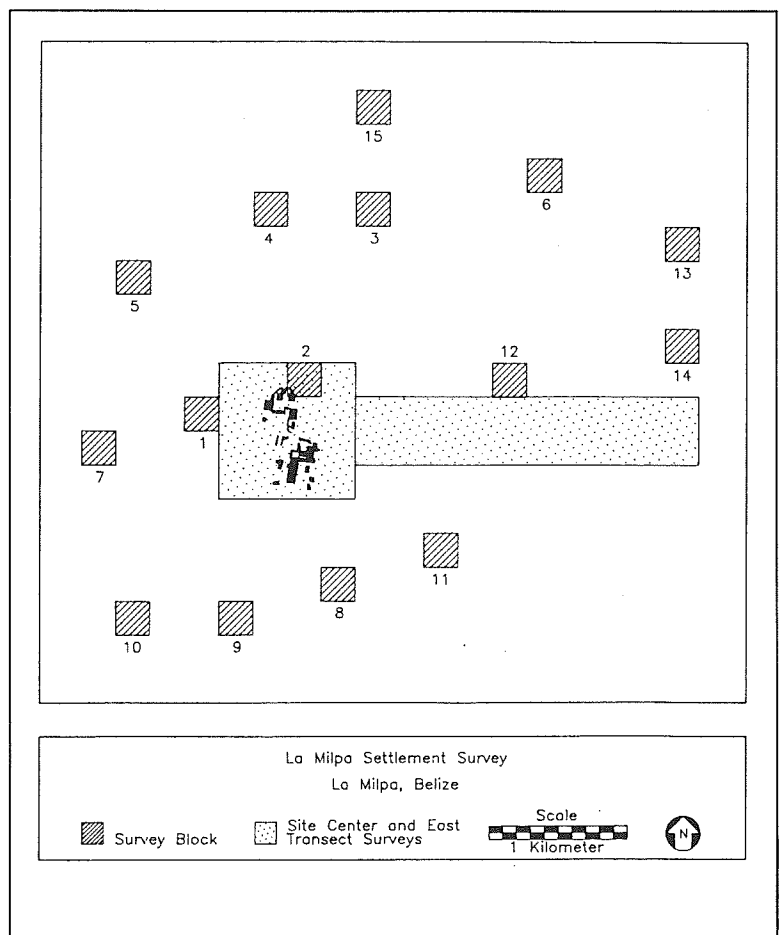
ment are flat terraces and others have elevated berms or lips.

In general, these terraces are visible only on very gentle slopes, and usually follow the contours. It is hard to conceive of a reason for terracing gentle slopes: perhaps the landscape had already become so denuded by demand for timber, firewood, and clearance for crops, that even gentle slopes were eroding badly under direct exposure to torrential rainfall. If so, the tremendous effort represented by the many visibly low, but often extensive, little terraces might have been worthwhile, a scenario more likely if they were built and used for a short time very late in the Classic at maximum population levels, when maximum productivity was needed. While we are not yet convinced of their entirely artificial nature or effective functioning, there is now no doubt in our minds that the Maya in fact extensively modified the landscape to suit their purposes.

No artificial reservoirs have been recognized in the transects (or survey blocks), in contrast to several large

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Figure 2. La Milpa Settlement Survey, with the mapped areas of the central square kilometer and East Transect, and the locations of Survey Blocks 1-15.



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 candidates on the main hill. This absence may be connected to a similar absence of massive platforms, structures, and plazas for which deep quarries were needed, and which perhaps then served to collect water. Despite the huge volumes of rock that must have been extracted and moved to erect the linear berms and terraces, obvious source quarries are few and shallow. Although any of the cross-slope berms or terraces could slow water runoff—indeed, that is their probable purpose—none stands high enough to trap much standing water.

Along the North Transect the main La Milpa ridge ends 1.4 km north of the Great Plaza, much further than we had thought. The ridge divides east- and west-flowing drainages, perhaps a factor in attracting early settlement here. At its north end, the prevalent

open *corosal* palm forest shades downhill into lower *escobal* and then a miserable *tintal* bajo, noted between SB 3 and 4 in 1993. From the staked baseline trail only a small number of mound groups have been seen, apparently lacking linear features or any major structures: the core of La Milpa does not appear to correspond with the center of the ridge, but with its highest and broadest portion.

Our second program during the 1994 season was the investigation of eight additional 250 x 250 m survey blocks (SB) under the supervision of John Rose. All were randomly selected from south or east of site center, to complement the seven blocks finished last season north and west of the center; we have now sampled all areas within 2–3 km of site center, investigating nearly 1 sq km from some 18 sq km gross. The program of shovel-test pits (postholes) showed two things: (1) no significant non-mound occupation has been encountered away from mapped features at La Milpa, and (2) hidden occupation occurs alongside visible construction. At least three test-pits, ostensibly placed outside platforms, came down on buried Late/Terminal Classic period fill or plaster floors. These are probably earlier, lower, or extended parts of the visible platforms: the area covered by floors and platforms is somewhat more extensive than the already impressive area covered by visible architecture.

A total of 164 Contexts (that is, archaeologically significant episodes) have been recorded in 35 test pits and dated by their ceramic content, not including the hundreds of posthole tests recorded as unitary samples.

Discussion

Reviewing our 1994 season results, we see that we are not getting the data expected on the basis of some of our initial assumptions about the likely historical and developmental trajectory of La Milpa; on the basis of the evidence that we have recovered, several hypotheses and speculations can be advanced.

Early La Milpa

The continuing “rarity” of Preclassic and Early Classic sherds in the settlement test-pitting program suggests that we may have had an entirely wrong set of expectations for La Milpa, based not only on our conception of typical Maya site histories but especially on our work in the center and on what now appears to be only a Late/Terminal Classic pattern of mapped settlement. By “rare” we mean that the early material fails to fit our expectation that some should be found almost anywhere we dig, especially in pits to bedrock through later Classic construction.

If in fact Preclassic and Early Classic occupation are truly found only around the Great Plaza, then, as at other sites (such as Cerros, Uaxactun Group E, Seibal Group A, Colha, and Tikal’s Mundo Perdido group), it would appear that early pioneer settlers lived in nucleated settlements, not dispersed across the landscape as in the Late Classic. We now suspect that early things are not out there to be found because early people lived in nucleated communities. The theoretically-significant consequence is that these early settlers must have commuted to their farms, rather than practising the inverse Late Classic pattern of living on the land and commuting to the town center instead. This is a striking change in community organization, if it can be shown to be valid by future extensive testing. If the early people at La Milpa lived in a nucleated community, then a relatively small population is implied. Within such a small and compact community, the socio-economic differentiation among the early settlers was plausibly less than later,

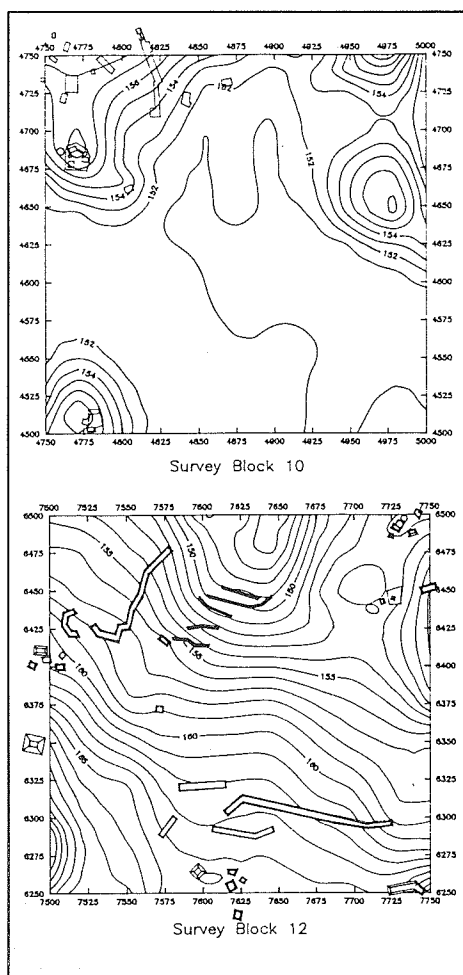


Figure 3. AutoCAD plots of topography and cultural features in Survey Blocks 10 and 12. Note the linear constructions running both with and across the contours. Drafted by John R. Rose.

Ceramic Phase Ubiquity in Test Pits, 1993–1994

Middle Preclassic	0
Preclassic (nonspecific)	3
Late Preclassic	1
Early Classic	8
Late Classic	6
Late/Terminal Classic	20
Terminal Classic	16
Postclassic	0

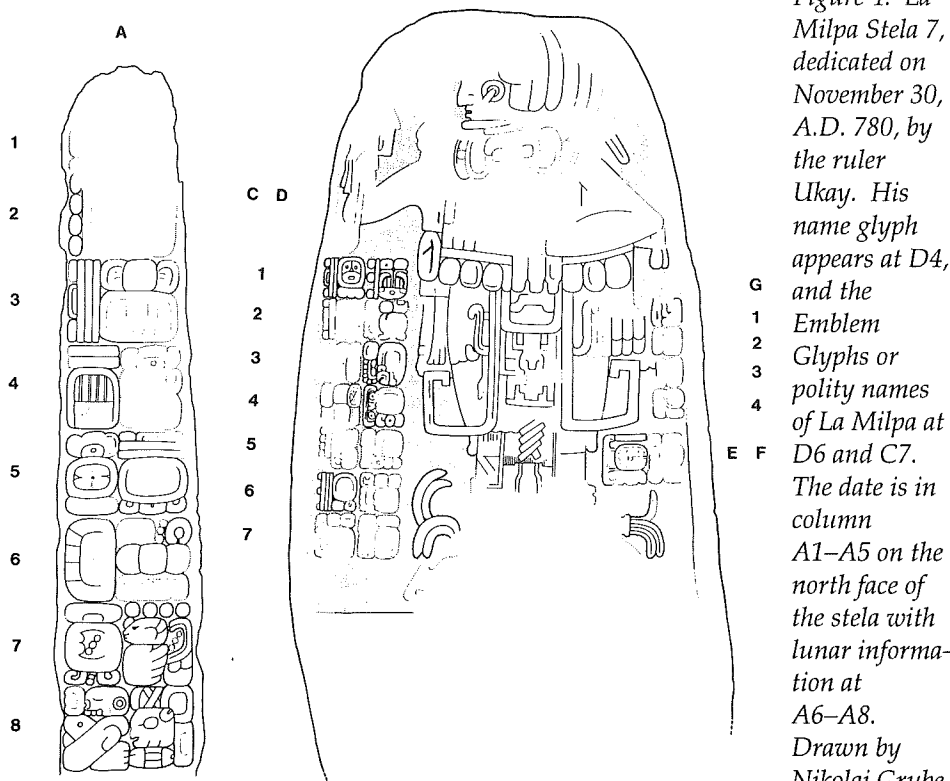


Figure 4. *La Milpa Stela 7, dedicated on November 30, A.D. 780, by the ruler Ukay. His name glyph appears at D4, and the Emblem Glyphs or polity names of La Milpa at D6 and C7. The date is in column A1–A5 on the north face of the stela with lunar information at A6–A8. Drawn by Nikolai Grube.*

when population and its dispersion had tremendously increased.

The practical consequence of this proposal is that we would have a very small chance of randomly finding early material in the peripheries because pioneer people were very concentrated in few places and simply did not live out there. Instead, for early material we must look to big agglomerations of structures, like Plaza A (built over earlier remains), in the most favored ridgetop locations. This line of reasoning provides a rationale for our testing specifically the largest mound groups in our settlement, on the basis that they may represent the earliest loci on the most desirable sites.

Such nucleated settlement may be linked to an unstable political situation in the southern Maya lowlands. An unpublished study by Simon Martin and Nikolai Grube in 1994 proposed mounting tension between Calakmul and Tikal in the sixth and seventh centuries, as Calakmul tried to encircle Tikal with a network of strategic alliances with such polities as Dos Pilas and Caracol. La Milpa lies east of and equidistant from both Tikal and Calakmul, in an area where as yet no inscriptions have been

found to throw light on political events at this period. Since La Milpa has monuments from both the fifth and eighth centuries, others from the gap (and the missing inscribed portions of some of those already known) may be recovered in a future season and shed some light on the situation.

Late La Milpa

Initial indications are that terraces and rock piles or berms at La Milpa are Late/Terminal Classic. The great intensification of agricultural activity that these techniques and systems represent both at La Milpa and in the surrounding Rio Bravo region seems to coincide with the dispersion of settlement and the colossal infilling of the landscape late in the Classic period, implying a relatively pacific period allowing population growth and dispersal without fear, or the expansion of a regional state with internal security. Such circumstances would have resulted in the manpower for the massive new constructions of the Late Classic in the site center.

We have no reason to think that our investigations have extended far enough out from the center to

encounter any boundaries that might exist, and do not expect that to happen until we reach about 6 km. In the patterns of our berm-walls we do not observe defensive webs similar to the allegedly defensive walls erected during a desperate struggle for land and food in the contemporary Petexbatun region.

Ironically, peace may have made possible a spectacular florescence and simultaneously sent things out of control: the Terminal Classic Maya may well have clearcut much of the forest for their houses, patios, yards, fields, and terraces, plus firewood, exports, and other activities. They may not have been sustainably "well adjusted" to their environment. If extraordinary soil depletion occurred, the long-term abandonment or grossly lower populations of the next 500+ years may also be explained. Possibly the modern forest, in its present mature secondary composition, is even less than 1,000 years old, given the necessary time to recover from depleted soils or denuded terrain.

In sum, data relevant to a Terminal Classic environmental crisis at La Milpa may thus include: vast dispersion and infilling of the landscape with houses, increasing by a factor of perhaps five over earlier times; an implied fivefold increase in number of clearings for maize fields; implied fivefold cutting of forest for timber and thatch in a very short time; construction of shallow terraces on gentle slopes to stem erosion; construction of platforms on bare bedrock; accelerated down-cutting of drainages on the La Milpa ridge, with construction of check dams in La Milpa drainages to check erosion; and investment in an irrigation system, perhaps extremely marginal in value.

Two provocative hypotheses thus emerge, and require testing in 1996: the apparent dearth of early material left by pioneer settlers needs to be confirmed by further deep soundings in a greater variety of structures and situations; and the striking modifications to the late landscape also require additional trenching to recover data on each type of linear or terrace feature in a greater range of settings. In

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both we need good stratigraphy, as well as larger artifact samples for dating and analysis of the uses of features. In the center of La Milpa, we also need to ascribe firmer dates and functions to some of the public buildings around the Great Plaza and the Tzaman Courtyards to the south, and ascertain just how short and how intense was the explosion of population and construction in the eighth century A.C. We are beginning to learn something of the history of La Milpa at that time—Stela 7 names the ruler Ukay, and the date of the monument is equivalent to November 30, A.D. 780—but to understand both its rise and its fall we need to beat the bushes further.

Acknowledgments

The National Geographic Society, Boston University, and an anonymous donor funded the 1994 work at La Milpa, which was carried out under a permit from the Government of Belize. We are grateful to Harriot W. Topsey, Archaeological Commissioner, and Paul Francisco for their help in official matters. The Programme for Belize, and the staff of its Rio Bravo Research Station headed by Bart and Barbara Romero, allowed us to work at La Milpa and were both hospitable and helpful.

We were assisted by nine hard-working volunteers from Europe and America: David Barnocki, Damian Blanck, James Burke, Francisco Estrada Belli, Gloria Everson, Benjamin Ford, Elizabeth Fuller, Jason Gonzalez, and Stefanie Teufel, several of them graduates of Boston University's Department of Archaeology, and some of them survivors of previous seasons at Cuello and La Milpa. We benefitted from the labors of a dozen men from San Felipe, many of them returning for a second season (as did three of the volunteers). Indeed, little undergrowth or soil would have been moved without them. Our neighbors at Rio Bravo from the University of Texas regional archaeological projects were most congenial and collegial.

A Mapper's Experience in Belize

by Gair Tourtellot III

For mapping Maya sites, our techniques range from sublimely high-tech to ridiculously simple, from the ineffective to the efficient. One great challenge to recording ancient Maya settlement remains on the Yucatan Peninsula is their dispersed, "suburban" nature. These settlements usually cover vast territories, measured in kilometers not hectares, each house group surrounded by its individual house lot and garden area. Furthermore, one "garden city" tends to blend into the next. Although newer survey equipment holds great promise, and has been most productive in desert or deforested regions, we have found it to be much less efficacious under the smothering blanket of tropical forest that is the second challenge to finding, let alone investigating, expansive Maya sites.

I am directing the mapping and settlement studies for Boston University's La Milpa Archaeological Project and field school in northwestern Belize, Central America, where we began work in 1992 (see *Context* 10:3-4, 1, 5-8; 11:1-2, 9-12, and this issue, pages 6-10). We are housed in tents adjacent to the Rio Bravo Research Station at 120 m above sea level, and commute daily to the 180 m ridge on which the center of ancient La Milpa lies, and where the mapping grid originates. We seek to map the thousands of large and small mounds that dot the landscape, the eroded

remnants of stepped pyramids, collapsed masonry buildings, low, stone-girt house platforms, and newly discovered sinuous mounds of enigmatic purpose, all constructed over a thousand years ago by the ancient Maya in the former domain of Lord Ukay (as memorialized on one of the carved monuments newly deciphered in 1993 by our collaborator, Nikolai Grube).

