

The Digital Archaeological Archive of Chesapeake Slavery and Internet Technologies
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In 1999, the Andrew W. Mellon Foundation awarded the Monticello Archaeology Department funds for the creation of an online-digital archive of archaeological data excavated from twenty slave-quarter sites in the greater Chesapeake region. Begun in May 2000, the Digital Archaeological Archive of Chesapeake Slavery is a first-of-its-kind digital project that will provide an unprecedented opportunity for comparative archeological research into the social and economic dynamics that shaped Chesapeake society and the African-American experience in the colonial and ante-bellum periods.

The data that the archive will make available will allow numerous historical questions to be addressed in a systematic way for the first time. The archive will also help clarify the role of newly available computing technologies, specifically the Web, in facilitating inter-site comparative research and collaboration in the discipline of archaeology. The project hopes to serve as an experimental model that, if successful, could be exported to other times and places that archaeologists study. The analytical roadblocks presented by low levels of data accessibility and data comparability among sites, and difficult to access collections, are universal in the discipline. Therefore an effective Internet-based solution would have discipline-wide consequences.

Today we would like to briefly discuss the four major components of the archive and then focus on the development of the database, the backbone of the Archive. This database is, in many ways, the first major “end-product” of the Archive project. The final web site that will debut in 2004 is the grand finale, *the* end product that will contain all the components of the archive, from historical overviews of sites to the raw data and query tools. In getting to the web site, however, the development of a complex, multi-dimensional database that contains standardized artifact lexicons and artifact attributes is essential to facilitating truly comparative analyses.

I want to first give you a quick overview of the entire Archive. (SLIDE Chesapeake Map) Although based at Monticello, DAACS is a joint venture between Monticello and six regional archaeological institutions that curate the collections involved. The institutions contributing sites to the archive include Colonial Williamsburg, Mount Vernon, Poplar Forest, the James River Institute for Archaeology, the William and Mary Center for Archaeological Research, and the Department of Anthropology at the College of William and Mary. The twenty sites in the archive come from both the Tidewater and Piedmont regions of Virginia. An Archive Steering Committee of over 30 archaeologists and historians are also directly involved with the archive's design and have greatly contributed to the development of the database and the standardization of artifact lexicons and artifact measurements.

(SLIDE DAACS Bullet points) When complete, DAACS will contain a wide range of data that will make up the four main components of the archive. The first component of the Archive that researchers will encounter consists of a detailed historical background on slavery in the Chesapeake. In addition, 20 archaeological and historical

narratives written by each participating site's principal investigator will accompany every site.

The second and largest segment of the Archive is the archaeological data. I will talk more about the development of the database in a moment but I just want to note that the Archive will contain fine-grained quantitative information on artifacts, faunal remains, the stratigraphic and spatial contexts in which they were found, archaeological site plans, stratigraphic sections of major site features, and images of artifacts.

The third component of the archive consists of tools that will allow a researcher to search the data in a variety of ways. Digitized site plans and sections of features will be available as navigatable maps that will be fully queriable. Whatever data a researcher requests will be able to be viewed two ways, in HTML tables with images or as ASCII files that can be downloaded to the researcher's computer. CAD site plans will also be available for downloading.

The fourth part of the archive is the documentation of the data standards. We will provide, on the web site, detailed descriptions of the data structures, field definitions, and artifact authority tables used by the archive, thereby allowing other archaeologists to duplicate the database on their own computers and catalog to the DAACS standard.

(SLIDE Welcome Window)

During the past year, our main focus has been on developing the DAACS database. In building the archive's data structures and artifact authority tables, we took into account not only the historical and archaeological questions that guide the archive, but also current analytical practice in the region and in historical archaeology. We wanted to use existing systems and authority terms as the backbone for the archive, but we also

needed to make sure that we had the ability to search for and test individual attributes of artifacts, as well as experiment with new ways to measure assemblages spatially and temporally across and between sites.

Thus the archive's first "end-result" is a collaborative, multi-dimensional relational database, which allows us to record fine-grained artifact and context information on an attribute-by-attribute level. In its final form, the database contains 209 related tables that sit in a SQL Server backend. The front-end consists of forms and queries programmed in Access.

