THE PROVISIONING OF NINETEENTH CENTURY ZULU CAPITALS: INSIGHTS FROM CERAMIC COMPOSITIONAL ANALYSES

Project Background

How urban areas are provisioned is key to understanding rural-urban relations in preindustrial states. Most research on this topic has focused on the world's most well known civilizations, such as the Maya, Inca, and those in the Near East and the Classical world.[55] The neglect of African data in general is a considerable issue.[30,36] A more immediate concern is the lack of archaeological attention given many preindustrial states known primarily from oral history.[10] In such cases, there is tendency for historians to ignore archaeological evidence and archaeologists to privilege the documentary record.[42]

In explaining the rise of urbanism and state forms of governance in southern Africa, archaeologists have emphasized how external trade stimulated new relationships between large centres and smaller ones in the surrounding countryside.[23] For the Mapungubwe and Great Zimbabwe states, it has been shown that raw materials from rural areas were used to make items for the elite or for long distance trade.[14,23,37,40,41,49] For the Zulu kingdom of the nineteenth century AD, comparable interactions between rural homesteads and royal capitals are only known from oral history, but these have not been investigated using archaeological data.

This research project is a study of how political capitals (*amakhanda*) of the Zulu kingdom in southern Africa were provisioned. The historical record describes how the social strata at Zulu capitals were differently provisioned: the royal family and elite was supported by the collection of surplus from rural chiefdoms and special herds and crops worked by the permanent army[61] whilst regiments were largely sustained by the homesteads from which they originated.[20,61] No archaeological evidence exists to support whether royal homesteads organized provisioning in this manner. Direct evidence for food provisioning of urban capitals is problematic because animal remains tend to preserve poorly and plant remains are rare.[33,41,48,50] Rather than focus on food, we examine pottery vessels used to contain, cook, and transport food. Pottery is the most abundant and well-preserved artefact at nineteenth century sites.[21,33-35] However, since regional ceramic styles are not evident until after the fall of the Zulu kingdom,[25] they cannot be used to trace the movement of people, goods and ideas between rural and urban areas. Ceramic provenience research offers an alternative means to investigate rural-urban relations during the nineteenth century.

Hypotheses and Objectives

We hypothesize that pottery used by the royal family and its retainers were made using local resources, while young military men used pottery made by their families in rural homesteads. Alternatively, if pottery was only made using local clays from the vicinity of capitals, then specialized potters at capitals must have provisioned thousands of inhabitants. Craft specialization of this kind has not been documented until the twentieth century.[16-18,28,31]

To test this hypothesis we propose to identify pottery production locations in the Zulu kingdom through a study of the mineral and chemical composition of pottery found at three Zulu capitals. The capitals established by Shaka (kwaBulawayo), Dingane (uMgundgundlovu) and Cetshwayo (oNdini) are the focus of our interest because they span the rise and collapse of the Zulu kingdom (c. 1821-1879).[47,60,62]

Inferring ceramic production locations from compositional data

A substantial corpus of provenance research in southern Africa has examined the composition of pottery to identify local and imported pottery at archaeological sites. Previous work by researchers in southern Africa have distinguished pottery made locally, pottery made locally but of non-local styles, and pottery that was imported.[24]

These studies have taken what is referred to as the 'hierarchical approach' in determining 'local' and 'non-local' sources.[1] This means that definite clay sources are not known. By comparing shards from a

site, the analyst defines compositional groups. Those groups that fall outside the local compositional space known from the geology must be interpreted as either the upper limits of geochemical variability in a region or as imported vessels. Analytically, this is tenuous ground to tread for three reasons: (1) 'local' production areas are defined in geological terms, not in terms of the community of potters who utilized them; (2) the approach does not adequately account for how production, use and deposition impacts changes in the mineralogical and chemical composition of ceramics [1,5-8,43,44]; and (3) to infer the organisation of ceramic production, it is simply not enough to detect whether clay is "local" or "non-local" in geological terms or to identify what may have been subtracted from or added to clays used by ancient potters. These are not problems that can be solved by just having more samples.[24] Materials science data has no inherit social meaning.[2,53] To link materials science analyses of ceramics to the societies that produced them requires a comparative interpretive framework that minimally accounts for (1) geological variation, (2) the resource areas used by potters, (3) how clays are modified during the manufacturing process, and (4) the ability to detect change and variation practices over time.[2,3]

METHODOLOGY

Our methodology uses precisely chosen data sets to identify pottery production locations in the Zulu kingdom during the nineteenth century and explore how capitals were purportedly provisioned. Since nineteenth century Zulu ceramics have never been studied in this manner, new data must be collected.

