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CORING IN CRM AND ARCHAEOLOGY: A REMINDER

Julie K. Stein

Corers and augers have become increasingly useful in archaeological investigations, but more in cultural-resource management (CRM) than in research archaeology. Although this increase is evident, coring and augering were used in the earliest CRM projects in the 1970s and merely have gained in popularity in the last five years. Schuldenrein (1991) points out that of all the coring and augering equipment described, the manual bucket auger with a large-diameter barrel is of special value. However, one major disadvantage is that sediment is disturbed during extraction, making observations about soil structure and stratification difficult. The disadvantages have to be balanced against the fact that bucket augers are more versatile than corers and penetrate many more types of substrate. Because of these differences between augers and corers, the terms should not be used interchangeably.

Taladros tubulares y de cubeta se han tornado crecientemente útiles en investigaciones arqueológicas, pero más en el manejo de recursos culturales (CRM) que en arqueología de investigación. A pesar de que este incremento es evidente, taladros tubulares y de cubeta se utilizaron en los primeros proyectos de CRM en los años 70 y simplemente han ganado popularidad en los últimos cinco años. Schuldenrein (1990) señala que, de todo el equipo de taladro que ha sido descrito, el talador manual de cubeta con un barril de diámetro amplio es especialmente valioso. Sin embargo, éste tiene la gran desventaja de que perturba el sedimento durante la extracción, lo que dificulta la observación de la estructura del suelo y su estratificación. Las desventajas de este tipo de taladro deben ser balanceadas frente al hecho de que los taladros de cubeta son mas versátiles que los taladros tubulares y penetran muchos más tipos de sustrato. Debido a que existen diferencias entre taladros tubulares y de cubeta, no debemos continuar usando estos términos de manera intercambiable.

In 1977, I made a discovery that coring could save considerable time in my efforts to determine the location of site boundaries. I was not the first to discover it, but nonetheless it was a revelation that I thought needed to be shared, and in 1986 I wrote the article "Coring Archaeological Sites." Now, more than a decade after I began using corers and augers, and four years after the article appeared, Schuldenrein is spreading the message again.

Schuldenrein's article appears now because archaeologists rarely discuss coring in reports, grant proposals, and publications, or describe the methods of coring or augering used. Schuldenrein is correct; a corer is potentially the most useful piece of equipment an archaeologist can have. Yet few people talk about them, and many people use them. So here we are again, discussing the issues associated with coring and augering in archaeology.

Schuldenrein (1990) makes three points: (1) in the last two decades archaeologists have used coring and augering devices with increasing frequency, especially for purposes of managing cultural resources (i.e., planning and preservation); (2) the increased use and change in emphasis for coring and augering represents a new "period" in the history of coring in archaeology; and (3) the potential of the large-diameter bucket auger is great. Two of the points addressed by Schuldenrein in this issue warrant clarification.

CREATING PERIOD III

To resolve the dilemma of Period I, II, or III, I suggest we ponder the issue no longer, and forget the whole thing. These periods are not real, but rather devices for discussing a progressive change in the use of coring through time. To demonstrate the arbitrary nature of the periods, let me offer this observation. In the original discussion of Period II (Stein 1986:509–514), 26 examples of archaeological research were introduced in which coring and augering was used. Of those examples, 17 were CRM projects. Obviously my Period II already contains archaeological projects that used coring in some sort of archaeological field work. If the Period III proposed by Schuldenrein (1991)

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is accepted, then 65 percent of the projects in my Period II have to be switched to his Period III. This leaves Period II with only a few “research” projects. The discussion of the history of coring using “periods” seems now obsolete.

What is interesting about Schuldenrein’s suggestion is a change of attitude about CRM and research archaeology. During the review process of the original article one *American Antiquity* reviewer pointed out that I separated CRM projects from research projects in my discussion. He thought that CRM and research archaeology had identical goals. To separate them was to force a dichotomy that did not really exist in the discipline of archaeology. Now, five years later, Schuldenrein suggests that CRM is very different from research projects and should be discussed separately. Certainly “new archaeology” is no longer so “new” (Binford 1986, 1989; Dunnell 1986; Trigger 1989), and perhaps at least some cultural-resource managers no longer wish to be associated with research archaeologists. Schuldenrein (1990) proposes that we are entering the “age of contract archaeology,” where people “do archaeology.” CRM archaeologists may disagree with the rest of the discipline on theoretical issues, and they seem (according to Schuldenrein) to have gained a degree of confidence and independence. Certainly in the five years between reviews, archaeologists in state and federal agencies have increased in numbers, their responsibilities are crucial for conservation, and their political influence crucial for legislation (Knudson 1986). These archaeologists increasingly are involved with “managing” sites and have to “sell” archaeology to the public through interpretation. Perhaps this comment by Schuldenrein is a static glimpse of dynamic change in the discipline.