I am going to quickly walk you through the first several sections of the database so you can get a sense of the type of data that is actually recorded. Right now you are looking at the Welcome Window for the program. (SLIDE Project Form) From the Welcome Window, data entry begins in the Project Form. The Project Table, which sits behind this form, records a wide range of information for each site, from the State Site Number and site soils to spatial data such as the Geographical Coordinate system used on the site. (SLIDE Context Form Sediments) After recording the site's basic information, one progresses to the Context Form, which is basically a more detailed version of field notes. Here, you can record each context's data, from sediments and recovery methods, to elevations and the types of soil samples taken. The context table will also provide links to digitized site plans.

In this screen shot I have highlighted the Fine Sediments and Sediment Inclusion tables. Although they sit on one form in the front-end, these are really two related tables, which allow us to record multiple fine and coarse sediment types. For example, if you

have a context that contains both charcoal and bone, you can record each of these inclusions and their percentages in two searchable fields instead of listing them in a general text field. (SLIDE Project relationships) If we look at the relationships in the backend, we can see the variety of tables that relate to the Project and Context tables. Here you can see that the Project and Context tables are linked in a one to many relationship. From there, one context can have any number of Fine Sediments, Sediment Inclusions, Elevation Points, and Boundary Points.

(SLIDE Context Samples table) I want to briefly explain the Context Samples table and its role in the database. Here, embedded in the Context form, is the Context Sample Table which contains data about each sample taken from a context, whether it is a standard ¼ inch mesh dry screen sample, a float sample, a water screen or chem sample. Once the type of sample is entered, the program generates a prefix that contains the Site id and the Context Sample numbers. Once you enter artifactual data for this Context Sample, this prefix will be carried to the artifact tables where it is combined with an autonumber number to create the unique artifact identifier.

(SLIDE All Artifact Relations)

Once you've completed the Context form, one moves onto recording artifact data. Information about every artifact from each site will be included in the Archive. Artifacts will be broken into two categories. The Archive will have a general artifact table that will function like a finds list by recording basic information about a wide variety of artifacts. Special artifact tables will accommodate data about artifacts that have complex and measurable attributes that need to be captured in a more detailed manner than a simple

finds list. We have, with the help of the Steering Committee, identified faunal remains, botanical remains, ceramics, glass, buttons, beads, buckles, tobacco pipes, and utensils as artifacts that will receive detailed analytical treatment. Beginning in May, DAACS analysts will recatalog all of these categories of special artifacts from the 20 participating archive sites to the Archive's new data standards. This means that each artifact from every archive site that falls into these categories will be reexamined to meet the cataloging standards set by the archive. (SO here you have your table, which pulls from the Context samples table and Generate artifact Ids. This is all related to the artifact tables).

(SLIDE CERAMICS measurements) Lets quickly look at the Ceramics Form. As I mentioned earlier, we were intent on developing new ways of measuring artifact attributes while still including long established data collection protocols. In the case of Ceramics, we are including sherd measurements that will allow archaeologists to calculate Estimated Vessel Equivalencies instead of minimum vessel counts. We are also borrowing a vessel diameter measurement technique developed and used by Steve Plog in the American Southwest. We call them Plog-o-meter measurements and are looking forward to comparing its results with traditional diameter chart estimates.

(SLIDE Ceramics dec tech)

IN addition, we have designed a much more in-depth way of describing decorative techniques on ceramics. Historical archaeologists have tended to lump decorative technique descriptions into one text field with no fixed or standardized authority terms. In DAACS, we are using fixed look-up tables to record all decorative techniques on a minute level, noting color, decorative technique, stylistic element, motif,

and genre. (SLIDE-Cer/Glass Relationships) As you can see here, we are also connecting similar detailed analyses on glass as well as the other special artifact classes.

This database will begin to have data entered into it in May and the real test of the system will begin. With the Internet Publication of the Archive, the database and its standards, in 2004, we hope to foster network externality, where the prevalence of some standard in a community affects the payoff for individuals who consider adopting it.

From this perspective, the most far-reaching implications of the archive project flow from the fact that it will engender a network externality in Chesapeake Archaeology. If this is correct, then it seems likely that archive standards and protocols will be attractive to all archaeologists anxious to reap the interpretive and professional pay offs from comparing their newly excavated finds to the large amount of data in the archive.