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Introduction

How, when, and where did complex societies first emerge in China? This question has been at the heart of archaeological research since the discipline began to develop in China in the 1920s. Scholars in the West have shown particular interest in the process by which centralized states and expansive empires emerged in the Late Neolithic and Bronze Age in the Yellow River valley (e.g., Chang 1983b, 1986; Creel 1970; Fried 1983; Liu 2004; Liu and Chen 2003; Underhill and Fang 2004; von Falkenhausen 2006b), which is traditionally considered the core of Chinese civilization, as well as in adjacent regions (e.g., Li 2006; Nelson 1996; Shelach 1999, 2009). The Sichuan Basin and surrounding areas, where recent discoveries have established that complex polities emerged contemporaneously with the development of social complexity in the Central Plains (Bagley 2001), have only become a focus of interest more recently (Flad and Chen n.d.).

To examine emergent complexity in China, as elsewhere, a key factor that must be explored is the degree to which social roles of community members are interdependent and involve stratified relations of authority. The development of economic specialization plays an important role in the establishment of both interdependence and stratification. This study examines the emergence and organization of specialized salt production at the eastern Sichuan Basin site of Zhongba and explores the implications that this specialization has for emergent complexity in the region.

Countless archaeological studies have considered the relationship between complex society and specialization (among the most important are Arnold 1987; Arnold and Munns 1994; Brumfiel 1980; Brumfiel and Earle 1987; Clark 1995, 2007; Clark and Parry 1990; Costin 1991, 2001, 2004; Costin and Hagstrum 1995; Flad and Hruby 2007; Inomata 2001; Kenoyer 1992; Lewis 1996; Rice 1981, 1991; Shimada 2007a; M. Stark 1995; Stein and Blackman 1993; Tosi 1984; Underhill 1996, 2002; Wright 1996). This study builds on this previous research by examining the process by which specialized production changes over the *longue dureé* and the interaction between specialized production and other

specialized and nonspecialized activities. The results of this research challenge a commonly expressed belief that when specialized production is used as a strategy for wealth accumulation by emergent, mid-level elites, it necessarily concerns the production of socially symbolic prestige goods. I argue that the nature of products is, in fact, often contingent on their consumption and that many products of specialized manufacture whose production plays a crucial role in the development of social stratification display considerable ontological multiplicity. Salt is one such product, and the rise of specialized salt production in the context of developing social complexity during the Bronze Age in central China provides an ideal context in which to examine the claims of previous research.

Zhongba is located near the county seat of Zhong County in the upper middle Yangzi River drainage region: a region that is now part of the municipality of Chongqing (see Figure 1.1). The site was occupied from the Late Neolithic (mid-third millennium B.C.) through the twentieth century A.D. This study focuses on the pre-Qin (i.e., pre–221 B.C.) period, which constitutes the prehistoric era of this region. Trial excavations showed that the site was deeply stratified, providing a continuous record of the environmental, economic, political, and social changes in the area over several millennia. Evidence in the form of large amounts of homogeneous production debris – at the outset suspected to relate to the manufacture of salt – further suggested that the site was an important area for large-scale production in antiquity. These factors make Zhongba an ideal place to examine the process by which large-scale specialized production emerges and to use multiple lines of evidence to test models that characterize the organization of production based on archaeological remains.

This book addresses these issues through a focus on data collected during controlled archaeological excavation from 1999 to 2001. The study uses multiple lines of evidence to examine the organization of production, including remains directly related to salt production and associated with other activities. I employ a model based on research by Costin (1991) to characterize the different aspects of the emergent specialization at Zhongba. The model is particularly effective for rigorous discussions of production organization because it provides a nuanced view of the intersecting aspects of production processes. The intersecting aspects include the *intensity*, *concentration*, *scale*, *relationships among workers*, and *context* of production – each of which is defined and discussed subsequently. This model helps untangle various aspects of a production system so that we can understand as thoroughly as possible the social aspects of production in an archaeological situation.

