Doing Research and Teaching with the Digital Archaeological Archive of Comparative Slavery: A Workshop

Handouts and Datasets available at:
http://www.daacs.org/research/workshops/

Jillian E. Galle, Fraser Neiman, Lynsey Bates, Elizabeth Bollwerk, Leslie Cooper

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The Four Key Website Sections for Research
http://www.daacs.org/

1. Archaeological Sites
2. Query the Database
3. About the Database
4. Research
How to Find Archaeological Sites and Plantations

1. Use Atlantic Sites Map to locate sites
   http://www.daacs.org/archaeological-sites-map/

2. Use fly-out menu and region maps to select specific sites

   North America: http://www.daacs.org/regions/north-america/

   Caribbean: http://www.daacs.org/regions/caribbean/
Navigable Maps Locate Plantations and Sites

http://www.daacs.org/archaeological-sites-map/
Navigate to Plantations
Navigate to Individual Sites

http://www.daacs.org/regions/caribbean/
Montpelier House 37

http://www.daacs.org/sites/house-37/
You can also navigate to specific Plantations and Sites using...

- The left-hand navigation bar
- The fly-out menu
Archaeological Sites Pages
The first place to start researching an archaeological site.

Every archaeological site in DAACS has a suite of seven related content pages that provide a researcher with a site report, chronology, Harris matrix, downloadable maps and images, as well as critical information that with aid in the analysis of data from each site.

Researchers need to spend time with these pages prior to accessing the site’s context and artifact data.

The seven content pages are:

1. Site Home
2. Background
3. Before You Begin
4. Features
5. Chronology
6. Harris Matrix
7. Images

Links are here
Site Home Page

1. Provides a map detailing the full extent of the site’s excavation. Downloadable maps available through the Site Images page.

2. Provides an at-a-glance summary of the site’s location, when it was excavated, and by whom.
1. Site background pages are most often written by the project’s principal investigator.

2. Every site background page has the same four subheadings: Overview, Documentary evidence, Excavation history, procedure and methods, and Summary of research and analysis.

3. Site Images are expandable and downloadable.
Before You Begin Page: A must read!

1. Provides a list of things a researcher needs to know before using the data from the site.

2. Provides a quick view of excavation methods, as well as any parts of the collection that may be digitally translated, cataloged with different protocols, or that are missing.
Site Features

1. Summarizes how features were identified and excavated at the site. The page provides readers with an overview of the features.

2. If features were excavated at the site, provides summary tables that group features Feature Groups and provides quick identifying information. The Context Queries in the Query the Database section provide many more details on individual features.
Site Chronology

1. DAACS has developed an uniform set of methods to infer intra-site chronologies for all of the sites included in the archive. Each Chronology page describes the frequency seriation and correspondence analysis methods used to develop the site chronology.

2. Occupation phases are assigned for each site, and a table provides the accompanying MCD, BLUEMCD, TPQ, TPQ90 and TPQ95. The DAACS Glossary defines these terms.

3. The Query the Database section of the archive provides vanilla Mean Ceramic Dates by Context, Feature Numbers, Feature Types, Feature Groups, Stratigraphic Groups, Phased, and Sites.
Harris Matrix

1. The Harris Matrix summarizes stratigraphic relationships among excavated contexts and groups of contexts that DAACS staff has identified as part of the same stratigraphic group.

2. DAACS staff create the Harris Matrix based on data on stratigraphic relationships recorded among contexts in the DAACS database. It also includes color codes contexts, features, and stratigraphic groups by phase.

3. The Harris Matrix is drawn with the ArchEd application (http://www.ads.tuwien.ac.at/arched/index.html) and are downloadable.
Images

1. The Image Page provides expandable and downloadable photographs of the site and some of the recovered artifacts. All images related to the site can be found using an Image Query in the Query the Database section of the website.

2. Site maps, in .pdf, .dgn, and .dxr formats, are also available for download and use through the Images page.
Bibliography

1. Provides a detailed bibliography of published and presented papers relating to the site.
Plantation Home Page

1. Provides schematic map of plantation, with archaeological sites that are in DAACS located by orange “bulls-eyes”.

2. Provides links to the archaeological sites from the plantation currently in DAACS.
Plantation Background

1. Provides detailed background information, including summaries about what is known about the plantation from documentary and archaeological sources.

2. Provides links to expandable and downloadable images.
Plantation Images

1. Provides downloadable images and maps of the plantation.
Query the Database

http://www.daacs.org/query-the-database/
Artifact Queries provide users with access to all of the artifact data in the DAACS. The queries return data on assemblage content for one or more sites at varying levels of details and aggregation.

http://www.daacs.org/query-the-database/artifact-queries/
Context Queries

Context Queries return detailed data on excavated contexts for the chosen site or sites.
Object Queries provide users with access to data on all of the Objects cataloged in the DAACS.

http://www.daacs.org/query-the-database/object-queries/
The Site Query gives users access to all of the meta-data collected on an archaeological site or sites.
Image Queries return image data for chosen sites.

http://www.daacs.org/query-the-database/image-queries/
Mean Ceramic Date Queries

A mean ceramic date offers a quick and rough indication of the chronological position of a ceramic assemblage. DAACS offers two different mean ceramic date queries. The first provides mean ceramic dates for the chosen level of aggregation. The second provides ware-type frequencies.

http://www.daacs.org/query-the-database/meanceramicdate-queries/
Document Queries
(only for Nevis and St. Kitts sites)

Document Queries provide users with access to primary documentary material from the Jessups, New River, and Spring Village sites on the islands of Nevis and St. Kitts. Currently, primary source material is not available for other sites in the Archive.