The Ethnographic Background

Ceramic ethnography provides interpretive guidelines for inferring resources areas, the effects of manufacturing on ceramic composition, and evaluating change in ceramic production practices over time.[5,56,58] Such models should ideally be based upon the practices in descendant communities to provide more nuanced and sophisticated interpretations of the complex social factors that influence the production of ceramics. Fowler's ethnographic work on Zulu ceramics provides such a model.[16-19] Modern Zulu potters only exploit clays derived from a very limited geological range. Clays and tempering material are obtained within seven km of production sites, but those within two km are preferred. This range defines 'local' resources. "Resource areas"[2] exploited by potters have been distinguished using geochemical data and effectively identify known communities of potters based upon the strategies the use to acquire clay and temper.[11-13,57,59]

Data sets

Two data sets will be used in this study: (1) a comparative ethnographic collection of finished vessels and clays used by and known to potters living in the vicinity of nineteenth century capitals and other locations in KwaZulu-Natal and Swaziland; (2) shards from vessels deposited in two spatially distinct areas at capitals: the *isigodlo* (king's residence) and areas occupied by military men.

Archaeological Samples

With this motivation, we seek permanent export for the destructive analysis of 250 *undecorated body shards* to be selected from the sites of kwaBulawayo (Nat. Site No.: 2831DC 004), uMgundgundlovu (Nat. Site No.: 2831AD 004), and oNdini (Nat. Site No.: 2831AD 010). 100 body shards will be selected from each of the uMgundgundlovu and oNdini collections, and 50 shards will be selected from kwaBulawayo.

Data analysis

Analysis of the modern reference collection and the archaeological ceramics will involve laboratory research at the University of Manitoba Our approach to ceramic characterization involves a multistage analytical strategy combining petrography and geochemistry.[8] Building upon earlier regional research,[24,39] our five-step data collection protocol synthesizes several approaches to petrographic and chemical characterization analyses:[1,4,5,8,27,29,45,46]

1. Prior to destructive characterisation analyses, the physical, stylistic and manufacturing characteristics of selected shards will be documented and described according to standard[15,26,52,54] and regional[22,32] ceramic data collection protocols.
2. Optical petrography is employed to classify clay and shard materials into broadly similar groups by identifying the rock and mineral components using a cross-polarizing microscope.
3. The third step involves identifying minerals in clay bodies and shards based upon their crystalline structure. Oriented powder x-ray diffraction (XRD) will be utilized to determine bulk composition and the mineralogy of fine-grained clay material occurring in the matrix of all samples. However, more abundant minerals can mask minor constituents.[19]
4. The fourth step in analysis involves a more detailed study of the mineral and major element composition of clays and shards. A scanning electron microscope (SEM) equipped with a backscattered electron detector, an energy dispersive X-ray spectroscopy (EDS) detector with digital imaging, and an electron micro-probe is used to identify minerals not detected using XRD. SEM is used to characterize textural features and EDS is able to provide identification of mineral grains.
5. The final analytical technique characterizes the chemical composition of clays and shards. We will utilize two instruments to collect chemical data: a portable X-Ray Florescence instrument will be used in the field (in collaboration with the University of Pretoria) and laboratory analysis will employ Fusion Inductively Coupled Plasma/Mass Spectrometry (Fusion ICP/MS) to identify major and trace elements and provide accurate levels of metals that distinguish different deposits in the same geological regime.[38]

Each shard selected for analysis must weigh at least ten grams so that it can be included in each step in analytical procedure. This combination of analytical techniques and instrumentation is innovative in archaeological geochemistry because all are rarely integrated into research designs.[51] The qualitative and quantitative results of each analytical technique are then correlated for geological samples, processed clays, modern vessels, and archaeological shards. To infer production locations archaeological specimens will be compared to the geochemical data derived from the study of modern clays and vessels from around Zulu capitals and previously collected data from locations along the Thukela River, Mhlathuze River, White and Black Umfolozi rivers, Mkhuze River, the Phongolo River, and the Usutu River in Swaziland.

Significance and Potential Impact

This project will advance the application of ceramic provenance research to provisioning studies and encourage scholars who focus on classic state societies to enlarge the comparative scope of their analyses to all forms of ancient states and their economies. Regionally, this work will contribute to promoting the archaeology of Zulu culture, which has remained understudied despite a surge in historical scholarship over the past twenty years.[9] The project will allow us to link geochemical data with the behaviour of modern Zulu potters and compare these associations to geochemical data from archaeological ceramics. This presents a significant advance in the geochemical study of pottery in southern Africa and an innovative approach to understanding the provisioning of Zulu capitals during the nineteenth century.

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