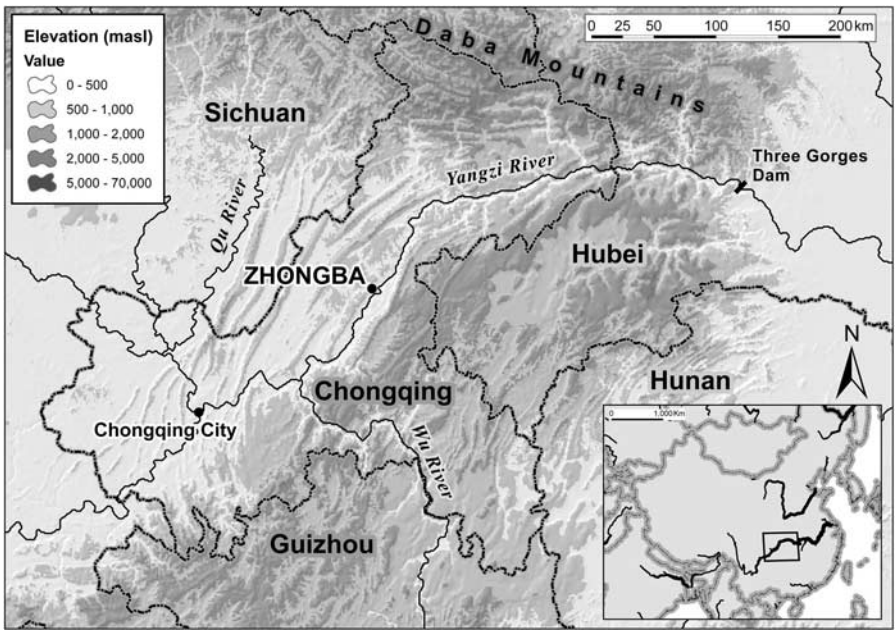

FIGURE 1.1. Map of the Three Gorges region on the eastern edge of the Sichuan Basin with the location of Zhongba.

In adapting Costin's model, I first examine the ceramics used to produce salt at the site (Chapters 5 and 6). The ceramic analysis provides one set of perspectives on the organization of production at the site of Zhongba during different periods and is enhanced by other lines of evidence. Among these other lines of evidence are the layout of the work areas used for salt production (Chapter 7) and the faunal remains associated with the production, including remnants of ritual divination (Chapter 8). The multiple lines of evidence enrich our total picture of the interdependent activities that took place at the site.

This study will show that the primary activity at the site of Zhongba, the production of salt, changed from low-level production as part of a mixed economic strategy to intensive production on a nearly industrial scale. At the same time, other aspects of the organization of production, such as the concentration and seasonality of production, may not have changed for millennia. The changes in production strategies at Zhongba were primarily related to changing social and political factors. The region was never an integral part of a centralized state during the period under consideration, but gradually, during the Bronze Age, Zhongba became increasingly part of a regional system that was influenced by centralized polities in surrounding areas.[1] At first, during the Neolithic period (third millennium B.C. until ca. 1750 B.C.), salt was most

likely produced for low-level consumption by local individuals as part of a system of subsistence activities that relied on domesticated animals and small-scale regional exchange. During the Bronze Age (mid-second millennium B.C. to second century B.C.), larger-scale salt production developed in the absence of overt status differentiation and yet concomitant with the introduction of ritual divination practices that may have been controlled by a restricted segment of the population. Management of salt production was a strategy employed by members of an emergent elite class whose (limited) authority was based in part on their control of ritual knowledge and divinatory ability and in part on their management of the salt production and distribution at Zhongba. These individuals developed access to markets for salt and salted products in other regions (primarily areas controlled by the state of Chu) and exploited this access to increase their social power. They were able to do so by exploiting a previously established economic activity (salt production) and existing belief systems in a way that the salt producers at Zhongba believed would benefit them. Through the actions of these individuals, salt and salted products from Zhongba became commodities that were widely exchanged in a regional economic system.