How Queries Work: an example

Before You Begin

Each query is different, offering a range of options for summarizing and aggregating the data.

The first query of any given query type provides the most basic data (the fewest fields) and few aggregation options.

Subsequent queries within a query type offer more options for getting the data you want.

All query results can be downloaded for use in the stats package of your choice (or excel).
How Queries Work: an example

**Query the Database**

Artifact Query 1: Basic Inventory by Category

**WHAT DOES THIS QUERY DO?**

**STEP 1: AGGREGATE AND SUBSET DATA**

- CONTEXT
- FEATURE GROUP
- FEATURE NUMBER
- FEATURE TYPE
- PHASE
- STRATIGRAPHIC GROUP
- SITE

Specify Phase or leave blank and get data for all Phases

Here we chose Phase

Step 1: Aggregate/Subset Data
Step 2: Choose Site or Sites

Selected Building o
<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT ID</th>
<th>PHASE</th>
<th>TOTAL COUNT</th>
<th>ARTIFACT TYPE</th>
<th>ARTIFACT CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Buckles, Chain</td>
<td>Buckles</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Button, Flat Disc</td>
<td>Button</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>3</td>
<td>American Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>2</td>
<td>British Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>5</td>
<td>Course Earthenware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>65</td>
<td>Creamware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>26</td>
<td>Dressing, Doll/Behaim</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Jack/Kid Type</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Porcelain</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>3</td>
<td>Porcelain</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>2</td>
<td>Refined Earthenware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Staffordshire Brown Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>2</td>
<td>Stoneware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>3</td>
<td>Whitewash/Wash</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>10</td>
<td>White Gilt Glass</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>9</td>
<td>Bird</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>5</td>
<td>Chicken</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>8</td>
<td>Domestic, Cow</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>1</td>
<td>Domestic, Co, Cat</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>16</td>
<td>Domestic Pig</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 1</td>
<td>1010</td>
<td>F01</td>
<td>5</td>
<td>Domestic Sheep or Goat</td>
<td>Faunal</td>
</tr>
</tbody>
</table>
About the Database

http://www.daacs.org/about-the-database/
About the Database: Cataloging Manuals

The DAACS Cataloging Manuals provide researchers using DAACS data with a comprehensive manual describing how those data were created and insure data consistency between catalogers through the duration of the project by explicating cataloging protocols.

DAACS Cataloging Manual

- Project Context Feature Manual
- Read Manual
- Buckle Manual
- Button Manual
- Ceramic Manual
- Ceramic Genre Appendix
- Ceramic Pattern Appendix
- Found Manual
- Glass Vessel Manual
- Tobacco Pipe Manual
- Utensil Manual
- All Other Artifacts Manual
- Object Manual
- Images Manual
About the Database: Stylistic Elements

DAACS Stylistic Elements

DAACS offers two approaches to recording and analyzing decoration on ceramics, the DAACS Stylistic Element Initiative and DAACS Ceramic Genres. The DAACS Stylistic Element Initiative records individual decorative elements on the sherd level, providing researchers with detailed data on decorative elements and motifs. DAACS Ceramic Genres provide a way of understanding decoration on ceramics by using traditional types, based on decorative technique and patterns. Both are described below.

DAACS Stylistic Element Initiative

The DAACS Stylistic Element Initiative explores an approach to measuring variation in applied decoration on ceramics that is novel in historical archaeology. Traditionally historical archaeologists have measured decorative variation at the level of the sherd or vessel. This means that a single sherd or vessel has to be assigned to a single decorative category or genre. This approach produces useful results (and we have followed it in the DAACS ceramic genre field), but it may obscure decorative variation when there are multiple decorative elements on a single object.

DAACS Stylistic Element Glossaries

- Stylistic Element Glossary A-C (4 MB)
- Stylistic Element Glossary D-G (1.385 MB)
- Stylistic Element Glossary H-Q (815 KB)
- Stylistic Element Glossary R-S (1.088 MB)
- Stylistic Element Glossary T-Z (552 KB)
About the Database:
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Jillian Galie, Project Director
Monticello Archaeology, DAACS
P.O. Box 316
Charlottesville, VA 22902

How to Cite Archive Content
DAACS provides users with a wide variety of content, from discursive site reports presented on the Archaeological Sites pages and detailed chronologies to archaeological data, digitized maps, and images. The following guidelines provide

Citing Archaeological Sites and Plantation Home Pages:
Some DAACS web site pages, such as the Archaeological Sites and Plantation pages, are signed by their author. Pages with author signatures should be cited by author name and the appropriate page title.

Please provide the following information in a bibliography when citing signed website content.
1. The Author and context title.

http://www.daacs.org/about-the-database/guidelines/
PAPERS, SCIENTIFIC POSTERS, AND MANUSCRIPTS:

2014:


2013:


Order a copy of Ceramics in America 2012 through The University of New England Press.

