

Spatial Data Analysis in Archaeology
Anthropology 589b

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Problem Set 4: Kriging Artifact Distributions

The Problem

A major topic of research into the social dynamics of the 17th-century Chesapeake variability in the living arrangements of tobacco planters and their laborers, who during this period were more likely to be indentured servants from England than enslaved Africans. Did laborers and their owner share living space on 17th-century plantations? One way to address this question is by looking at differences in the spatial distribution of white vs. red-clay pipe fragments across plantation sites, in conjunction with the locations of buildings. Red-clay pipes were locally made, while white ones were imported. This leads to the hypothesis that the former were more likely to be smoked by laborers, while the latter were smoked by labor owners.

With this idea in mind, examine the spatial distribution red and white-clay pipes at The Clifts and Compton. For the Clifts, compare the spatial distribution of red pipes and 8 and 9/64th-inch bore diameter white-clay pipes. For Compton, compare red pipes to the total number of white-clay pipes. If you are feeling ambitious, you might also want to explore the possibilities of combing the white bore-diameter classes at Compton into two larger groups (*e.g.* 8 and 9/64th *vs.* 7 and 6/64th).

Use kriging to interpolate artifact distribution surfaces. Comment on the decisions you made in fitting model variograms to the semivariance scatter plots ("experimental variograms") and their implications for interpreting the interpolated surfaces. What do the resulting maps tell is about spatial segregation in the living areas of labor owners and laborer on these two sites? To what extent does smoothing the raw interpolated surfaces and/or converting the red and white surfaces to a single map of relative frequencies help clarify the issue?

What to Turn In

A short (< 2 page single spaced) description of the problem, the methods you used to address it, your results, and your conclusions. Come to class prepared to describe your results. Due date: 03.12.07.