Building a Regional Chronology from Diverse Digital Data: an example from Jamaica

1. Introduction

As the volume of digital data storing increases in the discipline, archaeologists will increasingly find themselves faced with the need to build and maintain repositories for assemblages from different sites. Moreover, there is a growing realization that the use of digital data as an approach to the problem has grown out of several related research needs, the social dynamics of life in Jamaica during the 18th and early 19th centuries.

Our approach consists of three key elements:

- We employ a complementary statistical methodology: correspondence analysis (CA) and multi-response QDA (MQDA).
- We develop a new methodology using probabilistic distributions, and extend the results from the two methods to evaluate the results objectively.
- We test the same set of techniques if the data for each of our sites are consistent with local archaeology and to plan the temporal sequence into a single-level scale chronology.

For sites sampled using these test methods, the relationship between the two techniques in the analysis of the effects of soil samples and extract an archaeological signal from soil samples.

2. The Sites

The study used archaeological data from four Jamaican sugar estates: New Montpelier, Seville House, Papine Slave House, and Village Castles.

3. Seville: House 16

House 16 is part of a much larger slave estate associated with the Seville sugar estate. The site is located near the site of the 18th-century slave castle.

4. Papine Slave Village

Between 1898 and 2006, DAACS and the University of Idaho identified 2000 sites for the slave village of Papine Sugar Estates located in what is today the St. Thomas. Over 200 sites in different contexts have been dug. This report assesses over 15,000 artifacts and over 2000 individual artifacts, with a small amount of overlay error.

We incorporated the problem by using empirical data techniques. The approach captures of the CA estimates and MQDA based on prior probability distributions, whose parameters were estimated from samples for 0.9999, with 100 estimates. The georeferenced model was used to estimate the Cape population density. A Sobel test model provided results of this approach.

5. New Montpelier: House 37

House 37, a large house at New Montpelier, contains many features of the 19th-century that can be seen. The site contains a large number of artifacts, including ceramic fragments and graphitic assemblages. The site is located near the site of the 18th-century slave castle.

In this case, the plot of ceramic types over time shows peaks in the late 19th century. As the site opens in 1800, the telltale signal is plotted in a small dataset.

6. Putting it Together

We used the following methods to create the following analytical units:

- CA analysis
- MQDA analysis
- Probability distributions

7. Results

The first two CA dimensions capture 65% of the variance in the data. There are no significant differences in the remaining dimensions.

A strong, positive correlation between the CA scores and MQDA confirms that the latter capture time. We can therefore use the CA to aggregate assemblages into larger counting units.