1.1. LINES OF EVIDENCE

Our understanding of the development of specialized salt production and the role of managers in this process of long-term change comes primarily from detailed analysis of the archaeological remains at Zhongba. The Zhongba remains discussed in this study can be separated into three phases. Phase I coincides with the terminal Neolithic in the region: roughly 2500–1750 B.C. Phase II, the early Bronze Age, dates to between circa 1600 and 1210 B.C. Phase III covers the time between roughly 1100 and 200 B.C. and contains the most abundant remains. Salt production seems to have begun during Phase I and continued through to the end of Phase III. Three general categories of evidence recovered from our excavations at Zhongba can be used to examine the organization of production at the site. These lines of evidence relate to the following four interconnected topics: ceramic remains, the organization of space, fauna, and specialization in ritual behavior.

CERAMIC REMAINS

In Chapters 5 and 6, I examine the organization of salt production and the associated manufacture of pottery at Zhongba using the ceramics that were

used either to boil the brine or as molds during the production of salt. This ceramic analysis provides an indirect measure of the organization of salt production because the ceramics in question were the tools used in the salt-production process. I analyze a sample of the fragments of salt-production pottery and all the complete salt-production vessels to assess the relationships between producers, the concentration of production activities, and the scale and intensity of manufacture. The ceramic analysis suggests that both pottery and salt production changed over time in several ways.

During Phase I, large vats were the primary salt-production tool. They were most likely used as brine storage vats or possibly as evaporation containers. Pottery production became concentrated spatially over the course of Phase I and may have involved more and more individuals – a trend that resulted in less skill exhibited in the manufacture of vats. Salt production increased in scale throughout this phase.

In Phase II, the ceramic aspect of salt production changed dramatically. Vats fell out of use, and the most common salt-production debris became small cups used as molds for salt cakes. Producers of both pottery and salt became more specialized[2] – individuals focused more exclusively on one or a few types of productive activity. Regionally, salt production may have become more dispersed at this point, but at Zhongba, it remained concentrated in one area. Meanwhile, a small group of intense producers engaged in pottery production.

In Phase III, salt manufacture utilized yet a third type of ceramic-based production process that employed small, globular jarlets that were used to evaporate brine. Analysis of these jarlets shows that the producers of pottery and salt had likely become relatively full-time producers – at least for certain seasons of the year – although this intensity may have waned over time, particularly in pottery production. Regionally, salt manufacture seems to have become centralized, mainly at Zhongba, during the course of Phase III, and the scale of salt (and pottery) production increased dramatically during the latter half of the phase.

THE ORGANIZATION OF SPACE

Direct evidence of the organization of production includes spatial aspects of production loci. In Chapter 7, I use direct evidence from the spatial lay-out of the salt-production area as a means to assess the organization of salt manufacture. The production area includes a massive quantity of pottery, but this was not a ceramic production zone. No ceramic wasters exist, nor are

there pottery production kilns. Instead, the large workshop, separated from residential areas at the site, was the locus of specialized salt production as well as other subsidiary activities, including oracle divination on a small scale, some stone and metal tool production, and the consumption of animals. The spatial organization of this production area further informs us about the organization of production.

In characterizing the spatial organization of the production locus, I examine the orientation of features across the production area and the overall spatial relations among these features. During Phase I, pits are the predominant feature. They exhibit little formal spatial organization. Starting in Phase II, a period when holes and gullies compose the most significant salt-production features, these facilities exhibit a strong sense of spatial order. The gullies, in particular, are arranged in nearly straight lines oriented northwest-southeast or northeast-southwest. Significantly, this orientation may relate to the position of the brine source, northwest of the production area. During Phase III, the spatiality that emerged in Phase II persists in the organization of workshop floors. Across the site, these surfaces create a patchwork of sandy, rectangular features. In some cases, these floors are crossed by rows of postholes, sometimes inside shallow ditches, and they are occasionally associated with enigmatic, rectangular, basin-like features, lined with clay and wood, that were probably used for brine storage.

The layout of these workshop floors replicates the organizational structure of the gullies in Phase II. The northwest-southeast or northeast-southwest orientation is remarkably consistent across the site and over time, from Phase II to the end of Phase III. The consistent spatiality suggests that an overall production management plan was put into place starting in Phase II and continuing into Phase III. I suggest that this relates to the emergence of low-level managerial elites at Zhongba in Phase II.