THE LARGE-DIAMETER BUCKET AUGER

Another important point made by Schuldenrein is the use of the manual 4-inch (102mm) bucket auger as a tool that is more versatile than the 1-inch (25mm) coring probe described in the 1986 article. However, it is not perfect. The bucket auger is able to penetrate many more types of substrates because it uses a rotary motion to penetrate the ground, and has a larger diameter and a screw-type bit configuration (Figure 1). These characteristics cause the resulting sample to be disturbed (Figure 2). The auger bores into the ground with a helical motion, forcing sediment into the bucket through the opposite-facing bits. Sediment in an auger is not extracted in a continuous core and no longer is in stratigraphic order.

Schuldenrein (1991:135) suggests that the 4-inch bucket auger “discloses the intricacies of soil and sediment composition,” observations that are possible only if the sediment is forced over the bits in large chunks and not crushed into individual particles. These large chunks occasionally do survive in bucket augers, and soil structure or sediment stratification can sometimes be preserved, especially if no pebbles or cobbles get stuck in the bit and pulverize the other contents of the bucket. But more frequently the structures are obliterated and only gross-scale observations of the contents can be made. By definition, all augers disturb the substrate that they are sampling. I agree that augers provide valuable information, but they are not as perfect a tool as Schuldenrein intimates.

Perhaps part of the problem is the lack of clarity with which archaeologists use the terms mechanical bucket auger, power auger, manual auger, and corer. Schuldenrein is an experienced user of corers and augers and knows the differences between manual and mechanized devices and between corers and augers, yet he sometimes uses the terms interchangeably. The devices differ in costs and errors, and result in the acquisition of samples from different contexts. As I already have stated (Stein 1986:505) a core is a continuous section of sediment or rock obtained by a hollow cylinder. An auger or drill is a device that cuts the sediment or rock in a helical motion, disturbing the context of the material. Augers have screw bits. Corers have straight bits. Cores are more difficult to obtain, but provide much more accurate samples of the substrate. Augers are obtained more easily, but provide sediment the context of which always is disturbed. In many situations the general context of an augered sample is more than acceptable, but in cases where soil horizons and fine-scale stratification is being examined, the mixed context is perhaps not fine enough. These considerations have to be evaluated for each project. But evaluation can only be done if archaeologists describe the device they are using in a consistent and clear manner. Even if state agencies use the terms interchangeably, we need to differentiate them and use them precisely.



Figure 1. These two manual bucket augers have 4-inch buckets and extension rods of two different lengths. The bucket auger is used by placing the screw-type bit on the surface and rotating downward. The bit digs into the substrate while the sediment is pushed into the bucket. The helical motion and the action of the bit disturbs the context of the sediment. When the bucket is full the auger is brought to the surface and the contents emptied. The auger is then lowered back into the hole, repeating the whole process until the bucket is full again. The handle and extension rod can be removed from the auger head to allow additional rods to be added and greater depths reached. However, I found that having two augers, attached to a short and a long rod, eliminates the difficult process of unscrewing the rod from the head. When a depth equal to the length of the short auger is reached, the other auger is used. (Photo taken by the author at 45-SJ-24, San Juan Island National Historic Park-British Camp.)



Figure 2. The sediment being extracted from this 4-inch bucket auger has been removed from a depth of 2 m below the surface and is from a Northwest Coast shell midden saturated with ground water. The disturbed context of the site material is obvious. However, even with the contextual difficulties, the auger did allow us to determine the depth of the base of the midden within an error of 10 cm. We could not confidently identify any stratification within the midden, but the contact between the midden and the subsurface was clear. (Photo taken by Ken Alford at 45-SJ-24, San Juan Island National Historic Park-British Camp.)

As Schuldenrein points out, coring and augering have increased in use since 1986. What he does not emphasize is that the largest increase in use of coring and augering is of hydraulic (mechanical) augers and corers. Many cultural-resource managers own truck- or trailer-mounted hydraulic probes. Like geomorphologists (from soil conservation services, geological surveys, and private engineering firms), archaeologists now are using these mechanical devices routinely to extract continuous cores from which samples can be obtained and stratigraphy can be observed. Large-diameter cores can be stored as permanent records of sites that never will be excavated, or of sites that will be destroyed by reservoir inundation or road construction. Some of these machines can extract 4-inch continuous cores in 1-m sections, to depths of 5–8 m and even deeper. I believe that although they are more expensive than the hand-held manual augers and corers, mechanical ones will become even more important for managing cultural resources.

CONCLUSION

In conclusion, Schuldenrein has pointed out the new and important functions that coring and augering have gained in cultural-resource management, especially when dealing with issues of planning and preservation. He has discussed the potential of the large-diameter bucket auger in archaeological investigations and has provided an updated bibliography of people using coring and augering in archaeological investigations. The discussion of CRM, and its differences from “research” archaeology suggest a change in the discipline from that of the late 1970s.

Personally, I believe that the most valuable aspect of these comments is to point out (again) the importance of coring and augering in archaeology. Anyone not familiar with it has now been reminded one more time.

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