2012:

- [Other papers and manuscripts listed here]
Research: Galleries

http://www.daacs.org/research/galleries/
Use of DAACS by Historians
(that we know about)

Morgan, P. D., and A. J. O’Shaughnessy

Bly, Antonio
2008  “Pretends he can read”: Runaways and Literacy in Colonial America, 1730-1776” Early American Studies 6.2 (Fall 2008): 261-294.
    http://history.appstate.edu/sites/history.appstate.edu/files/Bly,%20Pretends%20he%20can%20read.pdf

DAACS figures in historians’ reflections on the ways in which archaeological data might advance their understanding of changing slave life ways

Morgan, Phillip D.

Other Digital Resources for Teaching Slavery and Archaeology

Data Rich

- Voyages: The Trans-Atlantic Slave Trade Database: http://www.slavevoyages.org/tast/index.faces
- The Digital Archaeological Record (tDAR): http://core.tdar.org/
- Chaco Research Archive: http://www.chacoarchive.org/cra/
- The Comparative Archaeological Study of Colonial Chesapeake Culture: http://www.chesapeakearchaeology.org/index.cfm

Qualitative historical data but quantitative data could be gleaned

- Slave Revolt in Jamaica, 1760-1761: A Cartographic Narrative: http://revolt.axismaps.com/
Working with DAACS Data
Working with data is an iterative process!
An example from MCD Queries

Monticello’s *Building t* and the “Negro Quarter”
Negro Quarter:

--Occupied 1770s-1790s.
--Log house with four rooms, each with their own subfloor Pit (F01-F04).
--Possibly home to Issac Jefferson and his parents, Ursala and Great George.

Isaac Jefferson (1775-c.1850), c.1847 (courtesy of the University of Virginia Library)
--Constructed between 1793 and 1795.
--One subfloor pit (F05)
--Described by Jefferson on his 1796 Mutual assurance plat

r. which as well as s. and t. are servants houses of wood with wooden chimneys, & earth floors, 12. by 14. feet, each and 27. feet apart from one another. from t. it is 85 feet to F. the stable.
Mean Ceramic Date Query 1

Mean Ceramic Date Queries

A mean ceramic date offers a quick and rough indication of the chronological position of a ceramic assemblage [from 1979]. The mean ceramic date for an assemblage is estimated as the weighted average of the manufacturing date midpoints for the ceramic types found in it. The weights are the frequencies of the respective types in the assemblage. Types represented by more sherds have greater influence in the calculation. Manufacturing midpoint estimates, and the beginning and ending manufacturing dates from which they are computed, come from documentary evidence on the ceramic industry.

Here we offer two different mean ceramic date queries. The first provides mean ceramic dates for the chosen level of aggregation. The second provides ware-type frequencies. The data in each query are generated using traditional ceramic ware types such as White Salt Glaze, Creamware, Pearlware, Chinese Porcelain, and American Stoneware. The manufacturing date range for each ware type was assigned using traditional documentary sources (e.g. [Baldwin 1989; Miller et al. 2010]).

1. Mean Ceramic Date Query 1. By contexts, feature numbers, feature types, feature groups, stratigraphic groups, phases or sites

   Mean Ceramic Dates are calculated for Contexts, Feature Numbers, Feature Types, Feature Groups, Stratigraphic Groups, Phases, or Sites. Choose the site or sites and the level at which you would like to calculate the mean ceramic date.

2. Mean Ceramic Date Query 2. Mean Type Frequencies

   Provides ceramic ware-type frequencies for individual Contexts, Feature Numbers, Feature Types, Feature Groups, Stratigraphic Groups, Phases, or Sites. Choose the site or sites and the level at which you would like to aggregate the ware-type frequencies.

Query the Database

Mean Ceramic Data Query 1

What does this query do?

Step 1: Select Dates By

Context
Feature Number
Feature Type
Feature Group
Stratigraphic Group
Phase
Site

Note: Select ware type frequencies for individual sites. Please select sites in Tab 2.
The DAACS Mean Ceramic Date Query 1 calculates two types of Mean Ceramic Dates

**Regular MCDs:** Are calculated using established beginning and ending manufacturing dates for ceramic ware types.

**BLUE MCDs** (BLUE stands for Best Linear Unbiased Estimator): Uses the same beginning and ending manufacturing dates but gives less emphasis to ceramic ware with long manufacturing spans.

\[
MCD_{\text{blue}} = \frac{\sum_{i=1}^{t} m_i p_i \left( \frac{1}{s_i} \right)^2}{\sum_{i=1}^{t} p_i \left( \frac{1}{s_i} \right)^2}
\]

Where \( m_i \) is the manufacturing midpoint for the \( i^{th} \) ceramic type, \( p_i \) is its relative frequency, and \( s_i \) is its manufacturing span.