FAUNA

Analyses of production rarely consider evidence other than the remains of manufacture itself, and yet data such as the remains of subsistence practices and subsidiary production activities are particularly useful for understanding the entirety of a complex production system (see Shimada 2007a for studies of multicraft processes). Archaeofaunal material can be used to investigate specialization as well as the organization of society and economic activities (Crabtree 1990; deFrance 2009; Zeder 1991, 1994, 2003). The Zhongba faunal data allow us to further understand the multifaceted organization of salt

production. A massive, taxonomically diverse collection of animal bones was recovered from our excavations. They can be used to investigate issues beyond a simple assessment of which species were being exploited at the site. In Chapter 8, I explore how these bones can elucidate various aspects of the organization of salt production at Zhongba.

Several trends are apparent in these data. First, during Phase I, large domestic animals dominate the fauna at the site. Over time, fish and wild mammals become increasingly prevalent. The increase in fish parallels a shift in fishing technology from the use of fishhooks to the use of nets. Second, diversity in the fauna increases over time, particularly during Phase III. Third, the faunal remains confirm the impression given by the ceramic data that the scale of activity in the production zone increased during Phase III. It may be the case that some of the fauna discovered in Phase III deposits were connected with the salting of meat or fish for trade or storage. These data suggest that less labor-intensive meat acquisition strategies (fishing and hunting of diverse, wild animals) emerged concomitant with increasingly large-scale salt production. The decline in labor invested in meat acquisition may relate to an increase in the amount of time dedicated to pottery and salt production by the people at Zhongba.

SPECIALIZATION IN RITUAL BEHAVIOR

The faunal data also include a unique and important component that speaks further to the relationship between the producers of salt and those who had control over its distribution (i.e., production context). In the second part of Chapter 8, I examine the use of oracle bones at the site as evidence for the association between salt production and ritual activity. More than three hundred fragments of oracle bones, mostly pieces of turtle plastrons, have been recovered from the excavations. The earliest fragments date to the earliest part of Phase II, and they continue all the way through to the end of the period under study. This long-term practice of divination in association with specialized production suggests that the production was not only imbued with ritual significance but also that it was a risky process that relied on supernatural support. The technical skill used in the creation of divination hollows increased over time. This indicates that the diviners became increasingly adept at their craft. The divination remains peak during times most clearly associated with uncertainty in the salt-production process. These peaks verify the association between divination activities and salt production. I propose that the emergent elite responsible for organizing salt production maintained their management

of the salt-production process through the control of divinatory activities. As salt became produced on a larger scale at Zhongba, the elite played a role in the development of Bronze Age societies along the Yangzi River.

1.2. SIGNIFICANCE

What do we gain from a detailed understanding of the organization of salt production at Zhongba based on these various topics of discussion? First, in terms of our understanding of the organization of society in the Chongqing area during the pre-Qin period, this analysis of the organization of specialized production at Zhongba contributes to our understanding of a region that is understudied and yet played an important role in the long-term development of society during the Bronze Age in China. This study examines the relationship between specialized production and these large-scale social changes and thereby contributes to both our understanding of the culture history of the region and the anthropological discourse on the relationship between specialization and social change. Second, the study continues to develop a methodological approach to understanding production systems in various archaeological contexts. The approach presented here shows how multiple lines of evidence provide a more detailed picture than any one data set can. It also contributes to our general understanding of how realms of social activity that are often analyzed independently of each other, such as the economy and ritual, can actually be intertwined. Third, the study contributes to the increasing communication between Western and Chinese archaeologists, who often approach similar data in vastly different ways. For example, it is hoped that the analyses of pottery and faunal remains will provoke questions and research on the part of our Chinese colleagues that otherwise may not have been addressed.

UNDERSTANDING CENTRAL CHINA

Regarding the first of these issues, the changes in economic activity evident at the site of Zhongba indicate broader-scale changes in the Yangzi River valley between Chongqing and the Three Gorges and, to a lesser extent perhaps, in the Sichuan Basin and central Yangzi River region, upstream and downstream from Zhongba, respectively. The region has generally received limited scholarly attention until recently, and our understanding of chronological change in the region is still quite rudimentary (but see Chongqing and Chongqing 2001, 2003, 2006, 2007a, 2007b; Flad and Chen n.d.; Guowuyuan and Guojia 2003,

2005, 2006; Hubei and Hubei 2003). This study specifically concerns the role that specialized salt production played in changes in the region from the later Neolithic through the end of the Bronze Age. Not only does this study provide insight on the general chronological changes that occurred during this time but it also explores the emergence of an extremely important industry.