An unusual condition of our work is that the land is managed by its owners, the Programme for Belize, as part of a natural biological reserve. They justifiably frown on any damage to the globally threatened rainforest, whether it be to trees or poisonous snakes native to the area. While this constraint might be considered an onerous burden on mapping activities—already a low-impact activity, but involving the cutting of straight trails or broad areas in order to locate and view the ruined structures—I see it as another spur to develop fast and efficient procedures. After all, time spent cutting trees is time away from actual mapping, and fallen trees are the greatest obstacles to spotting ruins on the forest floor, hence not in our interest in any case. The really positive aspect of the protected reserve is that it is being inventoried and studied by numerous natural scientists. From them we can learn much about geological resources; climatology; soils and agricultural productivity; forest structure, products, tim-

Norman Hammond is Professor of Archaeology and Gair Tourtellot is Research Fellow in the Department of Archaeology; they are Co-Directors of the La Milpa Project. John R. Rose is a graduate student at the University of Pittsburgh.

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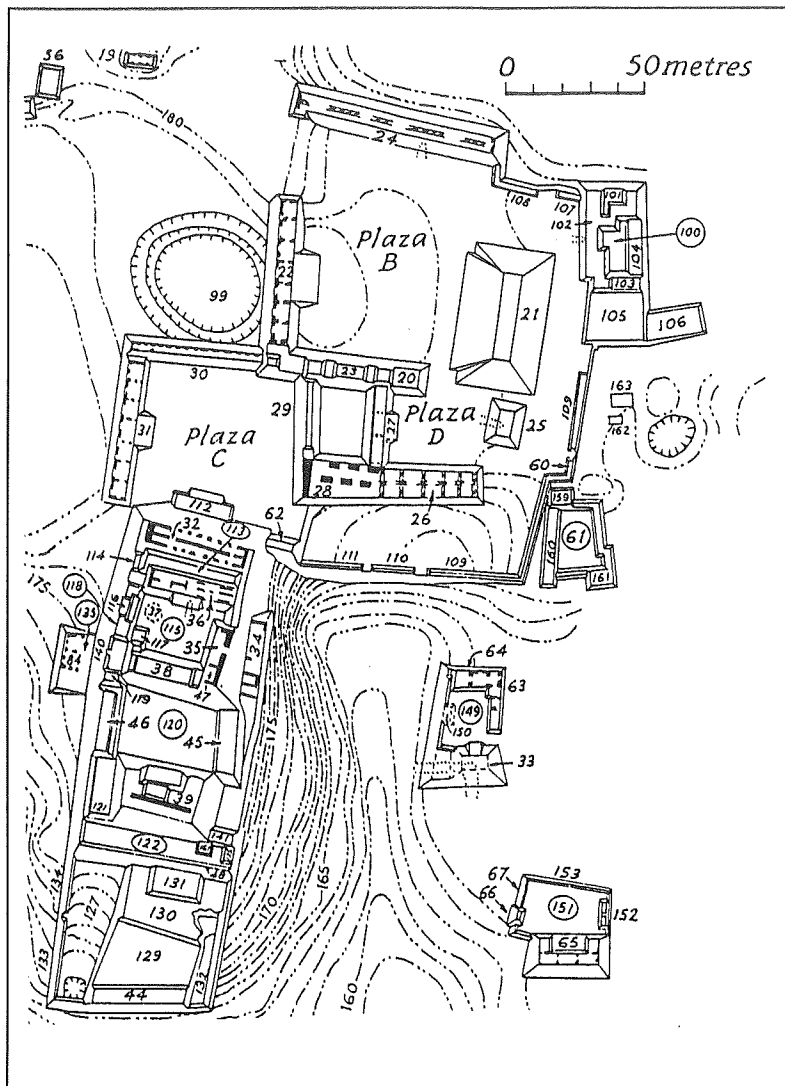
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A portion of a map of the site of La Milpa in Belize that shows Plazas B, C, and D with surrounding buildings. North is at top. Complete original map surveyed and drawn by Gair Tourtellot and inked by H.A. Shelley.

ing, and succession; animal species and habitats; and the like. Conversely, these other scientists stand to gain from us a grid of accurately marked trails for use as sampling transects, our detailed topographic maps, an indication of the formerly vast areas that were clearcut for ancient Maya farms, quarries, plazas, and building sites, and access to dated early biological materials from our stratigraphic excavations.

Scientifically, settlement mapping is the most rapid and, appropriately, least destructive way to amass a great deal of archaeologically useful information. From decent maps alone one can visualize the range of structure types, count them and calculate their proportions, inspect their locations and distribution patterns, suggest their natural and cultural associations at the household and zonal levels, and propose the whereabouts of diverse community activities. In the course of

survey, too, one can sometimes make serendipitous artifact collections from treefalls, eroded features, and rock-shelters. More personally, I can occasionally experience the thrill of coming upon a striking ruin, perhaps clasped in particularly dramatic foliage, pieces of intriguing architectural puzzles projecting from the rot and clambering roots. Unfortunately, these pleasures are spoiled at La Milpa by the sad evidence of ever-present looting that preceded me. Nevertheless, it is especially satisfying to unfold the size and structure of an ancient community.

Mapping a forested site requires several different procedures and instruments. An initial step is the cutting of trails for access and control on locations and topography. Survey instruments like transit and stadia rod are usually employed here. From these trails one can then do the actual mapping of interesting features, per-

haps applying less precise but more rapid techniques of recording, because you know that errors cannot propagate and accumulate beyond the nearest precisely surveyed trail.

One of the advanced technologies we have used is Boston University's Center for Remote Sensing's amazing hand-held Magellan NAV 1000 PRO Global Positioning System (GPS) device. It receives signals from navigation satellites that it uses to calculate immediately the latitude, longitude, and altitude of the point where one is standing. GPS receivers would allow us to break free from the tyranny of those slow, expensive, and arduously cut and oriented trail grids to locate directly whatever points we want to measure. A mapper's (and conservationist's) Heaven! However, use of GPS requires a clear view of the horizon in order to receive the weak radio signals from at least three satellites simultaneously, and this is rarely possible within the forest (even within the low growth covering the numerous abandoned marijuana fields that dot our site). One solution is to send someone up a tall tree with the receiver, to get above most of the canopy. Obviously this task is a bit dangerous, and also too time consuming to use to locate each of several thousand house ruins, let alone each of the points on each structure required to correctly render its form.

We have got much heavier use and superb results from the Center's EDM instrument: a theodolite integrated with an Electronic Distance Measuring unit and a dedicated computer. This compact machine automatically provides azimuth, distance, change of elevation, and map coordinates for any point sighted within 2 km: all the measurements we require. Of course, we can never see so far across the hilly and thickly forested landscape at La Milpa, but I treasure the reduction of mental error and fatigue that automatic calculation provides. Especially valuable, too, is the minimum of cutting required to get the EDM's infra-red beam through the foliage to its target. However, I would gladly give up some of the vaunted precision of these machines

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The La Milpa Project crew of students, staff, and workmen prepares to enter the forest for a day of mapping and other archaeological activities.

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in favor of lighter weight, lower cost, and longer battery life. Clean electricity for recharging batteries or operating computers is in very short supply in the remote forest, and reliably obtaining it is one of my constant concerns in applying the new electronic technologies. We use the EDM primarily for setting our control grid of straight trails, the backbone of our mapping effort.

At the opposite end of the technological scale is plain, old, quick-and-dirty pedestrian survey, employing a set of procedures first worked out at Tikal in the 1960s. Here a line of people equipped with bush knives loop out and back along compass bearings from the properly surveyed trails, stopping to record any feature encountered. As the leader, I record on a portable map board both a continuous series of personally calibrated "metric paces" and a continuous series of changes in elevation using a hand level mounted on a staff, as well as all archaeological features found by the team. Although physically and mentally tiring, we are able to maintain accuracy well above 90%, and errors cannot accumulate because loops are closed on the measured trails. If someone wants more precise orientations, dimensions, or altitudes for some more specialized purpose, they would probably want their own

machine survey or excavation in any case. In the meantime we have a large map produced about four times as fast as with tape, compass, and clinometer, or seven times as fast as with survey machines. Viewed differently, that is four to seven times as much coverage in the same time. And offering the bonus of less damage to the forest itself.

Field recording and map drafting also use various conventions in the interest of speed. We neither record nor draft the ruined platforms, pyramids, and buildings as contours or stone-by-stone, as these techniques are far too time-consuming and inappropriate to the traditional small 1:2000 scale at which Maya settlement maps are published. Instead, platforms are shown as prismatic reconstructions (see map illustration), allowing us to search for and record only the four corners of the typical structure and introducing an attractive three-dimensional effect to their plan views.

The really essential instrument is the low-tech (or at least old tech) combination of human brain and eye. I'm speaking less of the eye-hand (or eye-foot) coordination necessary to avoid spiky trees, than of archaeological vision, the acquired experience in survey and excavation that allows me to see architectural floor plans where neophytes see only a hopeless jumble

of eroded rocks. It's this simple: you can't measure what you don't see. Instrumentation really has little to do with useful accuracy.

Having previously completed work at Sayil in northern Yucatan (with Patricia McAnany), where the preservation of floor plans is incredibly clear, my expectations were not high for La Milpa, where the forest is much taller and the soil deeper. Imagine my surprise as I began to imagine that I could discern dwarf wall foundations on some mounds, and actual collapsed building outlines on others. Was I fooling myself? How should they be rendered on the maps? Consequently, one of the most personally gratifying, as well as exciting and unexpected, finds of our first season at La Milpa—a dimly perceived dwarf wall foundation for a very late house erected by squatters on the previously ceremonial Great Plaza—involved the confirmation through excavation that my eyes had not deceived me. Here are situations that call for recourse to the relatively slow and expensive alternative of excavation in order to test my interpretation of whole types of indistinct surface remains.

Despite the brilliance of the tropical sun overhead, I'm usually the palest person around, preferring to wear long shirts and pants to pick up the scratches and tears from outrageously spiny plants, and also to help fight off the plague of biting insects (from ticks and fleas to "doctor" flies and bees). Also, the forest canopy cuts out direct rays (requiring fast film). In the morning twilight, it is hours before long shots with a stadia rod and transit are feasible. Here also an EDM really shines, so to speak, because it generates its own light beam, and could, theoretically, work even in the blessed cool of night. The high heat and humidity of the Yucatan Peninsula exact a toll directly measurable in the loss of weight during a season. Pedestrian survey is particularly grueling because you are constantly moving, constantly active and vigilant, repeatedly climbing across the same ridges (why do they never *parallel* one's course?). And La Milpa has the most rugged landscape I've

worked over, its overall relief exceeding 60 m, with deep rocky gorges.

Recently a sort of index of mapper *braggadocio* was introduced by a colleague of ours. This Mayanist brags that their 26 km of trail is greater than the length cut during the classic study of Tikal (in which for the first time survey extended well beyond a ceremonial precinct into the humble sustaining area). Well now, I, among others, can claim to have done more, too, if we really get into this contest. But I count 48 km of main trail for Tikal, not including some 384 km of their innovative pedestrian survey trails. (Actually, for the main trails, they made use of ones previously cut for a new national park.) More interesting, really, would be the efficiency with which an area of settlement was actually mapped: our colleague evidently mapped only about 1.6 sq km in six field seasons (and then found the exquisitely precise data thus obtained was too picky to be published in full detail), while Dennis Puleston spent only four seasons to record approximately 24 sq km at Tikal. We can thus generate a more informative, if crude, index of efficiency or cost, involving area mapped divided by machine-surveyed trail length, divided again by number of seasons required (not included are such other factors as density of features and foliage, and number of people: but, hey, we're looking for bragging rights here, right?). On this index, Tikal bests the other Mayanist by a factor of 12.5 (.125 to .01). In practical terms that means pedestrian mappers will record 12.5 features (platforms or buildings) in the time it takes a precision instrument mapper to map one. Clearly, a high concern with survey precision is very costly, and works against the efficient production of data having archaeological-ly useful accuracy at the scale of a typically extensive Maya community. If it is not already apparent from the foregoing, I think the greatest challenge in Maya mapping is obtaining extensive coverage at low cost.

Oh, but how have I done on this efficiency scale, you ask? At one site (Seibal) I cut over 27 km of trails to

map an area of about 9 sq km in five seasons, for an index of .066 (with half the labor force of the others). At another (Sayil), we cut perhaps 20 km for a densely occupied area of 2.5 sq km in two seasons, for an index of .062. Ah ha, you're not a precision mapper, Tourtellot! Absolutely right, I don't have the patience for it, and don't think we archaeologists have either the time or real need for it when working at the community scale. After all, mapping is a means, not an end. We want to see an ancient city in its setting, so the more of it we can cover the better our understanding will be.

In fact, what we're doing now at La Milpa is implementing a sampling scheme for mapping a scatter of representative areas across the concession area of 113 sq km, rather than working continuously out from the center alone. (Indeed, at our present rate of pedestrian survey, approximately 1 sq km per month per team, to generate a complete continuous map would take us about 37 team-years. No way!) Falling short of complete coverage, we'd just end up with another centrally biased map, missing the outskirts, the fate of too many other ambitious mapping projects. With the assistance of John Rose (Pittsburgh), one of our strategies is to systematically select and investigate a random sample of 250 x 250 m squares well distributed over the site area. Already we have located two types of terrain not seen on the main ridge, recognized low linear features snaking through the forest, found several chert nodule extraction and processing areas (a very rare local type of production) well away from site center, and recorded a greatly expanded range of settlement densities. Without this sampling scheme we might never have reached these locations from the center, thus underestimating the true diversity of landscape and settlement characteristics. And it is this full range that we are seeking for the ancient community at La Milpa.

Gair Tourtellot is a Research Fellow in the Department of Archaeology and Co-Director of the La Milpa Archaeological Project.

New Excavations in Ethiopia

by Kathryn A. Bard

A major international project to study the cultural and environmental history of the Aksum region of Ethiopia was inaugurated in the summer of 1993 by Kathryn A. Bard of Boston University and Rodolfo Fattovich, Professor of Ethiopian Archaeology at the Oriental Institute, Naples, Italy. Because of the long civil war, this was the first archaeological field work done in northern Ethiopia since 1974. The author is the first woman ever to direct an archaeological excavation in Ethiopia.

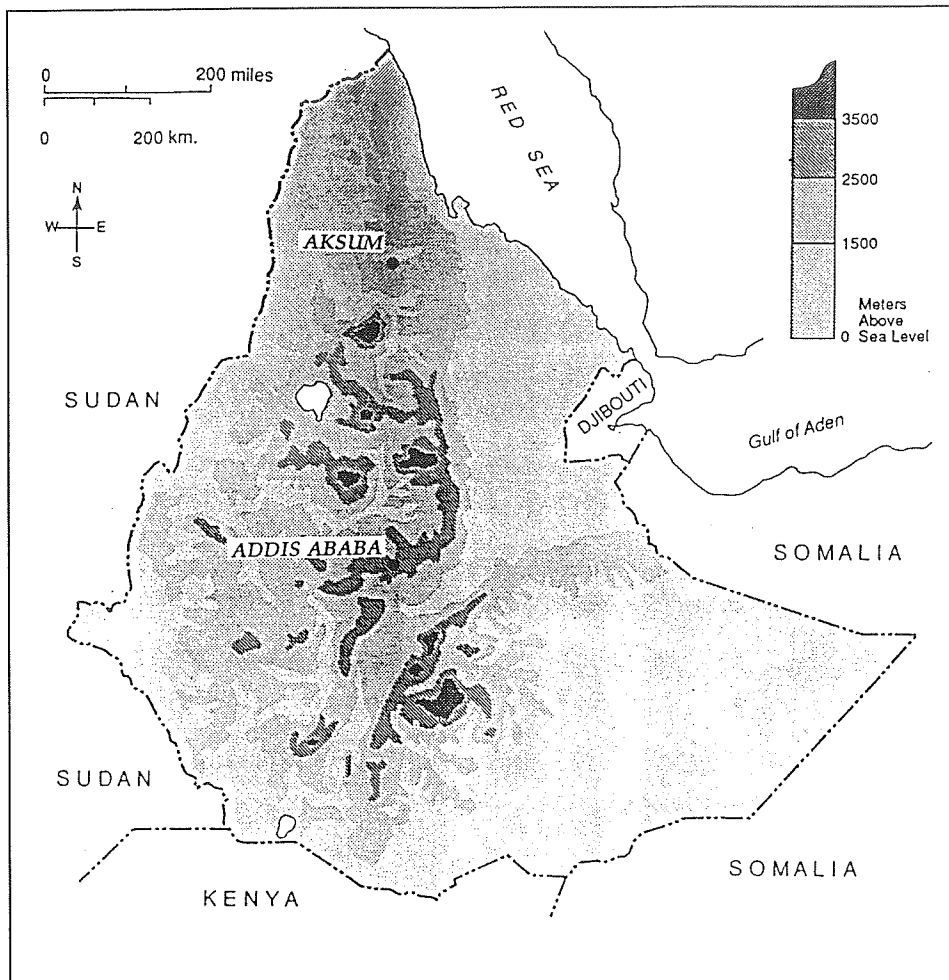
Aksum was the capital of a large kingdom in northern Ethiopia which arose by the first century A.C. and was a trading partner of the Roman and Byzantine empires. During the reign of King Ezana in the fourth century it became one of the earliest Christian states. The site of the new excavations by Boston University and the Oriental Institute lies within the territory of this early African state, not far to the northwest of Aksum itself.