**Mean Ceramic Date Query 1:** Aggregate by site.
Mean Ceramic Date Query 1: Aggregate by Feature Group.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>MCD</th>
<th>BLUE MCD</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1800.0</td>
<td>1785.0</td>
<td>102</td>
</tr>
<tr>
<td>Building t</td>
<td>FG02</td>
<td>East-West fenceline running through both the Negro Quarter and Building t.</td>
<td>1796.0</td>
<td>1791.0</td>
<td>26</td>
</tr>
<tr>
<td>Building t</td>
<td>FG03</td>
<td>East-West fenceline located along the south wall of Building t.</td>
<td>1788.0</td>
<td>1791.0</td>
<td>12</td>
</tr>
<tr>
<td>Building t</td>
<td>FG04</td>
<td>East-West fenceline running along the north edge of the site and passing through the Negro Quarter and Building t.</td>
<td>1760.0</td>
<td>1760.0</td>
<td>1</td>
</tr>
</tbody>
</table>
### Mean Ceramic Date Query 1: Aggregate by Feature Number

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE NUMBER</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>MCD</th>
<th>BLUE MCD</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>F01</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1823.0</td>
<td>1815.0</td>
<td>60</td>
</tr>
<tr>
<td>Building t</td>
<td>F02</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1789.0</td>
<td>1774.0</td>
<td>16</td>
</tr>
<tr>
<td>Building t</td>
<td>F03</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1737.0</td>
<td>1759.0</td>
<td>15</td>
</tr>
<tr>
<td>Building t</td>
<td>F04</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1778.0</td>
<td>1783.0</td>
<td>11</td>
</tr>
<tr>
<td>Building t</td>
<td>F05</td>
<td></td>
<td></td>
<td>1781.0</td>
<td>1794.0</td>
<td>13</td>
</tr>
</tbody>
</table>
MCDQ2: Ware Type Frequencies

--Step 1: Select Feature 01
--Step 2: Select Building t.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE NUMBER</th>
<th>FEATURE TYPE</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>WARE TYPES</th>
<th>COUNT</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>American Stoneware</td>
<td>49</td>
<td>436.6993</td>
</tr>
</tbody>
</table>

What do we know about American Stoneware?
--Long manufacturing span!
--Begin 1750, end 1820 (DAACS dates).

Next step, recalculate MCD without Stoneware
### Backend view of tblCeramicWare in the DAACS database

<table>
<thead>
<tr>
<th>WareID</th>
<th>Ware</th>
<th>ObjectTypeID</th>
<th>BeginDate</th>
<th>EndDate</th>
<th>CeramicMaterialID</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>Agate, refined (Whieldon-type)</td>
<td>4</td>
<td>1740</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>118</td>
<td>Albisola</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>52</td>
<td>American Stoneware</td>
<td>4</td>
<td>1750</td>
<td>1920</td>
<td>3</td>
</tr>
<tr>
<td>31</td>
<td>Astbury Type</td>
<td>4</td>
<td>1725</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>Bennington/Rockingham</td>
<td>4</td>
<td>1830</td>
<td>1900</td>
<td>1</td>
</tr>
<tr>
<td>122</td>
<td>Biot</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>61</td>
<td>Black Basalt</td>
<td>4</td>
<td>1750</td>
<td>1820</td>
<td>3</td>
</tr>
<tr>
<td>115</td>
<td>Bristol Glaze Stoneware</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>3</td>
</tr>
<tr>
<td>53</td>
<td>British Stoneware</td>
<td>4</td>
<td>1671</td>
<td>1800</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Buckley</td>
<td>4</td>
<td>1720</td>
<td>1775</td>
<td>8</td>
</tr>
<tr>
<td>56</td>
<td>Burslem</td>
<td>4</td>
<td>1700</td>
<td>1725</td>
<td>2</td>
</tr>
<tr>
<td>88</td>
<td>Canary Ware</td>
<td>4</td>
<td>1780</td>
<td>1835</td>
<td>1</td>
</tr>
<tr>
<td>103</td>
<td>Caribbean Coarse Earthenware, hand built</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>117</td>
<td>Caribbean Coarse Earthenware, unid.</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>116</td>
<td>Caribbean Coarse Earthenware, wheel thrown</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>99</td>
<td>Cauliflower ware</td>
<td>4</td>
<td>1760</td>
<td>1780</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Coarse Earthenware, unidentified</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>16</td>
<td>Coloneware</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>23</td>
<td>Creamware</td>
<td>4</td>
<td>1762</td>
<td>1820</td>
<td>1</td>
</tr>
<tr>
<td>106</td>
<td>Creamware, Carolina</td>
<td>4</td>
<td>1765</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>Delftware, Dutch/British</td>
<td>4</td>
<td>1600</td>
<td>1802</td>
<td>1</td>
</tr>
<tr>
<td>95</td>
<td>Derbyshire</td>
<td>4</td>
<td>1750</td>
<td>1800</td>
<td>8</td>
</tr>
<tr>
<td>35</td>
<td>Faience</td>
<td>4</td>
<td>1700</td>
<td>1800</td>
<td>1</td>
</tr>
</tbody>
</table>
Case Study: Pipes from Utopia II and III

Chronology and Social Dynamics
Sub-Floor Pit Hypotheses

- Africanisms
- “Hidey holes”
- Winter root-crop storage
- Safe-deposit boxes
Chronology
Harrington Histograms

Source:
Harrington, JC
1954   Dating stem fragments of 17th and 18th century tobacco pipes. *Quarterly Bulletin of the Archaeological Society of Virginia*
Chronology
Harrington Histograms

- A form of frequency seriation
Chronology

Binford's Regression Approach

Harrington's "data": \( y = 1919.1 - 36.06x \)
Binford's formula: \( y = 1931.85 - 38.26x \)
Pipes as Signals