The area under investigation was a major salt-production zone during the historic period, and prehistoric salt production may date to earlier than 2000 B.C. (Zhong and Huang 1997a). Some early historical evidence that links this region to salt production can be found in the now-lost *Shiben*, which is quoted in the "Nan Man Xinan Yi liezhuan" ("Commentary on the Southern Man and Southwestern Yi Barbarians") section of the *Houhan shu* by Fan Ye (A.D. 398–445). This record places the origins of an ethnic group called the Ba in the central Yangzi area and suggests that the Ba people moved up the Yangzi into present-day Chongqing. It indicates that their economy was connected with fish and salt.[3] Some recent archaeological finds lend tentative support to Neolithic-period communication along the Yangzi as well as to the prehistoric importance of both fish and salt in this area.

The importance of salt production in this area in later periods is well attested. Most significantly, control of salt in this region played an important role in the development of later states and empires in China (Adshead 1992; Gale 1931; Sage 1992, 179; Vogel 1990, n.d.). Changes in the production of salt at Zhongba reflect significant changes in the central Chinese regional economy.

It should be emphasized that Zhongba is not a typical site of the region in which it is located. In fact, it is a very special site not only because of the deep and rich cultural deposits but also because of the seemingly homogeneous remains from large-scale specialized production. It is in this latter regard that the Zhongba remains have significant implications for regions beyond central China and topics other than Chinese culture history. As discussed further later, specialized production has often been mentioned as an indicator of social complexity. This research contributes to the discourse on social complexity and its relationship to production.

UNDERSTANDING PRODUCTION SYSTEMS

Second, in this study, I evaluate and employ an influential model that explicates the organization of production using archaeological remains. I subject the Zhongba ceramics to an analysis based on Costin's model and then use other lines of evidence to further enhance our understanding. Although the model that Costin developed in various articles (Costin 1991, 1996, 2001;

Costin and Hagstrum 1995) remains the most comprehensive attempt to deal with the identification of different aspects of specialized production using archaeological data, few studies have adopted its multifaceted approach to production. Instead, many attempts to examine production have focused on a single parameter. Most frequently, studies have explored the context of production. As explained later, however, typically these approaches adopted a simplistic perspective on the organization of production and its relationship to products. I not only examine several parameters of the organization of salt production at Zhongba but also use various lines of evidence to do so. One line of evidence that has not typically been used in the analysis of production systems is zooarchaeological remains (but see Crabtree 1990; Zeder 1991). The Zhongba analysis contributes to the effort to demonstrate the association between patterns in faunal remains and the organization of production.

The use of multiple lines of evidence both enriches our understanding of the salt-production system itself and demonstrates that production cannot be treated as fully independent from other activities (Dobres and Hoffman 1994). At Zhongba, we see that economic and ritual behaviors in the Three Gorges region are often closely intertwined. Ritual divination using animal bones began as early as the second millennium B.C. and seems to have been intricately linked to the emergent production of salt at Zhongba. The degree to which this ritual activity is connected to changes in the organization of production demonstrates the interconnectedness among different activities often separated as economic and noneconomic. Although such distinctions may be heuristically useful for certain purposes (Flad and Chen n.d.), such separation should not be overinterpreted.

1.3. PRODUCTION, PRACTICE, AND SOCIAL CHANGE

The strength of archaeological research lies in its ability to consider questions of broad anthropological significance with a focus on change over time. Surprisingly, however, many models employed by archaeologists are inherently static. Here I briefly discuss an example of such static models – those that have been used to connect specialized production to changes in social complexity. Such models may posit a sequence of stages but rarely consider the process by which change occurs. To address the actual process of social change, it is necessary to consider the behavior of social actors and how this behavior may evolve in response to changes in their social context. Social action of this sort is central to theories of *practice*, which consider how the cultural norms that place constraints on behavior allow some flexibility of action. The variability