The site, Ona Enda Aboi Zague, extends over an area of about 10 hectares on the northern side of Bieta Ghiorghis hill in the region that is now known as Tigray Province. The site, partly covered by a modern village, is particularly remarkable because of the size and number of ancient funeral stelae that lie fallen on the ground. More than a hundred of these stone slabs are visible on the surface, including both roughly hewn monoliths and others that are more carefully carved with rounded tops. Stelae of the latter type were up to 10 m in height and were concentrated in the southern sector of the site.

Platforms of rough stones and clay, from which the stelae once rose, were uncovered during the excavation of squares (10 m to a side) both in the central and southern sectors.

In the central sector of the site an earlier phase of platform construction (OAZ I) was identified by ceramic

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Map of Ethiopia showing highland zones and Aksum.

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evidence. A platform about 1 m high was found above three pits that had been dug approximately 1.6–1.8 m into the bedrock beneath the base of the platform. The pits were covered with large stone slabs. Buried in one pit (Feature 1) was a stele, about 1.5 m in length. At the bottom of another pit (Feature 3) was a tightly contracted human burial with the head oriented to the east and the face to the south. Above the badly preserved bones were five complete pots. The third pit did not contain any evidence of a burial. This platform was built in "proto-Aksumite" times, tentatively dated to the first century B.C. or first century A.C., and represents an earlier cemetery field than those known in Aksum. The one burial excavated in OAZ I is of a previously unknown type.

Beneath the base of the platform of OAZ I an earlier stratum with Late Pre-Aksumite pottery has been identified, possibly dating to the second/

third centuries B.C. At present this is the earliest known occupation in the Aksum region.

A later phase of platform construction (OAZ II) was also excavated in the southern sector of the site. The ceramics found in this platform are contemporary with those excavated in the early 1970s by the British in the royal stele field in Aksum, and date to



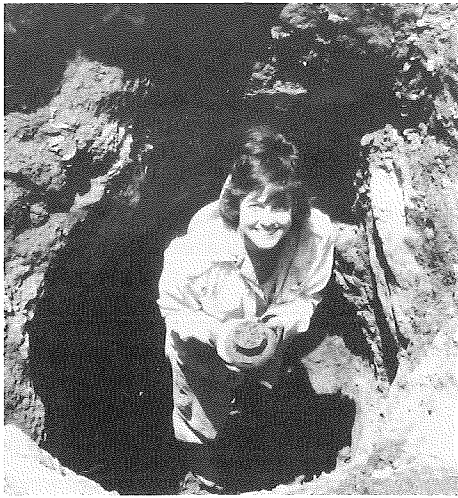
The "Double Stele" associated with the burial platform of OAZ II.

the Early Aksumite period (first/second to fourth centuries A.C.). The construction of this platform was more sophisticated than the earlier platform to the north.

Associated with the stone platform of OAZ II were three large, finely carved, stelae. One of these monuments was carved in an unusual form, consisting of two stelae projecting from a common base and originally joined by two carved bars above the base. The "Double Stele" was carved from a monolith of syenite 9.3 m in length and weighing many tons, and is of a style previously unknown.

Close to this platform and reused by farmers in a wall is a roughly hewn stele with a short unvocalized inscription in Ge'ez, the earliest written Ethiopic language. This inscription has tentatively been translated by the historian and philologist Lianfranco Ricci as "belonging to the chiefs."

Another significant discovery was a rock-cut tomb in the central sector. The tomb consisted of a rectangular shaft, 3 m deep, opening into a roughly rectangular chamber to the west; a smaller chamber extended further to the west. The tomb had been disturbed at some point in the past, but a thick layer of clay found on the tomb's floor had been intentionally placed there. Almost no evidence of the burial remained except for a few teeth and traces of disintegrated bones. Sherds of between 40 and 50 pots were found along the north side of the main chamber, along with a few sherds of glass vessels. Also in



Kathryn Bard completing the excavation of a burial (Feature 3) beneath the stone platform of OAZ I.

this area of the tomb were hundreds of very small, colored glass beads and some larger beads of carnelian. A few larger glass beads in green, dark blue, and clear glass covered with gold foil were also collected, and some traces of turquoise were recognized. According to Professor Murray McClellan of Boston University, the glass vessels and glass beads were probably imported from Roman Egypt. Professor Henry Wright of the University of Michigan has suggested that the stone beads came from India. The presence of such tomb goods confirms that very rich tombs of high-status individuals were located in this stele field.

The rock-cut tomb was created in Early Aksumite times (about second-fourth centuries A.C.). Its pottery is contemporary with that from the platform in the southern sector of the site and the royal stele field in Aksum.

In June 1994, Professor Fattovich conducted limited test excavations for ten days in a third unit at OAZ

Agreement of Affiliation

The fieldwork at Ona Enda Aboi Zague is the first major activity to result from an agreement of affiliation between Boston University and the Oriental Institute at Naples, the most important institution in Italy for African Studies. Both institutions also have agreements of affiliation with Addis Ababa University.

Update

Shang City—Out of Sight: Geoarchaeological Survey in China

by George (Rip) Rapp, Jr. and Zhichun Jing

As reported in *Context* 9: 3-4, 7-8, the first cooperative project between Harvard University and the Institute of Archaeology in Beijing was initiated to investigate predynastic and early Shang settlements sites in the Shangqiu area, northern China. The primary goal of the project is to locate and identify the site of Great City Shang, the sacred city and cult center throughout the Shang Dynasty. This archaeological project has witnessed some important developments since 1991 when we started our geoarchaeological survey. In addition to geoarchaeological coring, three seasons of geophysical investigation have been carried out using magnetometer profiling and ground-penetrating radar techniques. Archaeological excavations also have been conducted at two important Neolithic and Bronze Age sites in order to construct the cultural sequence of the late Neolithic and early Bronze Age periods in the project area.

Since we first visited the study area in 1990 we have conducted four field seasons of geoarchaeological survey. Our study has focused on the Holocene floodplain stratigraphy and the impact of changing landscape on the Neolithic and Bronze Age sites. The project area has been profoundly influenced by both local and regional alluvial processes in the past several thousands of years, especially from early twelfth through middle nineteenth centuries when the lower Yellow River flowed through the area. About ten to twelve meters of flood-

associated with some stylistically early stelae. More extensive fieldwork involving both Co-Directors is planned for 1995. These investigations will include test excavations at Ona Negast, the settlement associated with the OAZ cemetery and stele field.

Kathryn A. Bard is Assistant Professor of Archaeology at Boston University.

plain sediments have accumulated in the past 2,000 years. As a result, the archaeological remains dating to the Neolithic and Bronze Age are seen only at a limited number of mound sites.

It has been assumed that the area had the same landscape elements from the Neolithic through recent historical times when the flooding risk was always one of the most important factors in the selection of human settlement locality. In other words, the people of the Neolithic and Bronze Age tended to settle on the highlands in order to minimize flooding risks because the area was subject to the same high frequency and large magnitude floods as in later periods. This assumption has been called into question by our geoarchaeological survey over the past four years. Our study has shown that the Shangqiu area has undergone major environmental changes during the late Holocene by identifying three major episodes of landscape evolution: prolonged landscape stability until 2,000 years B.P., subsequent gradual floodplain accretion with the development of a cumulative soil, and rapid vertical aggradation of the floodplain that was caused by the dramatic changes of the hydrologic regime along the lower Yellow River.

These previously unrecognized environmental changes on the floodplain made it very difficult to determine temporal and spatial patterns of Neolithic and Bronze Age settlement sites. The pattern of the concentration of the Neolithic and Bronze Age sites in mound settings is a biased perception imposed by the evolving landscape rather than an accurate reflection of settlement pattern during the Neolithic and Bronze Age. The prolonged stability of the landscape before 2,000 B.P. might have provided a favorable physical environment for potential human occupation on the

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Context and Human Society Lectures

Kathleen Deagan on Historical Archaeology in America

How did the European colonization of the Americas evolve into a distinctly American culture, or set of cultures? This question was the central focus of the 1995 Context and Human Society Lecture series presented during the week of March 20 by Kathleen Deagan, Curator of Historical Archaeology in the Florida Museum of Natural History and Joint Professor of Anthropology at the University of Florida. Professor Deagan explored this topic by contrasting the Ibero-American and the Anglo-American colonial experiences in three public lectures and an open seminar under the general title, "Colonial Ethnogenesis and Cultural Identity in the Americas."

In her first lecture, "Medieval America, 1493–1498: Archaeology of La Isabela, First European Town in the New World," Deagan reported on her excavations at Columbus' colony established in what is now the Dominican Republic. The short-lived, self-sufficient community of La Isabela was laid out on a purely Medieval European model. In contrast, the Spanish community at St. Augustine, described in Deagan's second lecture, "From Contact to Criollo: The Emergence of Spanish-American Society in Post-Columbian America," was established following developments rooted in the European Renaissance. Deagan demonstrated that the material record at St. Augustine and other post-Columbian

Spanish colonies reflects a high degree of cultural integration among Ibero-American, native American, and Afro-American elements. In her final lecture, "Ethnic Stew or Melting Pot? Comparative Archaeological Perspectives on Anglo-American and Ibero-American Colonial Transformations," and in her open seminar on the same topic, chaired by Kathryn Bard of the Department of Archaeology, Deagan contrasted the Ibero-American model of cultural fusion with the Anglo-American record of cultural exclusion. Deagan sought to locate the differences in these two colonial trajectories within the contrasting *Zeitgeists* of Spain and Britain. She maintained that the Ibero-American cultural fusion was conditioned by Moorish and even Roman interventions in Spain, while the origin of the British experience is to be understood in the delayed influence of the Enlightenment on England.

The lectures were based on results of research conducted by Deagan over the past twenty years. Since 1979 she has directed an impressive program of archaeological investigations in the Caribbean, at sites in Haiti, the Dominican Republic, Honduras, and Panama, as well as a research and training program in historical archaeology in St. Augustine since 1973. She is the author of five books and more than sixty scientific papers, including *Spanish St. Augustine: The Archaeology*

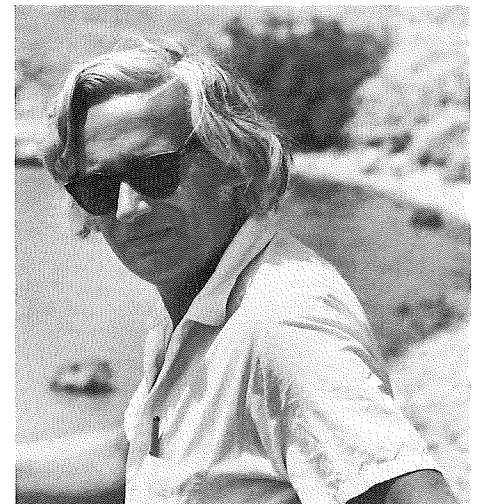
of a Colonial Creole Community (1983), *Artifacts of the Spanish Colonies* (1987), and *Puerto Real: A Sixteenth-Century Spanish Town in Hispaniola* (1995). Deagan is a past President of the Society for Historical Archaeology and serves as a consultant on Latin American historical archaeology for UNESCO.

The Context and Human Society Lectures of the Center for Archaeological Studies are made possible by grants from the Humanities Foundation of the College of Liberal Arts.

Thomas W. Jacobsen, Professor Emeritus at Indiana University, Program in Classical Archaeology, visited the Archaeology Department for several days this past December. He participated in a round-table session on the state of archaeology in Greece with Professors Julie Hansen, Murray McClellan, and James Wiseman. Numerous faculty and students from Archaeology, Art History, and Classics joined in the lively discussion of such topics as the role of survey versus excavation for the future of archaeology in Greece. In addition, Professor Jacobsen led the Aegean Prehistory seminar (AR712) in discussions of the role of Franchthi Cave in the early prehistory of Greece. He was director of these excavations from 1967 through 1976 and is the editor of the series of publications on the site, nine volumes of which have been published.



Professor Deagan (far right) shares a pleasant moment at a reception in her honor with (left to right) graduate students, Alan Kaiser and Brenda Cullen, and Professor Murray McClellan.



Professor Jacobsen standing above the bay at the site of Franchthi Cave.

Archaeology Faculty Honored

Hammond Receives Press Award

Norman Hammond, Professor of Archaeology, who has been Archaeology Correspondent of *The Times* of London since 1967, was the first recipient of the new Press Award for the Archaeological Journalist of the Year at the British Archaeological Awards ceremony held in York, England, on November 24, 1994. Established in 1977, the Awards recognize significant achievements in British archaeology, including outstanding excavations and discoveries, meritorious sponsorship and public presentation of projects, and the best archaeological book of the past two years. The 1994 Press Award, for the best reporting of archaeology in the UK over the period 1992–1994, was given to Hammond “for consistently high quality writing on archaeology,” the citation said. Hammond’s 1,000th article for *The Times* appeared this summer, and his recent coverage included a world-exclusive ‘scoop’ on the discovery of Boxgrove Man, the 500,000-year-old hominid from Sussex dubbed “the earliest European.” The trophy and a check for £1,000 were presented by Lord Montagu of Beaulieu, former Chairman of English Heritage and the new President of the British Archaeological Awards.

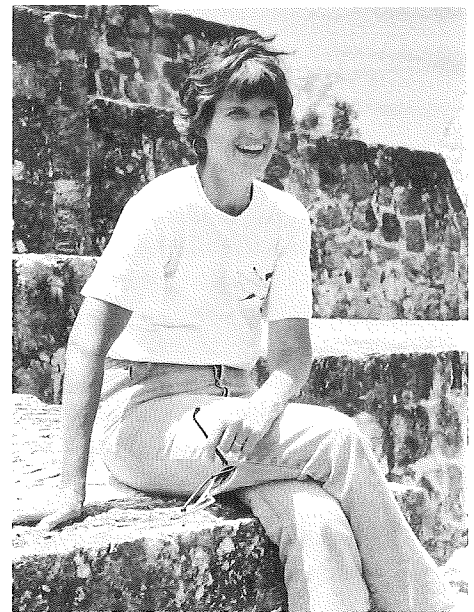


Lord Montagu of Beaulieu (left), President of the British Archaeological Awards, presents Norman Hammond with his trophy and a check for £1,000 during a ceremony at York, England.

Coggins Honored by USIS

Clemency Chase Coggins, Adjunct Professor of Archaeology and Art History, who served eleven years on the Cultural Property Advisory Committee, received an Award for Outstanding Service from the United States Information Service Agency in January 1995. The award was given, as cited on the award certificate, “For invaluable service as a member of the Cultural Property Advisory Committee since its inception in 1984 and for providing the committee with a scholarly understanding of the importance of pre-Hispanic cultures in the western hemisphere, as well as contributing immeasurably to our overall objectives in implementing the 1970 UNESCO Convention.”

Professor Coggins has been dedicated to the cause of passing legislation that would not only help protect the cultural heritage of the United States but also other countries around the world. She has served as Vice President of the International Cultural Property Society since 1991, and as an Academic Trustee of the Archaeological Institute of America since 1988. In 1980, Coggins received an award for her outstanding contributions from the American Society for Conservation Archaeology.



Professor Coggins sits on the steps of a Maya building at Edzna Campeche, Mexico.

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lowland of the floodplain during the Neolithic and Bronze Age. Floodplain alluvium from the Yellow River, however, buried most of the Neolithic and Bronze Age remains to the depth of ten meters, removed them from view, and made them undetectable with conventional survey and excavation techniques, limiting our knowledge of the cultural history of Neolithic and Bronze Age in the area.

Our study provides another example of the potential for geoarchaeological study to be dynamically integrated into archaeological investigations through focusing on the stratigraphic and landscape contexts of sites as fundamental dimensions of archaeological sites. A major publication on the study has been accepted for publication in the journal, *Geoarchaeology*.

The search for the Great City Shang will continue through multidisciplinary efforts of archaeologists, geologists, and geophysicists. We expect to go back to the field in the coming spring.

George (Rip) Rapp, Jr. is Professor of Geology and Director of the Archaeometry Laboratory at the University of Minnesota, Duluth, and is a Research Fellow in Archaeology at Boston University. Zhichun Jing is a Post-Doctoral Fellow in Geoarchaeology at the University of Minnesota, Duluth.

People and the Changing Landscape in Southern Epirus, Greece

by James Wiseman

The fourth and final season of field work of the Nikopolis Project was carried out in the summer, 1994. The principal aims of this interdisciplinary project are the characterization and explanation of interactions between human societies and the landscape of southern Epirus (Greece) from earliest times to the Mediaeval period. The geologic and archaeological investigations, aided by laboratory analyses, have been conducted annually, beginning in 1991, by an international team of scholars and students, including a Boston University Field School in 1992–1994. Previous reports have appeared in Context 9:3–4 (1991–1992) 1–7, 10:3–4 (1992–1993) 11–15, and 11:1–2 (1993) 1–4. The author is Co-Director of the Project with Kostas Zachos of the 12th Ephoreia of Prehistoric and Classical Antiquities of Greece.