- Bore diameter decrease is driven by the demand for longer thinner stems, in costly signaling arms race in the 17th and early 18th centuries

- Three measurements are sensitive to this process:
  - Bore diameter
    - \( \text{mm} \)
    - \( \text{64th-inch} \)
  - Exterior stem diameter
  - Stem length for whole pipes

- A complication:
  - Local vs. Imported pipes
  - DAACS field: Material
Estimating Pipe Length in Assemblages

\[
\text{Pipestem Index} = \frac{\# \text{ Stem Fragments}}{\# \text{ Stem Fragments} + \# \text{ Bowl Fragments}}
\]

DAACS Field: Tobacco Pipe Completeness

Base, Bowl
Base, Bowl, Rim
Bowl Fragment
Bowl, Rim
Mouthpiece, Stem
Stem
Stem, Base
Stem, Base, Bowl
Stem, Bowl
Stem, Bowl, Rim
Unidentified
Estimating Pipe Length in Assemblages

\[ \text{Pipestem Index} = \frac{\# \text{ Stem Fragments}}{\# \text{ Stem Fragments} + \# \text{ Bowl Fragments}} \]

# Bowl Fragments =
   Base, Bowl +
   Base, Bowl, Rim +
   Bowl Fragment +
   Bowl, Rim

# Stem Fragments =
   Mouthpiece, Stem +
   Stem +
   Stem, Base
Data Analysis Plan

- Artifact Query 3

- "Select All" attributes

- Download the .xls

- Excel: Pivot Table

- Select ("filter") imported pipes only

- Compute *mean metric bore diameters* for Feature Groups

- Convert to 64th inches and estimate dates. (64th inches = 0.03937mm * 64)

- Check order against *proportion local pipes*

- Compute *mean exterior stem diameters* for Feature Groups

- Compute *pipe stem index* for Feature Groups
Utopia III, your turn! Calculate the Pipestem Index for Structures 40 and 50.

1. First, check out the Utopia III site map. Find it in the Archaeological Sites Pages, Images.
2. Check out the differences between Structure 40 and Structure 50.
3. Then go to Artifact Query 3. Select Tobacco Pipes, Feature Numbers, Utopia III.
4. Run, download data. Open Data in Excel
5. Insert Pivot Table. Rows = Feature Number, Columns =Completeness, Values= Count
5. Filter on all Bowl Completeness. Copy Feature Row and Bowl Grand Total Row to create a new table below the pivot table. Use paste special values.
6. Revise pivot table. Filter on All Stem Completeness. Copy Stem Grand Total Row into the table below the pivot table. Use paste special values.
7. Now you have a new table with three columns: Feature Number, Bowl Count, and Stem Count.
8. Now calculate the Pipestem Index in the Column to the right of Stem Count. Your Formula will look like = Pipestems/(Pipestems+Bowls). Calculate for each Feature.
9. Insert Scatter Plot.
Utopia III, your turn! Calculate the Mean Exterior Pipe Bore Diameter and Plot it For Structures 40 and 50.

1. In the same excel workbook you calculated the index, return to the data page.
2. Insert Pivot Table. This new pivot table will appear in a different worksheet. Rows = Feature Number, Columns = None,
3. Add Exterior Stem Diameter to the Values field. Left click: Value Field Setting “Count”
4. Drag a second Exterior Stem Diameter to the Values Field. Left Click: Value Field “Average”
5. Copy fields and paste special into a new table below the Pivot Table.
6. Delete all features with a less than 15.
7. Insert Scatter Plot.
Mean Metric Exterior Bore Diameter vs. Structure

- Structure 40
- Structure 50

Points:
- F119
- F043
- F042
- F062
- F061
- F048A/E
- F053
- F057
- F055
- F058A
Estimating a Confidence Interval

Sample from a Gaussian distribution (e.g. a mean bore diameter)

\[
\overline{x} = \frac{\sum_{i=1}^{n} x_i}{n}
\]

The mean

\[
s^2 = \frac{\sum_{i=1}^{n} (x_i - \overline{x})^2}{n - 1}
\]

The variance (standard deviation squared)

\[
se = \frac{s}{\sqrt{n}}
\]

Standard error

\[
\overline{x} \pm se \times t.inv(1 - \frac{\alpha}{2}, df)
\]

The confidence interval

where alpha=.05

\[df = (n-1)\]
Estimating an Confidence Interval
Sample from a binomial distribution (e.g. a proportion)

\[ \hat{p} = \frac{\text{# successes}}{N} \]
\[ p' = \frac{(\text{# successes} + 2)}{(N + 4)} \]

\[ se = \frac{p'(1 - p')}{\sqrt{(N + 4)}} \]

\[ p' \pm se \times 1.96 \]
Introduction to the Sites for Abundance Index Exercise
Monticello

• Virginia Piedmont: One of four adjacent farms in the Charlottesville area owned by Jefferson, nearly 5000 acres in total

• “Mountaintop”: mansion, dependencies, path lined with slave workshops and dwellings known as Mulberry Row
  – Also a number of agricultural fields, domestic quarters, and outbuildings