Intensive archaeological survey at urban sites was added to the roster of activities of the Nikopolis Project in June and July 1994, bringing to a close four seasons of interdisciplinary field work. Almost the entire walkable area of the large (ca. thirty-three hectares) fortified town of Kastri in the lower valley of the Acheron River was surveyed by project teams, who also sampled with the same methodology three other fortified towns: Palaiorophoros, Kastro Rizovouni, and Kastro Rogon. Geologic coring, geomorphologic investigations, and geophysical prospection were undertaken along with the urban surveys and with the surface survey aimed at sampling all environmental zones of the region.

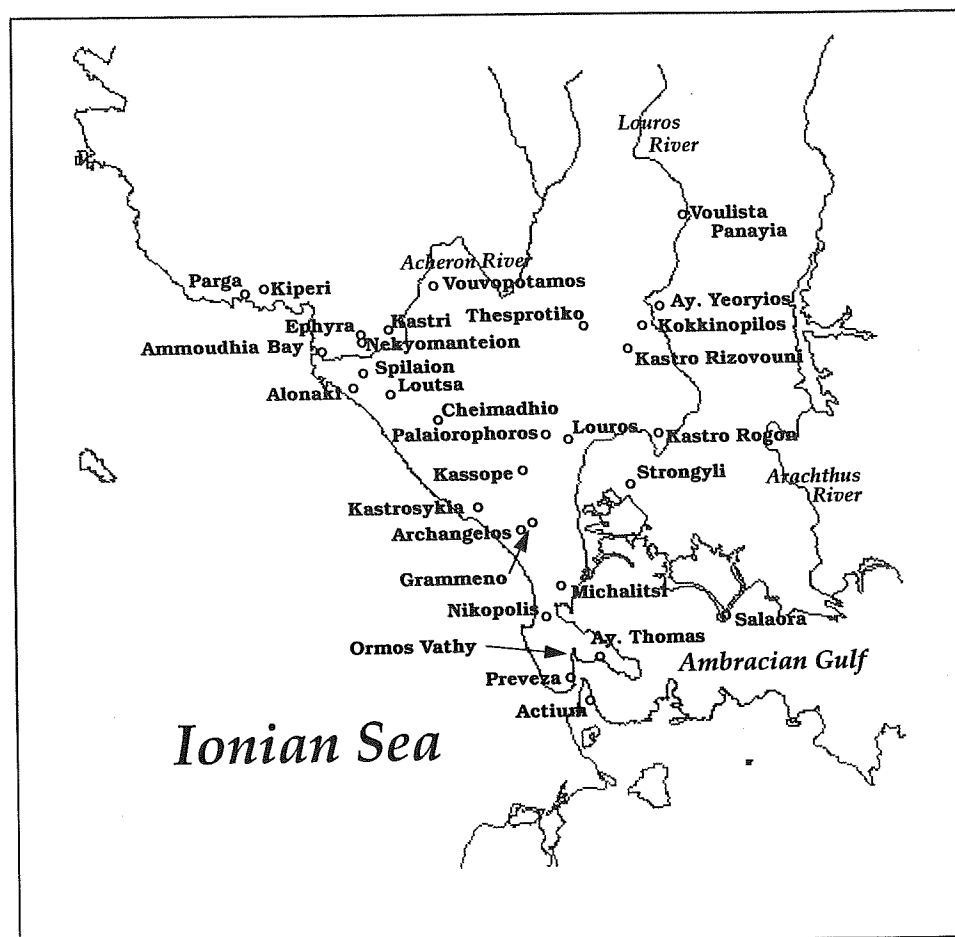
At Kastri, a site surrounded and capped by strong walls of handsome polygonal masonry, survey teams recovered thousands of cultural artifacts and identified extensive architectural remains, thereby making possible a new, more detailed map of the town. Their work also provides data for a close analysis of the relation between sections of the town and the number, as well as kind, of artifacts found there. Field-walkers, following lines five meters apart, surveyed consecutive and contiguous tracts over the entire site, recording total artifact counts and collecting diagnostic pieces every thirty meters. The density maps now being prepared will make possible a correlation of artifact type, density, and chronology

with architectural complexes. Although the cultural remains collected belong primarily to the Hellenistic and Roman periods, artifacts were also recovered that date as late as the Mediaeval period and as early as the Bronze Age.

The ancient name of Kastri is uncertain. Sotirios Dakaris, a Greek

archaeologist, considers it to be Pandosia (see Strabo vi.1.5), a town originally founded by colonists from the Peloponnesian city of Elis. N.G.L. Hammond, British historian and topographer, identifies Pandosia with Trikastron, a site high in the narrow gorge of the upper Acheron.

Kastri rises now from the flat plain of the Acheron River, which flows west past the foot of a long ridge on which are located both Ephyra, a Late Bronze Age citadel, and another fortified hilltop identified by Dakaris as the Nekomanteion, or Oracle of the Dead. From there the river continues west another four kilometers to empty into Ammoudhia Bay. In antiquity, however, as geologic investigations by the Project have shown, the now shallow bay at Ammoudhia, known then as Glykys Limen ("Sweet Harbor"), extended all the way to the ridge of Ephyra and even beyond, its waters perhaps washing onto the base of Kastri. Beginning at least by Roman times, long-shore deposition filled up much of Glykys Limen,



Map showing selected sites in the survey zone of the Nikopolis Project. The map was digitized by Brenda Cullen.



Tom Tartaron (center), survey team leader, and some of his team members consult a topographic map during field work in 1994. The surveyors are (left to right) Kathryn Montgomery (Boston University) and Mely Do (University of Pittsburgh), Boston University Field School students; Tartaron; Betty Banks of Spokane, a FRIEND OF THE NIKOPOLIS PROJECT; and Alan Kaiser, a graduate student in archaeology at Boston University. Photograph by Michael J. Hamilton.

Hellenistic and Roman times, although there is evidence for occupation at Ephyra itself, human activity was focused on the strongly fortified complex at the southern end of the ridge, which we noted above has been identified by Dakaris as the Oracle of the Dead. That identification, however, has been disputed in recent years. The Project's continuing analysis of the changing landscape in that area may be able to contribute to the confirmation or refutation of the identification.

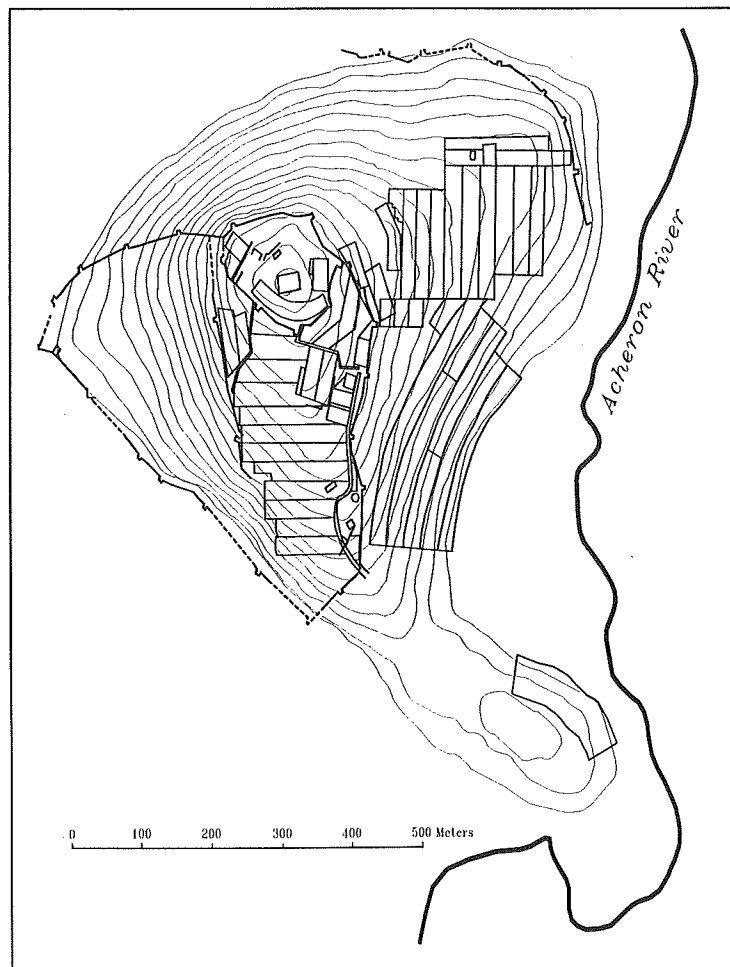
Settlements of different time periods, both prehistoric and historical, were found on several of the elevations and promontories that delimit the valley of the lower Acheron, and all were surveyed either for the first time or were revisited in the 1994 campaign. Koumasaki promontory on the coast south of Ammoudhia, which had first been explored by Project staff in 1992, proved to be particularly important because of the long range of human activity attested by cultural remains recovered in 1994.

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eventually reducing to its current size the once broad bay. Lake Acherousia (now dried up) succeeded the portion of the bay that lay in part between Ephyra and Kastri after the Bronze Age, perhaps as late as the eighth-fifth centuries B.C. Mark Besonen, a geologist working with senior Project geologist George (Rip) Rapp, took fifteen geological cores in the Acheron River valley in 1994 and is now working with Rapp at the University of Minnesota, Duluth, on a geologic history of Lake Acherousia and its relation over time to the Glykys Limen.

Both coastal regions and elevations on the periphery of the lower Acheron River received much additional attention from survey teams and geologists in the 1994 season. The ridge of Ephyra/Nekyomanteion, for example, was thoroughly explored, and intensive surface survey yielded significant results regarding patterns of exploitation. The Late Bronze Age settlement was centered on the acropolis of Ephyra, where enclosure and/or terrace walls of Cyclopean masonry (similar to the walls of Mycenae) are preserved, and on the western slope of the ridge. In

Map of Kastri on the Acheron River, showing contour lines at five-meter intervals (light), survey tracts (heavier lines), and fortification walls both of the upper and lower sections of the town. Map and data digitized by Brenda Cullen and Rudi Perkins.





View from near the mouth of the Acheron River at Ammoudhia Bay (left, foreground). Modern houses visible in the distance mark the slopes of the long ridge of Ephyra (left) and the Nekyomanteion (right). Kastri is shrouded in haze behind the latter. Photograph by James Wiseman.

The Nikopolis Project

The Nikopolis Project is a joint American-Greek project of the Department of Archaeology, the Center for Archaeological Studies, and the Center for Remote Sensing of Boston University in cooperation with the 12th Ephoreia of Prehistoric and Classical Antiquities, directed by Angelika Dousougli, and the 8th Ephoreia of Byzantine Antiquities, directed by Frankiska Kephallonitou. The Project is sponsored in Greece by the American School of Classical Studies at Athens.

Funding for the Nikopolis Project in 1994 was provided by a grant from the Institute for Aegean Prehistory and contributions by a number of private individuals, THE FRIENDS OF THE NIKOPOLIS PROJECT. Equipment for geophysical and topographic survey and for aerial photography, as in previous years, was provided through grants by the W. M. Keck Foundation to the Center for Remote Sensing. Autodesk Inc. gave the Nikopolis Project copies of its superb drawing program, AutoCAD, Version 12, for each of the three computer platforms used by the Project: Macintosh, DOS, and UNIX. Trimble Navigation Company lent the Project two Global Positioning System devices for the 1994 season. The Apple Computer Corporation contributed four computers—two Quadra 950s and two PowerBook 160s—to the Project in 1993 that continue to serve many of the computing needs of the Project, both in Greece and in Boston. Logistical aid and other assistance were provided by the 12th Ephoreia of Prehistoric and Classical Antiquities in Ioannina, Greece, and by the Demarcheion (Mayor's Office) of Preveza. The Archaeometry Lab of the University of Minnesota, Duluth, provided substantial aid in personnel time and support for analyses. Boston University provided financial and logistical support through its Office of International Programs, which sponsored the Field School, and the Department of Archaeology, where the Project's facilities are based. The help and contributions of all are acknowledged with deep gratitude by the entire staff of the Project.

Funding for 1995

The Nikopolis Project is pleased to announce that the Institute for Aegean Prehistory has awarded the Project a grant of \$24,427 for 1995. Additional financial support for 1995 is provided by THE FRIENDS OF THE NIKOPOLIS PROJECT.

The Nikopolis Newsletter

The *Nikopolis Newsletter* is an annual publication of the Center for Archaeological Studies intended for THE FRIENDS OF THE NIKOPOLIS PROJECT, sponsors, and other persons interested in the activities of the Nikopolis Project. Issue No. 4 contains a longer report on the 1994 season with additional illustrations, as well as a full list of staff and members of the Boston University Field School. Readers of *Context* may obtain a complimentary copy of *Nikopolis Newsletter* No. 4 and information on becoming a FRIEND OF THE NIKOPOLIS PROJECT by writing to Lucy Wiseman, Managing Editor, Center for Archaeological Studies, Boston University, 675 Commonwealth Avenue, Boston, MA 02215.

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Stone tools characteristic both of the Upper Palaeolithic and the Neolithic were found, as well as sickle elements with silica gloss, suggestive of agriculture, that may date to the Middle Bronze Age, according to Curtis Runnels and Lia Karimali. The pottery from Koumasaki dates almost exclusively to the Middle and Late Bronze Age, including some sherds from fine wheel-made vessels that may be imported Mycenaean ware. The Neolithic stone tools from Koumasaki and several other sites in the lower Acheron valley discovered in 1994 were the first of that time period to be securely identified in the survey zone. Among the diagnostic stone tools are triangular arrowheads and large bifacial reaping knives.

The most important site of the historical period discovered in 1994 was in an upland plain nested in the mountains south of the Acheron valley, near the modern village of Cheimadhio. There, near the Church of the Panayia, survey teams found extensive traces of a settlement dating from at least Hellenistic times to Late Antiquity, including a funereal stele with raised Greek letters identifying the grave of Lysipolios. The stele had been known for many years to the villagers of Cheimadhio, some of whom mistakenly took the inscription to designate the name of the ancient town. As a result, a coffee shop fronting onto the *plateia* of the village has been named Lysipolios, in proud commemoration of the ancient inhabitants of the region!

The survey in 1994 resulted in the discovery of additional Middle and Upper Palaeolithic sites, including a

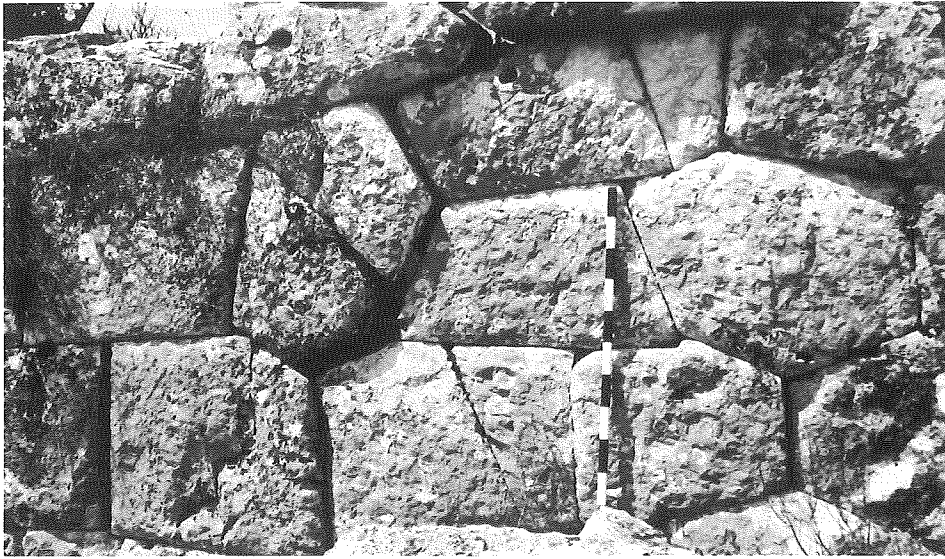
Faculty News

Kathryn Bard gave two invited lectures at the Instituto Universitario Orientale di Napoli (Italy) on March 6 and 8 entitled "Theories on the Origin of the State" and "Mortuary Analysis of Predynastic Cemeteries in Upper Egypt." The lectures were given as part of the affiliation agreement for research between Boston University and the I.U.O., Naples. In September, Bard chaired a panel that she had organized, "Environmental History of Early Aksum," at the XIIth International Ethiopian Studies Conference held in East Lansing, Michigan. She presented two papers at this meeting and also gave a lecture with her Italian colleague, Professor Rodolfo Fattovich, on their recent excavations at Aksum, Ethiopia, to the Department of Anthropology, University of Michigan, Ann Arbor.

Bard has received a grant from the National Geographic Society for excavations at two sites in the Aksum, Ethiopia region: OAZ, the cemetery where work began in 1993; and Ona Negast, the settlement associated with this cemetery.

Mary C. Beaudry was awarded a National Endowment for the Humanities Fellowship for Advanced Study at the Henry Francis du Pont Winterthur Museum and Library for September 1994 through January 1995, where she began research for a book on the artifacts of needlework and sewing. In January Beaudry attended the annual meetings of the Society for Historical Archaeology in Washington, D.C., where she presented a paper, "Definitions of Culture and Their Impact on Practice in Historical Archaeology," in the conference's plenary session and served as discussant for two symposia. She is spending the spring semester of 1995 as a Visiting Professor in the Department of Archaeology and Prehistory at the University of Sheffield, where she is offering two series of lectures on "The Archaeology of Colonialism" and "Landscape Archaeology in the United States." While in England

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Polygonal masonry in the fortification wall of Kastri. Photograph by James Wiseman.

stratified Middle Palaeolithic site in the same upland plain near Cheimadhio. The plain here, in fact, is more properly a *polje*, a geologic term used to identify enclosed regions that lack drainage, so that they often contain seasonal lakes or marshy areas. Curtis Runnels and Tjeerd van Andel have noted that several *poljes* in our survey zone are associated with Middle Palaeolithic sites, and that they may have been attractive in part because of the seasonal availability of water, as well as other resources, such as raw material for stone tools. In order to work out the history of these sediments in greater detail, laboratory analyses of the sediments are required. Dr. Li-Ping Zhou of the Godwin Laboratory at the University of Cambridge joined Runnels, van Andel, and other members of the prehistoric survey to take thirty-nine geological samples from stratified Pleistocene sediments at seven Palaeolithic sites. Laboratory work will include sedimentological analyses, uranium/thorium dating, thermoluminescence dating, and analysis for magnetic susceptibility.

Archaeological survey and geologic investigations were also conducted in several other areas of the survey zone in 1994. Of particular interest was the discovery of three new Mesolithic sites, characterized by microlithic tools, on the Ionian shore west of modern Preveza. The number of Mesolithic sites identified by the Nikopolis Project has now grown to

six: prior to the Nikopolis Project the only Mesolithic site known in northwestern Greece was on the island of Corfu. Geologic cores and geomorphologic studies continued in 1994 and are aiding our reconstruction of the ancient shorelines both of the Ionian coast and the north shore of the Ambracian Gulf. And new sites of historical periods, especially Roman and Late Antique, were identified on the Ayios Thomas peninsula east of Preveza.

The staff is now turning to the study and analysis of the material and the data recovered, and to the preparation of publications of the results. Laboratory analyses are now underway at the Archaeometry Lab of the University of Minnesota, Duluth, and at Godwin Laboratory of the University of Cambridge, where two pollen cores are being analyzed in addition to the samples already mentioned. Senior staff will return to Greece during the summer of 1995 both to study the artifacts recovered, all of which are stored in the Archaeological Museum in Ioannina, and to revisit the survey zone for additional observations. And manuscripts are in progress on the final results of the Project. Volume 1, it is hoped, will be published within the year.

James Wiseman is Chairman of the Department of Archaeology and Director of the Center for Archaeological Studies at Boston University.

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Beaudry also will lecture on New World historical archaeology at the University of Bradford and the University of Durham. Beaudry has recently been appointed to a five-year term on the editorial board of the journal *Rural History: Economy, Society, Culture*, published by Cambridge University Press.

Clemency Chase Coggins taught a seminar for graduate students and faculty for three months (February–May 1994) in the Instituto de Estudios Antropológicos of the Universidad Nacional Autónoma de México, Mexico City; during the March Easter break she visited the Boston University excavations at La Milpa, Belize. In September she delivered a paper, "The Licit International Trade in Art—Let there be Light," at a Congress of Law and the Art Trade in Vienna. During 1994 Coggins became a member of the editorial board of *Res: Anthropology and Aesthetics*, and her articles and reviews were published in *American Anthropologist*, *Current Anthropology*, *Journal of Field Archaeology*, *Arqueología Mexicana*, and *Memorias del Primer Congreso Internacional de Mayistas*.

Research Fellow **Lorinda Goodwin** co-authored a paper with Jeffrey Brain entitled "...the rest followed & labored hard in the trenches...": Excavations at Fort St. George, the British Colony." Goodwin also co-authored with Brain a paper entitled "Fort St. George: The 1607 British Colonization on the Kennebec River in Maine" at the annual meeting of the Society for Historical Archaeology held in Washington, D.C. on January 4–8, 1995.

On March 31, **Kenneth L. Kvamme** presented a paper entitled "Randomization Methods for Statistical Inference in Raster GIS Contexts" in the plenary session of the Computer Applications and Quantitative Methods in Archaeology meetings, which were held in Leiden, the Netherlands. Kvamme directed a workshop on May 3, 1995, entitled "GIS for Personal Computers: A Hands-on Workshop," at the annual meeting of the Society for American Archaeology in

Minneapolis, Minnesota.

Norman Hammond gave the Inaugural Lecture in January 1995 at the British Museum to celebrate the opening of the new Mexican Gallery, which for the first time placed the Museum's major Aztec and Maya treasures on permanent display in London. The British Museum has supported Hammond's fieldwork in the Maya area of Central America for more than 25 years, and its collections include many of his finds, donated by the Government of Belize.

Hammond was also among a group of Mexican and European scholars invited to a symposium in February 1995 to mark the inauguration of the Mexican Gallery. The gallery was donated by the Government of Mexico, and speakers from the Museo de Antropología and the Instituto Nacional de Antropología e Historia were among the participants in the two-day conference. European specialists in Mesoamerican archaeology were also invited, to mark Britain's place in the European Union. Hammond spoke on "A Tale of Two Cities: Maya Archaeology at Cuello and La Milpa, Belize," two recent projects in which Boston University students have taken part during the Field Study in Archaeology program.

During the summer of 1995, **Julie Hansen** spent four weeks working at the prehistoric site of Konispol Cave in southern Albania. The site is being excavated under the direction of Professor Karl Petruso of the University of Texas at Arlington, and Professor Musafër Korkuti, of the Institute of Archaeology in Tirane. It covers a time span from approximately 20,000 B.P. to about 2,800 B.P.

Hansen also spent two weeks in Ancient Corinth, Greece, to water-sieve sediments from several dining areas at the Sanctuary of Demeter and Kore, which was excavated by Dr. Nancy Bookidis. The plant and animal remains from this site will provide information on the types of foods that were consumed at the ceremonies, as well as some indication of the seasons of the year that the rituals were carried out. She spent the last two weeks of July in Cyprus sorting

the plant remains from the Late Bronze Age site of Kalavassos-Ayios Dhimitrios, excavated by Alison South. Judging from the processing and storage facilities uncovered, this large administrative center and city produced large quantities of olive oil.

While in Greece, Hansen participated in a workshop on science and archaeology organized by members of the Wiener Laboratory at the American School of Classical Studies in Athens. The workshop brought together specialists in zooarchaeology, palaeoethnobotany, geoarchaeology, physical anthropology, and biochemistry to discuss with excavators from across Crete ways in which the specialists and archaeologists can work more closely together to answer some of the major questions in Aegean prehistory.

During the summer of 1995, Hansen will participate in the excavations at Ona Negast, in the Aksum, Ethiopia region, which are directed by Professor Kathryn Bard. Hansen will set up a flotation tank and process samples from the site, as part of the first study of excavated plant remains in northern Ethiopia.

Murray C. McClellan continued his investigation of the late Roman settlement at Kalavassos-Kopetra, Cyprus, with a six-week study season in the summer of 1994. He also participated in the Maroni Valley Project in Cyprus, where he studied the glass artifacts from the late Roman site of Maroni-Petrera. In October McClellan presented an invited paper, "Where Have All the Farmers Gone? The Cypriot Countryside in the Seventh to Tenth Centuries A.D." at the University of Albany's Institute for Cypriot Studies in a conference entitled "Visitors, Immigrants, and Invaders in Cyprus." Boston University's Humanities Foundation announced in March that it had awarded McClellan a Junior Fellowship for 1995–1996. During the tenure of his fellowship, which includes release from college duties during the fall term, he will work on the report of his excavations on Cyprus and complete a study of luxury goods in Classical Greece.

In December 1994, **Curtis Runnels'**

most recent book was published by Stanford University Press. *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day*, written with Michael H. Jameson and Tjeerd van Andel, is a final report on the survey of the Argolid peninsula of southern Greece (the Argolid Exploration Project), which they carried out between 1979 and 1983. The survey revealed an archaeological record that spanned more than 50,000 years, with surprising periods of cultural collapse that punctuated the long history of human settlement. Another finding of the survey was evidence for the devastation of the natural environment by human activities during the last 8,000 years. The destruction of the environment was recorded in four phases of erosion that stripped the soil necessary for agriculture from the slopes of the hills and deposited it in the valley bottoms, where it buried contemporary settlements. A book on the Argolid Project for general readers was published earlier by Runnels and van Andel (*Beyond the Acropolis: A Rural Greek Past*, Stanford University Press, 1987), and a third volume on the project, edited by Runnels, Daniel Pullen, and Susan Langdon, will be published by Stanford in June 1995. This volume, *Artifact and Assemblage: The Finds from a Regional Survey of the Southern Argolid, Volume 1: The Prehistoric Pottery and the Lithic Artifacts*, reports on the findings made by the specialists who studied the artifacts recovered in the survey.

A related publication is Runnels' article in the March issue of *Scientific American* (vol. 272, no. 3, pp. 72-75) titled "Environmental Degradation of Ancient Greece." This article grew out of research conducted as part of the Argolid Exploration Project, and was given first as a series of lectures when Runnels was a National Lecturer for Sigma Xi, the National Research Society, from 1991 to 1993.

In September, Runnels attended a conference titled "The Palaeolithic of Greece and Neighboring Regions" held in Ioannina, Greece. This conference was the first international conference ever held on the subject of the Greek Palaeolithic and it marks the beginning of a new era of research on

the subject. Professor Runnels gave papers on the Palaeolithic of the Preveza region (part of the joint American-Greek survey project directed by Professor James R. Wiseman and Dr. Kostas Zachos) and on his Palaeolithic survey of Thessaly.

Runnels was on sabbatical leave during the fall term when he was a Visiting Fellow of the new McDonald Institute for Archaeological Research at the University of Cambridge, England. During his time in Cambridge he completed a paper commissioned by the editors of the *American Journal of Archaeology*: "The Stone Age of Greece from the Palaeolithic to the Advent of the Neolithic." One highlight of his busy sabbatical was being a guest at the formal opening of the McDonald Institute by HRH the Prince of Wales.

The Society of Antiquaries of London has awarded Professor Runnels a grant for research during June 1995 on the prehistoric finds from Boston University's Nikopolis Project in Epirus, Greece. Runnels was also invited to give the Eleventh Marjory Stoneman Douglas Lecture at Wellesley College on May 10, 1995. The lecture series is named in honor of Mrs. Douglas, a writer and conservationist, now 104 years old, who is best known for her 1947 book, *The Everglades: River of Grass*, and her lifelong efforts to preserve the Florida Everglades. The title of the lecture is "The End of the Golden Age? Environmental Catastrophes in Ancient Greece."

James Wiseman, Chairman of the Department of Archaeology, gave a plenary address at the international conference, "Science and Archaeology: Towards an Interdisciplinary Approach to Studying the Past," which was held at Harvard University, October 14-16, 1994. The title of his presentation was "Reflections on Archaeology as An Academic Discipline," which will be published in the proceedings of the conference. He also participated in a panel discussion devoted to a retrospective on the observations and concerns of participants in a workshop on science in archaeology that was conducted in 1982 by the Center for

Materials Research in Archaeology and Ethnology (CMRAE). The panel discussion was chaired by Professor Heather Lechtman of MIT, who has served as the Director of CMRAE since its creation. In January Wiseman gave a lecture entitled "The Nikopolis Project, 1991-94: Regional Survey and New Archaeological Technologies in Epirus, Greece," at Societies of the Archaeological Institute of America in Los Angeles, San Diego, and Irvine, California.

Wiseman was appointed last year to the Editorial Board of the *International Journal of the Classical Tradition*, the first issues of which appeared in 1994. The new journal is edited at Boston University by Professors Wolfgang Haase and Meyer Reinhold of the Department of Classical Studies and published by Transaction Periodicals Consortium at Rutgers University.

Wiseman has also accepted the invitation to write a feature column for *Archaeology* magazine. The first installment of the column, which will offer the author's perspectives on archaeological issues and concerns, will appear in the September/October issue of this year, *Archaeology*, which is published by the Archaeological Institute of America, has a readership of over 400,000.

In February 1995 Wiseman received a grant in the amount of \$24,427 from the Institute for Aegean Prehistory for the Nikopolis Project study season to be conducted during June-July 1995. (*For a report on the Nikopolis Project, of which Wiseman is the Co-Director, and the associated Boston University Field School in Epirus, Greece, in the summer of 1994, see pages 18-21 in this issue, where there is also information on other grants and funding for the Project.*)

Paul Zimansky presented a paper at a Table Ronde Internationale during February 1995, at the Université de Toulouse-Lemirail in Toulouse, France. The conference focused on the peoples and countries of the Near East as seen by Xenophon, a Greek military leader and writer active in the fifth-fourth centuries B.C. The title of Zimansky's paper was

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Student and Alumni/ae News

Graduate students and recent graduates of the Department of Archaeology presented papers at two major conferences in historical archaeology in 1994–1995. The annual meeting of the Council for Northeast Historical Archaeology, held in Williamsburg, VA, (October 21–23, 1994), offered a session of papers on Nineteenth-century American Culture, chaired by **Sara F. Mascia** (Ph.D. 1994). Presentations included papers by Mascia entitled "The Changing Agricultural Homelot: The Archaeology of 19th-Century Progressive Farming," and by **Karen Bescherer Metheny** on "Oral Histories from the Workplace: The Historical Archaeology of a Coal Company Town in Western Pennsylvania."

At the annual meeting of the Society for Historical Archaeology in Washington, D.C. (January 4–8, 1995), papers were presented by graduate students **Ann-Eliza Lewis** ("Living on a Cultural Frontier: The Archaeology of African-American Farmers at Casey Farm, Saunderstown, Rhode Island") and **Karen Bescherer Metheny** ("Gathering Independent Lines of Evidence: Oral History and the Historical Archaeology of a Coal Company Town in Western Pennsylvania.") Papers also were presented by several recent graduates, including **Don Jones** (Ph.D. 1994), "Recreating the Wilderness: The Cultural Landscape of Lynn Woods, A Late 19th-Century Public Park in Lynn, Massachusetts;" **Sara Mascia** (Ph.D. 1994), "The Massachusetts

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"Xenophon and the Legacy of Urartu." Zimansky also presented three lectures during October 10–12, 1994, for the Archaeological Institute of America. A lecture entitled "Aerial Reconnaissance at Mar Shipri" was given at two local societies in Iowa City, Iowa, and Monmouth, Illinois. The third presentation, "City of the Grim Reaper," was in Valparaiso, Indiana.

Ploughman: The Influence of Nineteenth-Century Agricultural Journals on New England Farmers;" **David Landon** (Ph.D. 1991), "The Place of Environmental and Ecological Approaches in a Post-Processual Archaeology;" **Nancy Seasholes** (Ph.D. 1994), "How They Did It in Boston: Landmaking Techniques in the 19th Century;" and **Dan Finamore** (Ph.D. 1994), "Into the Woods: Pirate Myths and African Realities in the Construction of the Belizean Past."

Mary Lee Angelini, a Ph.D. candidate, was awarded a Clarimond Mansfield Scholarship by the Humanities Foundation of the College of Liberal Arts for the academic year 1994–1995. During the spring of 1995 she spent six weeks with the archaeological project at K'axob in Belize, which is directed by Professor Patricia McAnany. Angelini serves as director of laboratory activities for the project.

Francisco Estrada Belli, Ph.D. candidate, received a grant from the National Geographic Society in the amount of \$4,940 for his dissertation project in Guatemala to be carried out in the spring of 1995.

Brenda Cullen, a Ph.D. student, has co-edited a book with Lyn Petrie, Ian Johnson, and Kenneth Kvamme entitled *GIS in Archaeology: An Annotated Bibliography* to be published in 1995. The book will be Volume I in a new series on archaeological methods to be published by the Archaeological Computing Laboratory at the University of Sydney (Australia). Cullen, a senior staff member of the Nikopolis Project, also participated in the Project's field work during May–July 1994, in Epirus, Greece.

Michèle Miller, a Ph.D. candidate, presented a paper entitled "The Production of Personal Ornaments and Craft Specialization in the Greek Neolithic" at the Annual Meetings of the Archaeological Institute of America held in Atlanta, Georgia, December 27–30, 1994.

Melissa Moore, a Ph.D. student, was awarded the Alice M. Brennan Humanities Fellowship by the Humanities Foundation of the College of Liberal Arts at Boston University

for the academic year 1994–1995. A senior staff member on the Nikopolis Project, she was also in Epirus, Greece, during May–July, 1994, for the Project's field season.

Akinwumi Ogundiran, Ph.D. candidate, has been awarded a national Social Science Research Council Pre-dissertation Award for \$2,500. Ogundiran will participate in a joint project by Boston University and Instituto Orientale Naples, an

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New Collections for the Library

Professor Anna Benjamin, Professor Emerita of Classics and Archaeology, Rutgers University, recently donated five sets of important archaeological and historical journals to the Department of Archaeology. The journals, which include *Historia* and the *Journal of the American Oriental Society*, have been added to the Stone Science Library, and are now available for use. Professor Benjamin, a former Editor of *Archaeology* magazine, served in numerous positions of leadership in the Archaeological Institute of America and the American School of Classical Studies at Athens. The Department and the library acknowledge with sincere thanks this generous gift.