• Two phases of mansion construction after the mountain was cleared: Monticello I (1770 – 1796) and Monticello II (1796 – the present)
  – This transition also marks Jefferson’s reorganization of the Monticello landscape, including enslaved domestic dwellings and field boundaries, with wheat cultivation
Monticello Archaeology

• Active in archaeological research of the mountaintop and surrounding areas since 1979

• Since the late 1990s: Research focus on chronology of sites across the landscape and the impact of Jefferson’s transition from tobacco to wheat in the 1790s on enslaved people
Monticello: Five Sites for Comparison

- Monticello Mansion
- Building 0
- Building 1
- Stewart-Watkins Site
- Elizabeth Hemings Site
- Site 8
Building /

- Domestic and industrial structure on Mulberry Row inhabited by enslaved laborers
- Storehouse; brick forge and anvil base
- Later two room slave quarter and nailery
- Possible previous structure before storehouse
Building o

- Domestic slave quarter site on Mulberry Row, near Monticello mansion

- Two distinct construction episodes
  - Log cabin constructed c. 1770s (Monticello I)
  - Second wood-frame house built early 1790s (Monticello II); contained one sub-floor pit (Neiman 1997)

- First excavated by William Kelso 1981; part of reassessment initiated by DAACS in 2000
Elizabeth (Betty) Hemings Site

• Enslaved matriarch of Hemings family at Monticello
• Her final residence, constructed c. 1795, for approximately ten years until her death in 1807
• Lack of subfloor pits suggests that residents had greater control over visitors
Home Farm Quarter: Site 8

• Enslaved laborer Quarter site dating from c. 1770 to c. 1800, downslope from the Mansion
  – Four structures identified
• Houses with more than two subfloor pits, also brick-lined cellar and borrow pit; maintained yard space between houses
• Buildings demolished for wheat cultivation
• Plowzone site discovered through shovel test pit survey
Stewart-Watkins

- White skilled laborers hired by Jefferson: William Stewart (blacksmith) until c. 1808; Elisha Watkins (carpenter) less than 2 years in residence
- Two building episodes: Core structure during first phase, eastern addition in second phase; dismantled c. 1810
- Unvaried and worn ceramics, quantity of salvaged industrial materials and tools (Heath 1999)
The Consumer Revolution and Ceramics
17th - 18th Century Consumer Trends

• A Consumer Revolution started in Europe in the late-17th century

• A proliferation of both tangible goods (ceramics, silver, linens, houses) and comestibles (tea, sugar, coffee, chocolate, spices).

• Emphasis on consumption and display

• Consumer goods = status markers

• The name of the game was differential access to not only costly goods, but also the specialized knowledge required to use them in culturally and socially appropriate settings.
Consumer Revolution

- Quickly expanded out of Europe and into the colonies in the New World. The “revolution” was in full force in the British colonies by the beginning of the 18th-century.

- A never-ending stream of newcomers, growing populations, and quickly changing demographics reinforced elite’s need for inexpensive, movable, and fashionable objects.

- People at all economic scales, including enslaved individuals, were actively participating and making their own consumer choices
Consumer Revolution

New goods produced

Individuals want new goods to continue to improve their lives/signal status

Costly goods bought by individuals of all classes to meet perceived needs

Larger percentage of population consumes once-costly goods when prices drop

Time passes/demand shrinks/price drops
Consumer Revolution and Archaeology

The Upsides:

• The increase in variety and abundance of materials is great for archaeologists!

• Ceramics are ideal artifacts to study consumption patterns, as styles and ware types change quickly in response to consumer demand. They provide insight into consumption patterns and enslaved individuals’ differential access to markets. Also great for archaeologists!

The Downsides:

• Many materials were organic and did not survive in the archaeological record. Luckily, ceramic vessel form can often tell us about many of the foods and drinks consumed, or at least aspirations for consumption.

• Archaeological sites contain thousands of artifacts! Archaeologists have an obligation to develop the methodological (analytical, statistical) skills for effectively analyzing all data from a site, not a handful of artifacts. It is only through the analysis of complete assemblages that statistically significant results are produced.
Chinese Porcelain
Delft/Tin-glazed Earthenware

Plate/Charger

Punch bowl

Ointment jar

1www.chipstone.org
White Salt Glaze

Chocolate/Coffee Mug

Plate

Coffee Pot

Platter

Teabowl

Creamware

From left to right: ovular platters, fruit basket, plates, tureen lid

Close up of fruit basket and tureen lid

Chamberpot
Platter

Pearlware

Dinner service

Pitcher

Mug

Teabowl


Handpainted
Molded Edge
Factory Made Slip
Handpainted and Transfer Printed
The Abundance Index
How to compare sites dug by different people, using different methods?

**Relative Frequencies:** Commonly used. Problematic because they are based on the assumption that the artifact class in the numerator is independent of the denominator. Enslaved households with greater access to costly adornment items, likely had greater access to all goods.

**Artifact Densities:** Provides a good estimate of per capita discard if population density and occupation among sites are constant. OR if site formation processes don’t impact density.

**Abundance Indices:** Provides estimates of discard that are relative to a baseline discard rate, with the assumption that the baseline discard does not change, or if it does, it does so in a predictable manner.
Abundance Index (AI) =
\[
\frac{\text{Artifact Group 1}}{\text{Artifact Group 1} + \text{Artifact Group 2}}
\]

Artifact Group 1 is the artifact class whose discard rate you wish to measure.