The Department of Archaeology is also grateful to the Humanities Foundation of the College of Liberal Arts for its support in the purchase of part of Professor Ian Todd's scholarly library. Among the 149 books and thirty sets of journals are included T. J. Arne's *Excavations at Shah Tepe, Iran* (1945), and multi-volume sets of Sir Leonard Woolley's *Excavations at Ur* (1926–1974), and L.C. Watelin and S. Langdon's *Excavations at Kish* (1924–1934). The books and journals will be housed in the Stone Science Library, and are now being catalogued. Professor Todd, who formerly taught at Brandeis University, now resides in Cyprus where he conducted archaeological investigations for many years.

Faculty Appointments, Promotions

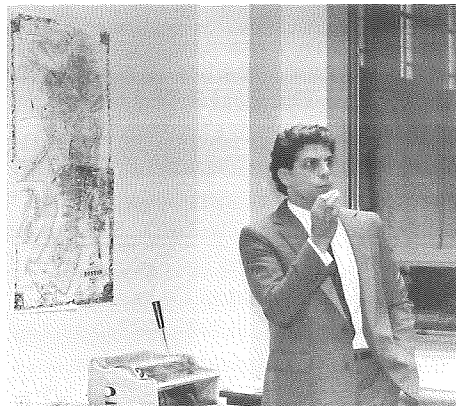
JFA Editorship for Elia

Ricardo J. Elia, former Director of the Office of Public Archaeology, has been appointed Editor-in-Chief of the *Journal of Field Archaeology*, an international quarterly published by Boston University. Elia, who assumed his new responsibilities in January, becomes the third archaeologist to head the prestigious journal. He succeeds Creighton Gabel, who had been Editor-in-Chief since 1985, and James Wiseman, who founded the journal in 1974 and edited it for its first twelve years. Al B. Wesolowsky, who was Managing Editor of the *JFA* during the tenure of both previous editors, will continue in his important post.

Elia commented regarding his new post, "Becoming Editor-in-Chief of the *Journal of Field Archaeology*, one of the foremost archaeological journals in the world, is both a personal thrill and a professional challenge. I am honored to take on an editorship that was previously held by two distinguished archaeologists and colleagues, and I look forward to continuing the *Journal's* tradition of publishing first-rate archaeological papers."

Elia, who was appointed Associate Professor of Archaeology in September 1994, will also have an active teaching role in the Department of Archaeology, for which he previously taught at least one course annually as an Adjunct Associate Professor. Current plans include further development of the Department's M.A. program in Archaeological Heritage Management, which he initiated two years ago, in addition to regular course offerings such as AR575 Archaeological Administration, Ethics and the Law. Elia also writes "Profiles of the Past," a regular feature in *Context*.

Elia served (1982–1994) as Director of the Office of Public Archaeology (OPA), a unit of the Center for Archaeological Studies. Under his leadership the OPA earned a reputation for the high quality both of its field work and its written reports



Ricardo Elia lecturing on urban archaeology in Boston.

involving more than a hundred archaeological contracts in New England. Some particularly significant projects include work at the alms house cemetery at Uxbridge; Fort Griswold, a Revolutionary War site in Connecticut; and the initial archaeological work in downtown Boston in connection with the Central Artery project.

After receiving his B.A. in Classics at Boston University in 1973, Elia earned an M.A. at The Ohio State University before returning to Boston University for a Ph.D. in Classics, with a concentration in archaeology (1982). He also attended the American School of Classical Studies at Athens and gained archaeological field experience abroad at Stobi in Yugoslavian Macedonia. Before joining the OPA Elia had participated in numerous archaeological projects in New England, including Boston University's work at the earliest glass factory in the United States in Temple, New Hampshire.

Elia's interests include archaeological heritage management, the antiquities market, and archaeological ethics. He has published several articles on these topics in professional journals and the popular media. He co-edited (with Al B. Wesolowsky) *Archaeological Excavations at the Uxbridge Almshouse Burial Ground in Uxbridge, Massachusetts* (BAR International Series 564, 1991) and is currently editing *Archaeological Heritage Management: An Encyclopedia* for Garland Publishing Company.

Administrative Post to Hansen

Julie Hansen, Associate Professor of Archaeology, was appointed Associate Chair of the Department of Archaeology in September 1994 by Dennis Berkey, Dean of CLA/GRS, and James Wiseman, Chairman of the Department. In this newly created post, Professor Hansen is working closely with the Chairman in the general administration of the Department, and has been asked to take on several responsibilities, ranging from course assignments and scheduling to development of instructional facilities.

Hansen also was notified in March 1995 that she is the recipient of a prestigious fellowship from the Near and Middle East Research and Training Program of the American Center of Oriental Research in Amman, Jordan. Hansen, who will be on sabbatical leave in the spring term next year, will be working on a major publication on the palaeoethnobotany of the Mediterranean basin while holding the fellowship in Amman during the spring and summer of 1996.



Julie Hansen reviews slides for a class lecture.

Hansen joined the Department in 1985, recruited directly from Cyprus where she held a Fulbright Fellowship at the Cyprus American Archaeological Research Institute. She had also been a Research Associate in the Classical Archaeology Program at Indiana University (1980–1985) and in the Department of Botany at the University of Manitoba. She was educated at the University of Wisconsin
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(B.A. 1972), where she majored in Archaeology–Anthropology, and at the University of Minnesota, where she received an M.A. (1975) and Ph.D. (1980) in Classical Area Studies: Archaeology.

Hansen has received several awards and grants during her career at Boston University, including a NEH University Teachers Fellowship in 1990–1991. She regularly teaches courses in Aegean prehistory as well as several courses with significant laboratory components. She is internationally known for her work in palaeoethnobotany, and is the author of *The Palaeoethnobotany of Franchthi Cave* (Indiana University Press, 1991).

Tenure, Promotion for McAnany

Patricia A. McAnany was awarded tenure and promotion to Associate Professor of Archaeology, effective September 1994. Professor McAnany has regularly taught courses both on the undergraduate and graduate level in Precolumbian archaeology and quantitative methods. She is also well known to Boston University undergraduates as an admired teacher of AR100 Great Discoveries in Archaeology. She often heads a Boston University field school during spring terms, as she is doing this year, at the site of K'axob, Belize, where she directs a major archaeological excavation.



Professor McAnany (second from right), Director of the excavations at K'axob, Belize, examines an artifact at the site with a student from Boston University observing.

McAnany studied at the University of Alaska, Anchorage (B.A. 1978), and received her Ph.D. in Anthropology from the University of New Mexico in 1986. She held the prestigious Charles P. Taft Post-Doctoral Fellowship at the University of Cincinnati before joining the Department of Archaeology at Boston University as Assistant Professor in 1987. She was a Fellow in the Center for Precolumbian Studies at Dumbarton Oaks in Washington D.C. (1992–1993) and has received NSF fellowships for her research in Belize. Her many publications include a book, *Living with the Ancestors: Kinship and Kingship in Ancient Maya Society*, published in 1994 by the University of Texas Press, and a co-edited book in 1989 with Barry L. Isaac entitled *Prehistoric Maya Economies of Belize*, published by the JAI Press in Greenwich, Connecticut.

Beaudry To Be Graduate Advisor

Mary C. Beaudry, Associate Professor of Archaeology and Anthropology, has been appointed Director of Graduate Studies in Archaeology by Department Chairman James Wiseman. Professor Beaudry succeeds Creighton Gabel, who has headed the graduate program since the Department was founded in 1982.

Professor Beaudry is one of the founding members of the Department of Archaeology, having joined Boston University as an assistant professor in 1980 when Archaeological Studies was an Interdepartmental Program before becoming a department. She has been a member of the Graduate Studies Committee since its inception, and has annually supervised M.A. and Ph.D. work by students in New World historical archaeology, in addition to teaching both undergraduates and graduates.

Beaudry did her graduate work in anthropology and archaeology at Brown University (Ph.D. 1980) after completing a B.A. at the College of William and Mary. She is a former President of the Society for Historical Archaeology, and is the Editor-in-Chief of the journal *Northeastern Historical Archaeology*. She is the

author (with Stephen A. Mrozowski and Grace Ziesing) of *Living on the Boott": Historical Archaeology at the Boott Mills Boardinghouses in Lowell, Massachusetts* to be published in 1995 and numerous other publications, including recently, as co-editor with Anne Yentsch, *The Art and Mystery of Historical Archaeology: Essays in Honor of James Deetz* (1992). (For more on Professor Beaudry's current activities, see "Faculty News," pages 21–24.)

Smith Is Visiting Assistant Professor

Joanna S. Smith, Research Fellow in Archaeology since January 1995, has been appointed Visiting Assistant Professor of Archaeology for the fall term, 1995, when she will teach AR330 Greek Archaeology. The appointment was made possible by funds from the Humanities Foundation of the College of Liberal Arts.

Dr. Smith also has been awarded a NEH fellowship for research next spring at the Cyprus American Archaeological Research Institute (CAARI) in Nicosia. Her project is "The Architecture, Stratigraphy, and Use of Space in a Cypro-Achaic Sanctuary in Polis, Cyprus."

Smith received her M.A. (1989) and Ph.D. (1994) in Near Eastern and Classical Archaeology from Bryn Mawr College. Her undergraduate studies (B.A. 1987) were in Classical Archaeology at Princeton University.

Egyptologist Joins Faculty

Stephen E. Thompson, who received his Ph.D. in Egyptology from Brown University in 1991, has been appointed Adjunct Assistant Professor in the Department of Archaeology for the academic year 1995–1996. Thompson is currently a Research Assistant in the Department of Egyptology at Brown, where he has occasionally taught since September 1990. At Boston University, Thompson will teach AR545 Middle Egyptian: Introduction to Language and Hieroglyphs during the fall term, and AR546 Readings in Middle Egyptian Hieroglyphs in the spring.

Lockard Gives Commencement Speech

Angela K. Lockard delivered the student speech at the 1994 Boston University Commencement exercises. She was nominated by Professor Patricia McAnany of Boston University's Department of Archaeology and was selected for the honor by a Boston University committee on the basis of the quality of the written essay she proposed as well as a verbal presentation of the essay to the committee. The speech, which also appeared in Bostonia Magazine, Spring 1995, No. 1, page 28, is printed here in full.

I was a kid who did not like to play in the dirt. So when I told my family and friends that I was going into archaeology, they were pretty surprised. Archaeology is not a typical interest for people in my hometown, Afton, Iowa. Population 980. But it

was my interest. I chose Boston University because it has an excellent department devoted exclusively to archaeology, and that's what I wanted. My parents cried when they left me at Warren Towers. I can understand why, Warren Towers has twice the population of Afton.

In one of my first archaeology classes the teacher gave me a banged up rock, and a bunch of stone flakes and she asked me to put them back together. When I finally had that rock in one piece I saw, step-by-step, how the maker had formed, a chopping tool. I understood that moment so important in prehistory when a person picked up a rock, realized there was a tool inside, and shaped it with intention. I was thrilled. Archaeology had come alive for me. Many of you have had that same excitement here at B.U. when your subject, like that rock, suddenly came together.

As a sophomore I went down to Belize, in Central America, and shov-

eled, dumped, picked, and scraped in the jungle with the snakes and mosquitoes on a Boston University archaeology dig.

In Belize I thought about how the objects we unearthed related to the lives of the people who made them. One day another student found a little, tiny, ceramic, bird whistle just outside the remains of a Maya house. He brushed the whistle off his shirt, put it to his lips, and played three high clear notes. I was awestruck. These were the same sounds heard on that site almost three thousand years ago.

In our surveys of the site we chopped our way through the jungle, over tree roots, under vines, through ancient rock quarries. On one of our last days in Belize I was walking along my survey line and I found: a pyramid, big as a barn, hidden by centuries of jungle growth. To my ever lasting pride and delight this structure is now named, Angela's

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Archaeology Commencement, May 1994

This was one of the largest graduation ceremonies ever held by the Department of Archaeology with thirteen Bachelor of Arts, seven Master of Arts, and seven Doctor of Philosophy degrees being awarded. A gala reception was held after the presentation ceremonies to honor the graduates and their families. Congratulations to all!

Bachelor of Arts

Christopher S. Cotton (Double major with Political Science)
 Scott deBrestian, *Magna Cum Laude*, Phi Beta Kappa, Department Prize for Excellence
 Sean Samuel Downey, *Cum Laude*, Archaeology Work for Distinction
 Leigh Anne Eubanks (Double major with History), *Magna Cum Laude*, Phi Beta Kappa
 Michael R. Giammusso, *Magna Cum Laude*
 Vicki Lynn Kobza, *Summa Cum Laude*, Phi Beta Kappa, Archaeology work for Distinction, College Prize for Excellence
 Angela K. Lockard, *Cum Laude*
 Erica Lyn Miller
 Wendy O'Brien (Double major with Classics), *Magna Cum Laude*, Phi Beta Kappa, Archaeology

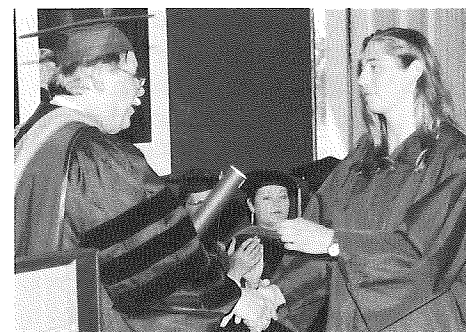
Work for Distinction
 David Thomas Palmer
 Wendy R. Seyb
 Samuel R. Sweitz (Double major with History)
 Erika Washburn (Double major with Biology), *Cum Laude*

Master of Arts

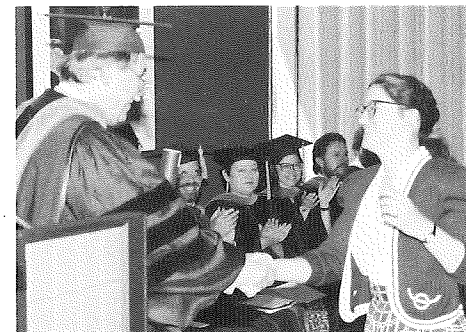
Stephen Agnew
 Adam Fuchs (September degree)
 Matthew Riggsby
 Katherine Rogers
 Timothy James Scarlett
 Maureen Smyth
 Howard Wellman

Doctor of Philosophy

Patricia L. Crawford
 Daniel R. Finamore
 Donald G. Jones
 Evagelia Karimali
 Sara F. Mascia
 Charles Pennington
 Nancy Seasholes



Vicki Lynn Kobza, who graduated with four titles of honor and distinction, receives her B.A. diploma from Professor James Wiseman at the Archaeology Commencement in May 1994.



Sara F. Mascia was one of seven students to receive the Ph.D. in Archaeology in 1994.

“We Don’t Dig Dinosaurs”: Teaching Kids What Archaeologists Really Do

by Michelle Watson and Ann-Eliza H. Lewis

Numerous essays in archaeology conclude with a paragraph or chapter exclaiming the need to educate the public about archaeology, arguing that a better informed public will be more sympathetic to archaeological issues including site protection and research funding. They often stress the importance of reaching out to young people, suggesting that if we provide children with a clear, comprehensive view of archaeology’s goals, techniques, and possibilities, it will foster a respect for our archaeological heritage that will be remembered when the youths become adults. To this end, the Graduate Student

Association (GSA) in the Department of Archaeology is developing an archaeological outreach program for children in schools in the Boston area. There are two components to the program, an introductory training program in archaeological methods to be followed by lectures on topics covered in the students’ regular social studies curriculum. For example, when a class studies Greek and Roman history, a teacher should be able to call the department and arrange for a graduate student to come and discuss the archaeology of that subject. These programs will help foster young people’s interest in

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Pyramid, after me—you can find it on the survey maps.

Back at Boston University, I became the Resident Assistant in a small dormitory called the Classics House. I shared my excavation stories. I arranged informal dinners in which students and faculty got to know each other as people. I have learned while helping others to learn. Now my adviser (Patricia McAnany) has invited me along as a staff member on her next Belize project. I will be teaching new undergraduates how to excavate, and how to fight off those jungle creatures.

The pyramid I found was only one of the discoveries I made in the tropics. One night in Belize I climbed

a stone water tower and gazed up at the stars—the stars the ancient Maya had used to orient the pyramid. I felt so far away from Afton, Iowa. Then, I realized that I was looking at most of the same stars I used to see from down by the crick, back home. At that moment, I thought of how much my own vision of the universe had been transformed by my studies and fieldwork. We new graduates of Boston University have this in common—we’ve all had familiar visions transformed by the new knowledge and perspectives we’ve gained here. We’ve all come to understand that by comprehending the past, we can make sense of the future that is our inheritance. And my inheritance is to go back and play in the dirt.

and respect for the archaeological past and provide graduate students valuable classroom experience.

Goldie Freeman, a teacher at the Kingsley Montessori School in Boston, contacted the department late last spring to see if there was an archaeological excavation in the area that her class could visit, or if someone would come and talk to her class about archaeology. The result of that phone call was a six-day program of lectures, activities, and mock excavations that introduced the field of archaeology to her class of nine- to twelve-year-old students through the study of North American prehistory. The greatest concern was to teach all aspects of the archaeological process including archaeological site conservation and publication of research findings, and not how to mine their back yards for artifacts. To gauge the students’ views and attitudes about archaeology, they completed a questionnaire before we came to the class. Of the fourteen children, five thought that archaeologists dug up dinosaur bones. One girl described archaeologists as “people wearing brown suits with bones in their hands,” demonstrating that although the imagery of *Jurassic Park* may now overshadow that of *Raiders of the Lost Ark*, some students do not have a clear idea of what archaeologists do. Many students, however, had a better understanding. Some reported that archaeologists find artifacts to learn about the past, and all, when asked, thought that studying the past, learning about other cultures, and saving sites were important. Some of the most interesting and surprisingly accurate answers were to the question “What problems do archaeologists face?” Suggestions ranged from wartime site destruction, to excavating fragile artifacts, to getting stuck in caves or caught in ancient death traps (Indiana Jones rears his head). Freeman will hand out a similar questionnaire in two weeks to see if our efforts substantially changed the students’ views on archaeology.

The basic questions of what is an archaeologist, what do they do, and how do they do it were the first topics. Considering the vast amount



Angela Lockard (left) and Ross Perot (second left) chat with Angela’s parents, Mr. and Mrs. Bert Lockard, at a reception given at the home of President and Mrs. John R. Silber. Photograph courtesy of Boston University Photo Services.

of information to be conveyed in the two-and-one-half hour session, our goal to be interesting as well as comprehensive was a challenging one. Topics discussed in the slide-illustrated lecture included: archaeology's goals, formation of the archaeological record, excavation techniques, and a brief history of American archaeology. Slides helped to illustrate vividly the sometimes abstract issues of artifact preservation, excavation techniques, and the effects of looters. The second section comprised two lectures on the archaeology of North American prehistory. Besides contributing to their regular social studies program, this served as the students' pre-excavation research. North America was divided into seven broad geographical/cultural areas and the talk used the unifying themes of the environment, housing, food, and technology to compare the different regions.

As a break from lectures, students tackled a variety of artifact-analysis tasks. During a discussion of artifact form and function, for example, we passed around artifacts such as a doughnut-shaped, stone net-weight and asked students to suggest possible uses. (The predominant opinion was that it was a wheel, but others believed it was a weapon or was used in cooking bread.) Another useful demonstration showed how the archaeological record is formed. While telling a simple, fictional story loosely based on New England Native American groups, we poured colored beans and lentils into a clear plastic

container to illustrate how, as time passed, different soils and artifacts were deposited forming a stratified site. At the end of the story we had a clear example of stratigraphy. Students also sorted artifacts and created typologies. In these simple exercises, students confronted problems faced daily by archaeologists.

The excavation day was the highlight of the program and anxiously awaited by the students. Each student was given a field notebook containing trench record forms, graph paper, blank sheets of writing paper, and background information on the site. To provide a proper context for the excavations we created a hypothetical "threat" to the site. Students were told that developers planned to build a hotel in a field where a farmer had regularly turned up prehistoric and historical artifacts. Their task, the students were told, was to determine whether there was a site here and to decide if the hotel should be built at this location.

The authors created the site in two large plastic storage bins, each representing one excavation unit. Each of the two "units" contained virtually identical Archaic, Woodland, and historical levels, with different colored dirt and appropriate artifacts and features. With the exception of those representing the historical period, the artifacts used in the units were from a collection of artifacts housed at Boston University that is used for teaching purposes. The historical artifacts included ceramic plates, cups, and saucers, purchased at a local sec-

ond-hand shop, and various metal artifacts. To match the issues discussed in the lectures on North American prehistory the artifacts were chosen to represent changes over time in food preparation and procurement strategies. The two units were carried out to the mall on Commonwealth Avenue and the excavations began.

Our initial fear that the students would rip into the units in search of artifacts was quickly dispelled, and we happily noted that they wanted to map every surface artifact and sift carefully. The diligence of the students varied, especially as more artifacts began to appear, but overall they were conscientious about their excavating techniques. Students were assigned the jobs of excavator, sifter, or recorder and rotated each level. After excavating, the students cleaned, identified, cataloged, and drew the artifacts. Each student wrote a final report. They mended some of the historical ceramics and created a small museum in their classroom in which to display the artifacts. The final element of the program was a discussion of their reports in which the members of the two groups shared their data and considered how the two units related to each other. Each student also had to decide whether the proposed hotel construction should continue. The report-writing stage of this project was crucial to the program. Many of those students who were less careful during the excavation portion were frustrated when they encountered a poorly labeled bag with artifacts needed for their site interpretation. Instances like this forcefully drive home the importance of proper archaeological techniques.

While we await the arrival of the follow-up questionnaires, the future of this program is bright. Shannon Plank, president of the GSA, has been working to set up an on-going program with the Chelsea school system to run a similar program, and the authors are hoping to present their experiences at the New England Teacher's Conference of Independent Schools in October. The children at

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Cristina Volpe (seated) and Jana Bartaloni (standing) are busy helping with the task of analyzing a variety of artifacts from a mock site.

Remembrance of Digs Past

by Creighton Gabel

Creighton Gabel will be on leave during the 1995–1996 academic year and will retire at the end of that year. In the essay that follows he recounts some of the memorable events of his career, and comments with sensitivity and gentle humor on many of the archaeologists with whom he studied, worked, and taught for more than four decades. He also provides a personal, professional perspective on the evolution of archaeological concepts and practices over the past half-century.

I entered the Anthropology program at the University of Michigan in 1950 or, to place that event in terms of a relative chronology, during the middle of Harry Truman's second term and just at the time when radiocarbon dating was making its debut among archaeologists—many of whom were still somewhat suspicious of it. The department chairman, and later my adviser, was Leslie A. White, whose relentless promotion of what he termed the "science of culture" made him a bit of a curiosity in a day when the historical particularism and cultural relativism of Franz Boas and his "school" of ethnology were dominant in this country (both men, interestingly enough, were once physicists). Ironically, in retrospect, White's impact on archaeology had been about nil as well. His doctrinaire brand of evolutionism seemed too rigid, and his theoretical framework, in fact, was materialistic to the point of virtually excluding consideration of environmental and ecological variables; and it was precisely these that were attracting the attention of prehistorians—with Grahame Clark's work at Star Carr in England often held up as a model. In the later 1950s, however, a Michigan graduate stu-

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Kingsley Montessori school were not the only ones who learned from this experience. They offered us a fresh look at many things, and made us think about just what archaeologists are trying to do.

Michelle Watson, a graduate student in the Department of Archaeology, is working on her Master of Arts degree. Ann-Eliza H. Lewis is a Ph.D. candidate, and is Associate Editor of the journal Northeast Historical Archaeology.

dent named Lewis Binford was sufficiently stimulated by L.A.W.'s quest for cultural "laws" to begin advocating a "science of archaeology." In that respect, then, White might be considered the godfather of the New Archaeology.

My own early archaeological training, apart from a couple of courses in the Classics Department, was under James B. Griffin, Albert C. Spaulding, and Emerson F. Greenman. Griffin maintained his own fief in the University Museum where, among other things, he looked after the needs of all the archaeology students quite well. While aware of his professional status, I found his classes somewhat less than completely stimulating. Student folklore had it that you could show "Jimmy" a potsherd from anywhere in the Eastern United States Woodlands and he could name the site from which it came. Sometimes I felt that we must have seen or discussed most of those sherds in his North American course, and I've never cared deeply for broken pottery since. Later, with some advance in maturity on my part, I came to appreciate more fully the true extent of his knowledge and insights, and he was helpful to me in a number of ways even after I left the University.

I took Al Spaulding's course on archaeological techniques (or what passed for method and theory) and also one that he taught on African prehistory—a subject that must have been about as much a mystery to him as it was to me at the time. He was just beginning to develop his notions of defining artifact attributes statistically, and on the last occasion I saw him on campus he was visibly excited about just having "discovered" the philosophy of science. I was never

quite sure what he thought of the New Archaeology, but he told me once, in the 1970s, that some of its practitioners seemed not to be entirely literate.

I belonged to an era when the "four-field" approach to an anthropological education was absolutely sacrosanct. Before I left Michigan, I had taken 26 courses in the Department, covering ethnography and ethnology, linguistics, physical (biological) anthropology, and archaeology. We had no laboratory courses whatever, although we learned something of human osteology in physical anthropology. My primary exposure to laboratory work was during two years as a research assistant in the Anatomy Department at the Medical School (a job Griffin helped me obtain, and where I learned a great deal more about human remains). My first excavation experience was during a ten-week field school in a remarkably beautiful area on Georgian Bay, at the northern end of Lake Huron, where E.F. Greenman had provided the introduction to fieldwork for a whole generation of Michigan students, including my wife, Jane.

I stayed on for a M.A., having already decided that I would not continue into the Ph.D. program since I felt the then-unusual inclination to concentrate in Old World prehistory. There was little opportunity to do so in this country, and none whatever at Michigan. Also, I was ready to pursue archaeology as an independent subject, rather than within the context of a traditional anthropology curriculum, and that narrowed my options even more. I should say, however, that I never regretted the good foundation I was given in the general discipline, both cultural and biological.

In the end, I applied to work for a Ph.D. under Stuart Piggott's direction at the University of Edinburgh. I had read and enjoyed his little book, *Prehistoric India*, and had recently seen his new one, *Neolithic Cultures of the British Isles*. In 1954, as I remember it, there were only four professorships in prehistoric archaeology in the whole of Britain: Piggott, Christopher Hawkes at Oxford, Grahame Clark at

Cambridge, and V. Gordon Childe at London. Childe had been Piggott's predecessor in the Abercromby Chair at Edinburgh, where, it was said, he never had a single archaeology student in the 20 years he was there (which may account for this having been the most productive period of his life!).

Piggott had little formal university education, although he had been active in Wessex archaeology from an early age. His first professional paper was published when he was 19, and this was followed two years later by a summary article on British Neolithic pottery. (It was his subsequent assignment to British military intelligence in the Middle East during World War II that led him to write his book on the Indus.) He was, to me, an amazingly erudite person who, like Childe, was able to synthesize a wide range of European archaeological material, and he did so in publications with illustrations that frequently featured his own elegant draftsmanship. He was more of a humanist than Childe, and I still find his 1965 book, *Ancient Europe*, one of the best and most sensitive treatments of that continent's pre-Roman past, however much new information has accumulated in the interim.

One summer while at Edinburgh, I joined the department team excavating at West Kennett Long Barrow—a famous megalithic tomb in Wiltshire—which turned out to be quite exciting: it was thought that an early antiquarian had entirely looted it, but in fact he had missed four of the five burial chambers, leaving them intact. We were billeted in the village of Avebury, which sits atop the huge Neolithic sanctuary of the same name. There was ample opportunity to explore other nearby sites such as Windmill Hill and Silbury Hill, and I spent a memorable day at Stonehenge with Richard Atkinson and his wife just before his definitive book on the site was published. It was a lovely summer day, yet we were able to sit down in the middle of the sarsen circle with our hamper of wine and cheese to enjoy lunch in almost perfect solitude. Subsequently, of course, the increasing hordes

of tourists resulted in the precinct's being closed to public access.

It was the custom during those years, at least, for British archaeologists to visit each other's excavations during the summer, and there was a constant stream of them at West Kennett, including Sir Mortimer Wheeler, Christopher Hawkes (whose son, Nicholas, was working with us), Gordon Childe, and Glyn Daniel. I remember that Wheeler was very friendly toward the students, as was Daniel; Professor Hawkes, somewhat more reserved and perhaps searching for something to say to a student from the former colonies, asked about my dissertation and remarked that I was lucky to be writing it just then because "it would soon be very difficult to find an acceptable topic" for such an exercise. Childe remains more of a phantom in my mind: an image of someone who might have been cast as a Central European spy in a low-budget vintage film, wearing a black slouch hat and cape, and with what looked suspiciously like breakfast egg staining his mustache, tie, and waistcoat. Daniel, already a familiar television personality, was in Avebury to orchestrate a BBC program on the excavation. This was a live telecast in prime time, made possible by the long evening hours of sunlight, and surely must have been a first for archaeology.

In due course, my dissertation was submitted, and accepted by Piggott. Unfortunately for me, Grahame Clark, my external examiner, did not follow suit (even though I had cited him liberally in that treatise) and recommended some revision that was to include consideration of materials he had run across in such well known periodicals as *Arbeits- und Forschungsberichte zur Sächsischen Bodendenkmalsflege*.

In the fall of 1956, I obtained an instructorship at Northwestern University that was offered to me by Melville J. Herskovits, a leading anthropologist who had been a student of Boas in the 1920s. It was a small department, in which I was to teach introductory anthropology, social organization, and two courses each in archaeology and biological

anthropology—all of this while completing my revision. To supplement a base salary of \$4,500, I also taught a course in the evening division once a week in downtown Chicago.

Northwestern, although a fine university, was an isolated place for a lone archaeologist, and I began to haunt the University of Chicago campus, and especially Bob Braidwood. In the fall of 1958, he and I and Joe Caldwell (with whom I had spent some time that summer on his dig in southern Illinois) organized a weekly symposium, or workshop, focused on comparative prehistory of several world areas. "Regulars" at those Friday afternoon sessions at the Field Museum included, besides the three of us, Clark Howell, Arthur Jelinek (who had been a fellow student at Michigan), George Quimby, and Charles Reed—with Robert McC. Adams, Gordon Willey, Don Collier, Walter W. Taylor, Howard Winters, Melvin Fowler, Paul Martin, Jimmy Griffin, and John Rinaldo participating part of the time, and some of them fairly often. Griffin came down at least two or three times on the train from Ann Arbor. The location of that symposium was significant to me also, for it was at the Field Museum, while visiting my grandparents in Chicago as a child, that my lifelong interest in archaeology began. One could say that the caveman dioramas and Egyptian mummies there proved to be my downfall.

The same year, our single graduate student in archaeology—Stuart Struever—had entered the department. His intention was to concentrate in African archaeology, but a serious and persistent intestinal ailment militated against that choice, and after earning his M.A. he went on to continue in North American archaeology under Binford's supervision at Chicago. Just before I left Northwestern, Stuart and a couple of our undergraduate students conducted the first (and successful) experiment in flotation (on a Woodland site in Illinois), an idea I believe he got from one of the geologists in our building.

Meanwhile Herskovits had become
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a good friend who delighted in needling me about Leslie White and cultural evolution in general. Mel was Director of the African Studies Program at NU (the earliest, together with that at Boston University, in this country), and he kept urging me to shift my interests to African archaeology. In 1959, he offered me the inescapable incentive—money—and as a result I was able to attend the fourth Pan-African Congress on Prehistory in Leopoldville (now Kinshasa) in what was still the Belgian Congo. While there, I renewed my acquaintance with Desmond Clark, who had taught at Chicago the previous winter and with whom I had arranged to visit Northern Rhodesia (now Zambia) after the Congress to plan a future research project of my own. The highlight of the meetings was when Louis and Mary Leakey produced—unannounced—the skull of “Zinjanthropus” (see photograph at bottom of this page) that they had found just a few weeks earlier at Olduvai Gorge. Raymond Dart stirred up some controversy by giving a lecture on his hypothetical

“osteodontokeratic” industry of the Australopithecines, complemented by numbers of his “bone tool” specimens.

After the conference, I had to proceed to Northern Rhodesia rather circuitously by way of Johannesburg in South Africa. Knowing that I would have a weekend layover, Philip Tobias, whom I had met in Leopoldville and who was about to assume Dart’s chair in anatomy at the University of the Witwatersrand, volunteered to entertain me there, even though he was to be engaged in writing his inaugural address. After dinner the previous evening—and a late-night visit to open the safe at his department in order to inspect the 1924 Taung skull and some of the hominid fossils from Dart’s excavations at Makapan—he gave me a guided tour of the Sterkfontein Australopithecine site and a glimpse of the nearby Kromdraai and Swartkrans caves.

Because Clark was not returning immediately to the Rhodes-Livingstone Museum, of which he was director, he had arranged for the new Keeper of Prehistory, Brian Fagan, to show me around. Brian

introduced me not only to the Museum and its staff, but also to Victoria Falls and the Zambezi River. The primary result of my visit was the identification of a potential research area in the Kafue River basin, some distance to the north.

That autumn, a few weeks after my return, the Northwestern Department and I hosted Louis Leakey for a week, as part of a fund-raising campaign thinly disguised as an academic tour. He talked to various classes of ours, expounding his new fossil hominid as the “first toolmaker” (an idea abandoned a few months later when the remains of *Homo habilis* were discovered in the same deposits). One evening, I accompanied him to a lavish dinner at the home of a potential donor in a Chicago suburb, where he entertained the group of assembled guests much of the evening by demonstrating innumerable string-figure (“cat’s cradle”) variations he had learned while growing up among the Kikuyu in the Kenya Highlands. That kind of interaction obviously contributed to the wide appeal of this rather unconventional man, although he was certainly also an exciting speaker and had a great nose for sniffing out important finds—some of them (like the Kanam and Kanjera fossils), however, even more interpretively controversial than Zinjanthropus.

I went back to Rhodesia in 1960–1961, and almost immediately relocated a Stone Age site near the Kafue that Clark had provisionally identified some time earlier. With a small crew of Africans, I excavated there off and on for the next eight or nine months. This 4,000–5,000-year-old settlement proved exceptionally productive, especially in organic remains: human, faunal, and botanical. As I was finishing, Desmond left the Museum to take a position at Berkeley, which was this country’s gain, but a great loss to Rhodesian archaeology.