Artifact Group 2 is the baseline artifact class, whose baseline discard does not change (or that changes in a predictable manner).

Compare this to relative frequencies:
\[
= \frac{\text{Artifact Group 1}}{\text{Artifact Group 2}}
\]
Excel Formula

=\frac{A1}{A1+A2}

<table>
<thead>
<tr>
<th>Sites</th>
<th>Creamware</th>
<th>Wine Bottle</th>
<th>AI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>482</td>
<td>469</td>
<td>0.506834911</td>
</tr>
<tr>
<td>B</td>
<td>2619</td>
<td>2852</td>
<td>0.478705904</td>
</tr>
<tr>
<td>C</td>
<td>157</td>
<td>65</td>
<td>0.707207207</td>
</tr>
<tr>
<td>D</td>
<td>1490</td>
<td>2736</td>
<td>=\frac{B7}{B7+C7}</td>
</tr>
</tbody>
</table>
Plot the Abundance Index By Time

1. Go to Insert Tab, Select Scatter Plot
2. Add MCD field.
X Axis = Time (MCDs)

Y Axis = Abundance Index
With Scatterplots, you add sites to the plot one at a time.

**Series Name** = Site Name

**X Axis** = Time (MCDs)

**Y Axis** = Abundance Index
Teaching with DAACS

Sample syllabi and projects are available at:
http://www.daacs.org/research/workshops/
Teaching with Digital Archaeological Data: A Research Archive in the University Classroom

Anna S. Agbe-Davies, Jillian E. Galle, Mark W. Hauser, and Fraser D. Neiman

Journal of Archaeological Method and Theory, 2013

Provides concrete examples of how to use digital archaeological data from DAACS to accomplish a range of pedagogical goals in undergraduate and graduate archaeology courses, as well as in general education classes.

Includes a discussion of how archaeologists can use digital data to address ethical and curricular concerns.

Available at: www.daacs.org/workshop-handouts/AgbeDaviesetal2013.pdf
Introductory Archaeology Undergraduate Courses

Common Themes:

1. A commitment to having students work with archaeological data.
   a. A belief that even beginning students should understand that archaeological research begins with the artifacts and the contexts from which they came.

2. A gradual approach to data analysis.
   a. Often first course assignments involve data tables prepared by instructor.

   a. Later course assignments have students to engage directly with the DAACS website, requiring them to find and aggregate the data they need for their projects.
J. Cameron Monroe’s and Greg O’Malley’s
Slavery in the Atlantic World: Historical and Archaeological Research Methods
HIS 158C/ANTH 179
University of California, Santa Cruz

• Upper Division course on the History of Slavery in the Atlantic World.
• Cross listed in Anthropology and History
• Solidly grounded in archaeological and documentary data analysis.
• Focuses on historical and archaeological research methods
• Organized around 4 major historical themes
  – West Africa and the Atlantic Slave Trade
  – The Plantation Social World
  – The Economics of Slave Life
  – African Culture in the Americas
• Has students work with data in weekly “lab” exercises
• Project difficulty builds gradually towards a final project.
Lab Modules

- **Module 1** – Enslavement in West Africa
- **Module 2** – Trade Goods in Africa
- **Module 3** – Violence on Southern Plantations
- **Module 4** – Domestic life in Slave Quarters***
- **Module 5** – Provisioning Plantations***
- **Module 6** – Cultural Origins of Enslaved Africans
- **Module 7** – Working with DAACS Data***

***DAACS heavy modules

Seville, Yard Space Artifact Distributions
UC Santa Cruz Slavery in the Atlantic World Final Presentations
UVA class taught in 2003, before the DAACS website was launched to the public. Data was provided to the students in excel files.

For UWI class, students used the website but Galle decided to provide excel data sets derived from DAACS for their final projects.

In both classes, the majority of students had never conducted any form of analysis or worked with excel before.

In both classes, the unit of analysis for the class projects was the household, and the students were presented with artifact and architectural data from these eighteenth- and nineteenth-century household sites. In a writing assignment and oral presentation, students were asked to interpret and compare the archaeological data from multiple households using the abundance index.
## Advanced Undergraduate and Graduate Courses

<table>
<thead>
<tr>
<th>Common Themes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prior coursework in archaeology is highly recommended.</td>
</tr>
<tr>
<td>2. Assumes some proficiency with statistical methods, and often requires use of a stats package.</td>
</tr>
<tr>
<td>3. Students engage with the archaeological data, and DAACS, in a sophisticated manner, using theoretical models and archaeological and historical literature.</td>
</tr>
<tr>
<td>4. Students are often required to find and download the data from the DAACS website directly.</td>
</tr>
<tr>
<td>5. When dataset is complex, instructor prepares data from DAACS prior to the assignment.</td>
</tr>
</tbody>
</table>
Students required to work with both archaeological and documentary data.