Much of the next three years was spent completing the analysis and write-up of the Gwisho material, during which time (1963) I moved to Boston University. That same summer (once again on Griffin’s recom-



Creighton Gabel, Louis Leakey, and “Zinjanthropus” (Evanston, Illinois, 1959).

mendation) I participated in an intensive, six-week anthropology training program for museum curators, organized in Tucson by Emil Haury and Edwin Ferdon on behalf of the American Museums Association. The core teaching staff and "students" spent one entire week, dawn to dusk, touring archaeological sites, Indian reservations, and places like Grand Canyon and Canyon De Chelly all over the state. This provided my brief, but live, introduction to Southwestern anthropology.

Just weeks before its independence, I returned to Northern Rhodesia to conduct a survey of Stone Age sites in the western Copperbelt, which is situated in the upper Kafue basin along the Congo (Zaire) border. Fagan was about to leave the Museum for a new post in Kenya, and a very young David Phillipson had just become Monuments Inspector. David provided me with permits to remove some of the Palaeolithic specimens from Kalambo Falls and my own survey that still form part of the teaching collection in this Department.

I had been hired at Boston University primarily by the African Studies Center, although I also had an appointment in the Department of Sociology and Anthropology. One of the attractions of this new position was that I was able to confine my teaching largely to archaeology, including a full-year seminar on African prehistory. We had no archaeology students at first, but there was a strong program in African history and ethnohistory to which I was expected to contribute (the History Department went so far as to permit students to select African archaeology as one of their four examination subjects for the Ph.D.).

In 1966–1967, with Leakey's encouragement, I excavated several rockshelters on Lake Victoria, in the Central Nyanza District of Kenya. These sites, when dated by radiocarbon, showed how late Stone Age foragers had persisted in this part of East Africa (from the last centuries B.C. to the first centuries A.C.), perhaps combining hunting with the keeping (or raiding) of small livestock. While in East Africa, I visited Olduvai Gorge,

toured game reserves such as Serengeti and Tsavo, and took the opportunity to look at other sites in the Rift and on the Indian Ocean coast—and even some Miocene fossil localities. I never returned to Kenya for additional archaeological work, although I subsequently arranged for several of our graduate students to do their dissertation research there under the aegis of the British Institute in Eastern Africa, of which Phillipson had become assistant to the Director, Neville Chittick, an historical archaeologist who had been with us at the African Studies Center for a semester some while earlier. Among the students in question were Mike DiBlasi, Tom Mahlstedt (current MDC Archaeologist in Boston) and Margot Nelson Gill, who is now Administrative Dean of the Harvard Graduate School.

A year or two later, after overcoming a bit of administrative inertia, we were able to form a separate Anthropology Department here, and I was chairman for a time. Early in 1973, I had given that up and, with two of our graduate students, embarked on an eight-month archaeological survey of Liberia—a country on the coast of West Africa about the size of New Hampshire and Maine together, which was dominated, until the 1980 revolution, by resettled American slaves and their descendants. There had never been any professional archaeological work done in the entire country (which in fact had just been mapped, for the first time, by the U. S. Geological Survey), although interested amateurs—mostly Peace Corps, USAID, and missionary personnel—had reported isolated finds. These spare-time investigators were much more adept at identifying ceramics or metal artifacts than lithics, and thus the sites they found were mostly late prehistoric or historical. The Liberian experience quickly taught me the rigors of conducting surveys in the wet-forest tropics, where there was little chance of identifying archaeological sites except along roadcuts, near existing foot trails, at occasional construction localities, or in erosion banks along beaches, lagoons, or tidal estuaries.

Nonetheless, we were able to record a substantial number of sites, ranging from late Pleistocene through Iron Age to post-1830 Americo-Liberian).

While I was in Liberia, the Director of the African Studies Center died, and I returned to find myself already designated as his successor until a permanent replacement could be found. The Anthropology Department was going through a difficult phase as well, and in 1976 I reassumed the chairmanship, which was to last for another three and one-half years. During that time, the Dean of the College was given to ruminating about the illogic of dividing the social sciences into their current, compartmentalized state "just because some Victorians had decided to do so." Ultimately, he confided to me his decision that anthropology *was* distinct from political science, sociology, psychology, etc., because the archaeological and biological sides of the discipline provided the only "deep" historical perspectives on the human condition. Whether with this in mind or not, I began to cooperate with Jim Wiseman to develop a separate, interdisciplinary program in archaeology, and then (in 1982) a Department of Archaeology. Three of the senior cultural anthropologists—still committed to the American "four-field" approach—vehemently opposed this move, and one of them never spoke to me again if he could help it. I am not so certain that their opinion would have been the same had archaeologists been dominant in that department where, as in most other anthropology departments in the United States, faculty apportionment seldom reflected the fact that (according to a poll taken by the SAA or AAA a few years ago) the majority of anthropology students in this country are primarily interested in archaeology.

The same period brought a three-season field school at a Byzantine town on the fringe of the Western Desert in northern Egypt, a change in venue for a dedicated "stones and bones" archaeologist that almost made me wish that I had continued in those Classics courses thirty years earlier, and a nine-year editorship of

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Profiles of the Past

Our Archaeological Heritage

by Ricardo Elia

The Continuing Saga of Priam's Treasure

"While the men were eating and resting, I cut out the Treasure with a large knife, which it was impossible to do without the very greatest exertion and the most fearful risk of my life, for the great fortification-wall, beneath which I had to dig, threatened every moment to fall down upon me. But the sight of so many objects, every one of which is of inestimable value to archaeology, made me foolhardy, and I never thought of any danger. It would, however, have been impossible for me to have removed the Treasure without the help of my dear wife, who stood by me ready to pack the things which I cut out in her shawl and to carry them away."

With these famous words Heinrich Schliemann described how, at Troy in May 1873, he excavated the remarkable assortment of gold and silver vessels, jewelry, and other artifacts known to the world as Priam's Treasure. Schliemann believed that the treasure had been hastily packed into a chest by a family member of Priam, the king of Troy at the time of the Trojan War. He thought that whoever attempted to save the treasure probably succumbed to the attacking Greeks or to fire in the final conflagration that destroyed Troy. The abandoned treasure chest was then covered over by debris and ashes from the adjacent royal palace.

There the treasure lay until Schliemann noticed a glint of gold as his workers were excavating along the city wall. He ordered his men to take a break and removed the treasure with his wife, in order, as he says, "to withdraw the Treasure from the greed of my workmen, and to save it for archaeology. . . ."

Although we now know that the material found by Schliemann is more than a thousand years older than the likely date of the Trojan War, the story of Heinrich Schliemann, the site of Troy, and Priam's Treasure remains a classic among archaeological adventure stories. Schliemann was a pioneer archaeologist, a self-made man

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the *Journal of Field Archaeology*. The Journal afforded me the opportunity to familiarize myself with a very wide range of research being carried out in various parts of the world, and to work closely with Al Wesolowsky, our capable and polymathic Managing Editor.

Much has happened to change our discipline over the last nearly half-century: a great increase in the number of archaeologists and in knowledge about the past (our conception of human origins, for example, having been altered out of all recognition), introduction of new chronometric dating techniques, development of archaeological materials analysis,

application of quantitative methods, and an emphasis upon more explicit research design. The "classificatory-historical" phase of prehistoric archaeology gave way to processualism, and then to the various versions of what is unhappily termed "post-processualism"—the first harking back in some ways to nineteenth-century (and White's) evolutionism, and the other in certain respects to Boasian anthropology. I confess that I remain essentially a culture-historian, albeit tempered by recognition that the "new" archaeology has made some positive contributions (even if sometimes through a veil of obfuscation). I haven't yet decided whether the post-processual movements have anything

who devoted much of his life and fortune to proving his conviction that ancient Troy had existed and that the Trojan War—immortalized in the epic poems of Homer—was history rather than legend. His reports from the field and his promptly published books brought archaeology to a popular audience in a way that few others have been able to match.

But Schliemann was also a shameless self-promoter, liar, and smuggler. He spirited Priam's Treasure and other artifacts out of Turkey and brought them to Greece, violating the terms of his permit with the Turkish authorities. He took such liberties with the truth in his published accounts that serious doubts have been raised about basic elements of his biography and his archaeological work. Scholars William Calder and David Traill, in particular, have questioned virtually every aspect of Schliemann and his archaeology, regarding him as a psychopathic liar.

The Schliemann controversy includes Priam's Treasure. We know that Schliemann lied about many things, including his statement that his wife Sophia was indispensable in helping him safely remove the treasure. In a letter written in December 1873 to the Keeper of the Department of Greek and Roman Antiquities of the British Museum, Schliemann boldly admitted that his wife was in Athens when the treasure was discov-

worthwhile to say, but will think about it further during retirement and let you know.

For me personally, I think the most important change has been the opportunity to participate in the creation of this Department and to help see it through its formative years, enjoying the company of students and colleagues who all share the same basic interest in trying to document the long and variegated course of human history.

Creighton Gabel is Professor of Archaeology and Anthropology, and has been the Director of Graduate Studies in Archaeology since the formation of the Department in 1982. He was Editor-in-Chief of the Journal of Field Archaeology, 1985–1995.

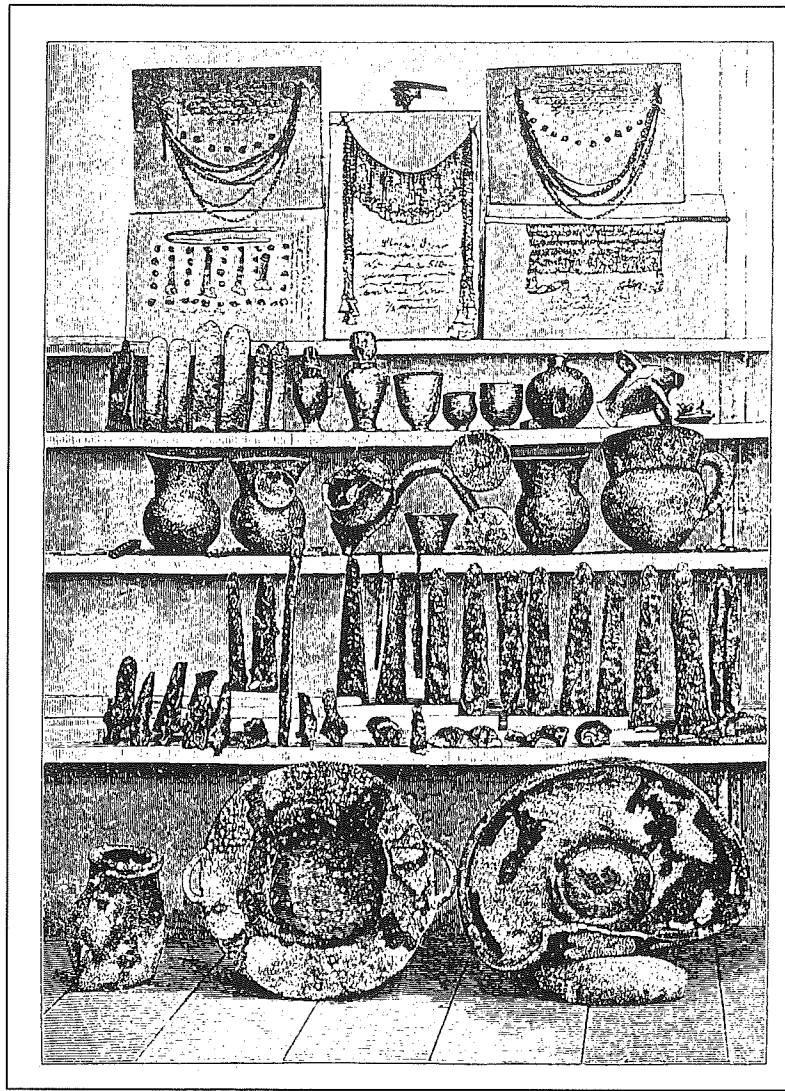
ered; he only wrote in his book that she was there, he says, "to stimulate and encourage her" because he was "endeavoring to make an archaeologist of her. . ."

Since Schliemann lied about such a basic fact, might he not have lied about other aspects of the discovery of the treasure? Was it originally packed in a chest as Schliemann reported? Perhaps the materials represent the contents of a grave. Do all the objects even belong to a single archaeological context? Perhaps they were amassed from various findspots so that Schliemann could make a more dramatic "discovery." Perhaps Schliemann bought the gold and silver objects on the art market and added them to the "treasure." Are they all authentic?

Theoretically these questions, some of them raised in Schliemann's own day, might be resolved through modern scientific methods of analysis. The only problem has been that most of the material excavated by Schliemann at Troy—including Priam's Treasure—disappeared from Berlin at the end of World War II.

The tale of the peregrinations of Priam's Treasure is every bit as interesting and mysterious as the discovery itself. Schliemann snuck the treasure out of Turkey shortly after its discovery. He took it to Athens and put it on display in his house. The Turks pursued him in the Greek courts, seeking the return of the Trojan artifacts. In 1875, the court ordered Schliemann to pay £2,000 to the Turkish government; in return, he was allowed to keep the artifacts. (Schliemann, with characteristic bravado, paid the Turks five times that amount).

In 1880, Schliemann donated his



Display of the Treasure of Priam (reproduced from Heinrich Schliemann, Troy and Its Remains, reprinted edition 1976 by Arno Press).

Trojan finds to the German people. The artifacts, numbering 9,704 items, were housed in Berlin's Museum for Pre-and-Early History. After the Allies captured Berlin in 1945, the Trojan collection seemingly vanished. Some thought it had been destroyed in the bombing and destruction that led up to the conquest of Berlin. Other rumors had it that the Russian Army had seized the material, or that it had made its way to a secret private collector. In any case, for 46 years the fate of Priam's Treasure and the Trojan collection remained a mystery.

Now the mystery has been solved. In 1991 the magazine *ARTnews* reported that the Schliemann collection had been removed by the Russian Army along with thousands of other examples of "trophy art" taken from the Germans to recompense Russia for

the devastating art losses it suffered at the hands of the Nazis during the war. After initially denying the report, the Russian authorities admitted in 1993 that they were holding vast collections of art, including the Trojan material. And last November, German curators from the Museum for Pre-and-Early History visited Moscow's Pushkin Museum and, for the first time in nearly five decades, were permitted to see the Trojan artifacts.

With this "rediscovery," the story of what happened to the Trojan collection is now clear. In 1941, in order to preserve their archaeological treasures, the Germans packed up the Trojan collection, along with other archaeological materials, and moved it to Flakturm Zoo, a massively fortified anti-aircraft tower built at the Berlin Zoo. The tower survived two years of aerial bombardment by Allied planes. When the tower was surrendered

to the Red Army in May 1945, its art treasures were removed by members of special "trophy brigades" set up to take art from German land occupied by the Russians. The Trojan collection was taken to the Pushkin Museum in Moscow, which is now busy preparing the material—including Priam's Treasure—for a public exhibition next year.

For years scholars have speculated that modern methods of scientific analysis might help to solve some of the questions about the integrity and authenticity of Priam's Treasure. For example, various metallurgical tests, especially trace metal analysis, might allow the gold objects to be characterized. Other tests may also enhance our understanding of the material, including gas and liquid chroma-

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tography, as well as pollen analysis and organic residues analysis, which may detect blood stains.

We should not, however, count on many of these tests—especially the intrusive or partially destructive ones—being performed anytime soon, at least not until the matter of ownership has been resolved. Right now three countries have potential claims on the Trojan collection. Russia, which took the artifacts in wartime as “trophy art,” may seek to retain the collection as restitution for the devastating losses of cultural heritage it suffered at the hands of the Nazis. The Germans, naturally, want the material to be returned to Germany on the basis that Schliemann gave it to the German people in 1880. The German claim of ownership, however, would be weakened if Schliemann himself

did not have good title to the material, or at least some of it.

Archaeologist Donald Easton has pointed out that the Trojan material taken from Berlin by the Russians includes several lots of artifacts recovered from Troy by Schliemann at different times, including after his settlement with the Turks in 1875. Some of this material may also have been removed without the consent of the Turkish authorities and so may be subject to claims for repatriation by the modern Turkish government.

However the matter is resolved, one thing is clear: the saga of one of the world’s most fascinating archaeological discoveries is destined to continue to spark interest and controversy for some time.

Ricardo Elia is Associate Professor of Archaeology and Editor-in-Chief of the Journal of Field Archaeology.

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archaeological survey of the region where the two sites, OAZ and Ona Negast, in Ethiopia are located (see Kathryn Bard in this issue of *Context*, pages 13–15, for information on the site, OAZ). He plans also to take time to visit Coptic churches in and around the ancient town of Aksum.

During May–July 1994, Carol Stein, a Ph.D. candidate, was a Teaching Fellow in Boston University’s Field School as well as a senior staff member on the Nikopolis Project in Epirus, Greece.

Tom Tartaron, Ph.D. candidate, was a Teaching Fellow in Boston University’s Field School as well as a

senior staff member on the Nikopolis Project in Epirus, Greece. Tartaron co-authored with Dr. Kostas Zachos a paper on “The Mycenaeans in Epirus,” which Zachos presented at the symposium “The Periphery of the Mycenaean World,” which was held in Lamia, Greece, on September 27, 1994. He also has been participating in a research project with Professor Heather Lechtman in the Center for Materials Research in Archaeology and Ethnology (CMRAE) at MIT. The research focuses on the study of copper fasteners from the USS Constitution and other ships to determine how many of the original ones are still in place.



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