They work first with documentary data from Slave Voyages, The Trans-Atlantic Slave Trade Database: [http://www.slavevoyages.org/tast/index.faces](http://www.slavevoyages.org/tast/index.faces)

The DAACS Assignment:

- For the undergraduates only.
- Requires students to develop a hypothesis from their readings, and to test that hypothesis using data from DAACS.
- They are not given prepared data, nor are they taught analytical methods in the class.
Fraser Neiman’s
Archaeological Approaches to Atlantic Slavery
http://people.virginia.edu/~fn9r/AnthARH3603.7603/index.html
ANTH 3603/7603 and ARC 3603/7603
University of Virginia

Project 1: Utopia Chronology: How can we infer reliable, fine-grained archaeological chronologies that are necessary to trace patterns of change in lifeways of enslaved people within a single site and at multiple sites? http://people.virginia.edu/~fn9r/AnthARH3603.7603/Project1.pdf

Requires students to seriate pipe stem and ceramic assemblages from the three Utopia sites.

Project 2: Slave Housing in the Eighteenth Century Chesapeake: What do patterns of change across the 18th century and regional variation in slave houses and in the abundance and morphology subfloor pits tell us about social dynamics within slave communities? http://people.virginia.edu/~fn9r/AnthARH3603.7603/Project2.pdf

Project 3: Enslaved Consumers: Do changing frequencies and shapes of locally made and imported ceramic vessels document changing social identities, economic opportunities, and participation by enslaved people in markets and the 18th-century "consumer revolution"? http://people.virginia.edu/~fn9r/AnthARH3603.7603/Project3.pdf

Requires students to calculate abundance indices for ceramics, leaded glass, and buttons from 7 sites in DAACS.
Student Responses

• Students were excited by the prospect of analyzing data in novel ways that speak to the historical and anthropological issues raised in the reading and lecture.

• They shared a sense that they were discovering something new and are close to “the cutting edge.”

• They often lamented the lack of engagement with data in other courses.

• One student wrote in a recent anonymous evaluation: “I wish more archaeological courses like this (practical skills, data analysis, etc.) were offered at UVA, and in this manner for that matter, grounding one in both theory and method. The course material has been deeply engrained and I will use its content for years to come.”
Also check out....

Fraser Neiman’s
Historical Archaeology
http://people.virginia.edu/~fn9r/arh3604/index.html
ANTH 3850/7855 and ARC 3604/7604
University of Virginia

AND

Quantitative Analysis I
http://people.virginia.edu/~fn9r/anth4840.7840/index.html
ANTH 4840/7840
University of Virginia
General Education Undergraduates

These classes use DAACS and data analysis to emphasize that the conceptual and analytical skills are broadly applicable outside archaeology AND outside the university.

Like the introductory archaeology classes, exercises in writing and basic data analysis requires students to develop arguments and learn introductory

Unique challenges of using digital archaeological data in teaching general education classes: archaeological data can be “unruly” requiring iterations of analysis. Learning that research, and data analysis, is iterative is a critical concept, across all course levels.
The course was to be pitched to a general student audience with no archaeological experience and no intention of further archaeological study. Challenges quickly emerged: first, to fulfill the goals of science curriculum, including instruction in hypothesis development, testing, and interpretation; second to provide a hands-on learning experience with real data; and finally, as best as we could, to mirror field school learning experiences in the classroom.

The Instructors turned to DAACS to provide the raw material with which to accomplish these objectives.

Had two hour weekly laboratory sessions during which students completed exercises that reinforced concepts covered in lecture and readings. Topics included relative and absolute dating methods in archaeology, how sites are mapped, and site formation processes, familiarizing students with the procedures that produced the data they would get from DAACS. In the fifth week of the ten-week term, the instructors began to introduce students to those data. The students calculated dates using pipe-stem bore sizes and ceramic manufacturing dates. Once they had established temporal contexts for analysis, they used ceramics and faunal remains to study food ways using their assemblages.

--Mark Hauser’s DePaul Course “Archaeology: Unearthing History”, provides students with individual objects from Seville Plantation, and asks them to use library and web resources to write a history of the object, its use, and contexts in which it might be found. He sees this as a precursor to working with tabular data.
Use of DAACS by Historians
(that we know about)

Morgan, P. D., and A. J. O’Shaughnessy

Bly, Antonio
2008 “Pretends he can read”: Runaways and Literacy in Colonial America, 1730-1776” Early American Studies 6.2 (Fall 2008): 261-294.
http://history.appstate.edu/sites/history.appstate.edu/files/Bly,%20Pretends%20he%20can%20read.pdf

DAACS also figures in historians’ reflections on the ways in which archaeological data might advance their understanding of changing slave life ways.

Morgan, Phillip D.

Other Digital Resources for Teaching Slavery and Archaeology

Data Rich

• Voyages: The Trans-Atlantic Slave Trade Database: http://www.slavevoyages.org/tast/index.faces

• The Digital Archaeological Record (tDar): http://core.tdar.org/

• Chaco Research Archive: http://www.chacoarchive.org/cra/

• The Comparative Archaeological Study of Colonial Chesapeake Culture: http://www.chesapeakearchaeology.org/index.cfm

Qualitative historical data but quantitative data could be gleaned

• The International Slavery Museum’s Archaeology of Slavery website, developed in collaboration with DAACS: http://www.liverpoolmuseums.org.uk/ism/slavery/archaeology/index.aspx

• Two Plantations (companion to Richard Dunn’s 2015 book, A Tale of Two Plantations): www.twoplantations.com

• Slave Revolt in Jamaica, 1760-1761: A Cartographic Narrative: http://revolt.axismaps.com/